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Research Paper

Research on Computer-Assisted Language Learning in Iran: Priorities, Challenges, and Attitudes among CALL Researchers and Teacher Educators

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Abstract

This study aimed at shedding light on issues pertaining to conducting CALL research in Iran. Therefore, a questionnaire was designed and validated using exploratory factor analysis (EFA). Iranian CALL researchers (n=107) and TEFL teacher educators (n=7) participated in the study. Independent samples t-test was used to examine perceptual differences. Findings established that while there were both commonalities and discrepancies between the CALL researchers' and teacher educators' perspectives, positive attitudes towards carrying out CALL research were identified in the study. However, findings revealed that conducting CALL research was influenced by a couple of contextual, pragmatic, and infrastructural constraints. The participants preferred considering cross-sectional, correlational, and experimental research as the research designs for their CALL studies. With regard to the research priorities, the participants believed that carrying out CALL research and teaching methodologies/approaches, language learning skills and sub-skills, assessment and testing, curriculum development, learning theories, and adult EFL learning had a high priority. Furthermore, the findings indicated that Iranian CALL researchers had low to moderate competence in

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conducting CALL research and that they did not take effective measures to facilitate their professional development for conducting CALL research.

Keywords: CALL Research; CALL Researchers, Competence, Constraints, Research Priorities, Teacher Educators, TEFL

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1. Introduction

CALL research has become a priority for a large number of English as a foreign language (EFL) researchers and scholars owing to the rapid popularity and applicability of the technology in educational contexts across the globe (Chen, 2012; Golonka et al., 2014). Moreover, CALL research has explored numerous language learning skills and areas such as writing and CALL (e.g., Chang et al., 2019; Hamidnia, et al., 2020; Wang & Jiang, 2021; Xu et al., 2019), speaking and CALL (e.g., Khadangi Barani & Mousapour Negari, 2022; Khodi et al., 2022; Sun et al., 2017; Sydorenko et al., 2019), reading and CALL (e.g. Boers et al., 2017; Tsai, 2017; Yu, Zhou, Yang, & Hu, 2022), and listening and CALL (e.g., Inceoglu, Chen, & Lim, 2023; Mohsen, 2016; Wei & Zheng, 2017). Furthermore, CALL research has evolved to examine the roles of various technologies in language learning, including wikis and language learning (e.g., Hsu, 2019; Rahimi, & Fathi, 2022), mobile devices and language learning (e.g., Xu & Peng, 2017), social network sites and language learning (e.g., Álvarez Valencia, 2016), interactive whiteboards and language learning (e.g., Whyte et al., 2014), digital games and language learning (e.g., Hwang et al., 2016; Lee, 2022), and blogs and language learning (e.g., Afzali & Salehi, 2022; Pham & Usaha, 2016).

In line with the demand for conducting CALL research at an international level, many researchers and scholars in Iran have focused their research studies on the efficacy of technology use for language learning in accordance with the limitations and parameters of the specific educational context of Iran. Examples of these Iranian CALL research lines comprise research on CALL and wikis (e.g., Dashtestani, 2014; Nami & Marandi, 2014), CALL and mobile learning (e.g., Dashtestani, 2019), interactive whiteboards and language learning (e.g., Dashtestani, 2019), social network sites and language learning (e.g., Ma'azi & Janfeshan, 2018), and digital games and language learning (e.g., Ebrahimzadeh & Alavi, 2016). Even though these studies and many others have been taken into account, CALL researchers in Iran encounter several obstacles and limitations such as the lack of digital facilities and access to recent language learning software tools. Therefore, this study draws on the current challenges and research priorities of Iranian CALL researchers and teacher educators in the Iranian EFL context in addition to comparing the perspectives of the two groups of stakeholders.

2. Theoretical Framework

Research in education has been influenced by some challenges and limitations. Pollard (2007) expounds on the challenges of educational research in terms of contextual challenges, conceptual challenges, methodological challenges, and transformational challenges. Regarding research problems in the field of educational technology and design, Williamson et al. (2019) suggest that one significant challenge of educational technology is the issue of digital education policy. They explain that governments may not be willing to support projects on educational technology in many countries. The other challenge is that educational technology is basically based on the science and theories of learning and it neglects other disciplines and fields of study such as positive psychology,

cognitive theories, and neuroscience. The other challenge pertains to the economics of educational technology. In some cases, some technologies might be used for commercial or advertising purposes using the data from the users of those technologies. This may pose a serious challenge to both the researchers and research participants who use commercial technologies. Issues associated with ethics and the proper use of educational technologies can be another problem. The concept of post-human constructs proposes that human beings, including teachers and students, do not play important roles in the process of learning and teaching when technologies are used for learning. The last challenge is digital methodologies and ways to define and delineate their characteristics and properties in the field of educational technology.

Delving into the challenges of CALL research, Levy et al. (2015) maintain that one important challenge in the field of CALL research is to encourage and guide novice and young researchers to embark on carrying out quality CALL research studies. Regarding research priorities in CALL, Levy et al. (2015) observed that “Pedagogy (28.9%), Design (27.8%), and Research (18.6%) followed equally by Psychology, Linguistics, and Technology (8.2%)” (p.3) were the main priorities for CALL researchers. Colpaert (2013) divided the challenges of CALL research into three main categories. These categories consist of contextual, methodological, and epistemological challenges. Levy et al. (2015) believe that epistemological issues and challenges need to be addressed with more attention and caution. More specifically, Garrett (2009) explains that CALL has been restricted by some issues such as the lack of production of materials and resources, the lack of CALL teacher training and preparation, the inadequate development of CALL theories and research, and the absence of support for CALL researchers from their institutions for conducting well-designed and quality CALL-based research studies.

3. Literature Review

The literature on the limitations and obstacles of CALL research has shown that conducting CALL research was not without limitations and challenges. These limitations were mostly related to methodological, infrastructural, and design-based aspects. For example, Golonka et al. (2014) assessed the status of CALL research and the effectiveness of such research in the field of foreign language teaching. They argued that CALL research is a growing field of investigation, while it can be affected by some challenges and problems. Improper explanations about research designs, inadequate descriptions of the participants, the problematic selection of variables, and the inclusion of participants who were not well-trained for the use of technology were some of the challenges discussed. On the efficacy of technology use for language learning, Golonka et al. (2014) found limited evidence based on analyzing previous research studies on CALL. They also discussed that problems relevant to CALL research designs and implementation can create challenges for researchers who strive to investigate the effectiveness of technology use for language learning. Similarly, Felix (2005) carried out a study on the effectiveness of CALL and its research from 2000 to 2004. She investigated the limitations, shortcomings, and strengths of research designs used over the period. The results indicated a penchant for combining qualitative and quantitative research approaches by CALL researchers. It was also shown that CALL researchers had taken an interest in the use of complex research designs. She further argued that appropriate models of CALL research design should be presented by the CALL community. In addition, it was posited that CALL research conducted by scholars and researchers lacked scientific rigor. There was a problem with the reliability and validity of the instruments used in the CALL research studies.

6 Teaching English Language, Vol. 17, No. 2
Research on Computer ...

Other studies have dealt with the issue that CALL research has been limited to some areas and aspects. For instance, Liu, Moore, Graham, and Lee (2002) investigated different aspects of CALL research from 1990 to 2000. They reported that the majority of the studies reviewed did not consider effective measures to ensure the reliability and validity of the instruments used. Moreover, the CALL studies were mostly dependent on learners' self-reports with limited focus on the reliability of the instruments used for self-reporting. CALL research was also restricted to the university level, while the use of technology in schools and K-12 levels was not an aim of the studies reviewed. They also suggested that there were positive attitudes towards technology use for the teaching and learning of language skills and sub-skills. Zhao (2003) pointed out that the research on the efficacy of technology use for language learning was inadequate. One finding was that there was a lack of systematic and quality empirical studies which had evaluated the efficacy of technology use in language learning contexts. Moreover, a large number of CALL studies investigated adult learning in the higher education context, while there was a dearth of research on the use of technology for young learners and adolescents. The other shortcoming was that CALL research was mostly limited to English and other commonly-spoken foreign languages. The findings showed that CALL research was not carried out on a longitudinal basis and that few language learning skills or aspects were taken into account in the majority of the CALL studies. However, the findings of previous CALL research indicated positive gains in students' learning and effects on teachers' teaching.

Some studies have pointed out some serious methodological shortcomings of CALL research. Beatty (2010) discussed that CALL research has been problematic due to its inadequate scientific rigor. She also warned that CALL researchers might follow their own research priorities

instead of sticking to some accepted research agendas and frameworks. Having reviewed 73 research studies about CALL from 2000 to 2003, Hubbard (2005) criticized CALL research for having been conducted with students or participants who were inexperienced in the use of technology and computer-based tasks and activities designed for them in the research studies. He argued about the methodological problems of CALL research and called for a more systematic and rigorous approach to undertaking CALL research.

4. Rationales for Conducting the Study

CALL has been a relatively recent research area in the TEFL context of Iran. Quite recently, an increasing number of CALL research proposals and research studies have been proposed and published by Iranian CALL researchers. Moreover, a wide spectrum of learning technologies has been the subject of these investigations in the context of Iran. Many of these CALL researchers are the younger generations of students who are willing to choose a CALL-based topic for their M.A. or Ph.D. dissertations. One considerable challenge regarding CALL implementation and research in the context of Iran is the lack of proper digital tools and equipment. Several Iranian studies have argued that the unavailability of the required CALL facilities would discourage teachers, students, and researchers from using technology in their pedagogical and research practices. Most educational contexts are equipped with only basic digital tools and facilities and there is a shortage of technological and digital infrastructures in the Iranian educational context (Dashtestani, 2012; Hedayati & Marandi, 2014). The other challenge for implementing CALL research in Iran is the lack of budget to carry out CALL research. At times, it is necessary to buy new software tools and learning systems whose purchase requires having access to university funds or organizational budgets. A large number of Iranian CALL researchers may avoid carrying out research on up-dated topics in CALL due to the costs and

expenditures they cannot afford. Previous research has emphasized the role of educational organizations in making software tools available to Iranian teachers and researchers (Dashtestani, 2012; Dashtestani, 2016). Furthermore, some Iranian CALL researchers may not have the required knowledge of technology or pedagogy in order to conduct research. As a result, many of Iranian researchers' publications are published in low-quality journals.

Even though several review and meta-analytical studies have been carried out on the efficacy of technology use for language learning and the evaluation of CALL research, these studies were not context-based and provided some universal findings on different aspects of CALL research. Moreover, there is a lack of empirical research investigating CALL stakeholders' perspectives on the current challenges, opportunities, and priorities in the field of CALL research. In this paper, the use of an empirical study was preferred to a meta-analysis or review study since the study aimed to echo the voices of those who were involved in practicing TEFL and CALL in Iran (i.e., TEFL educators and students). Their views and judgments can have valuable implications and applications for the renewal or reconsideration of CALL and TEFL courses and research programs in Iran. Given the popularity of CALL research in the Iranian context and the ever-growing interest of Iranian researchers in implementing CALL research, there is a research gap regarding the perceived challenges, attitudes, and research priorities and preferences of Iranian CALL researchers in this context. The study can have implications for Iran and some other similar countries in which conducting CALL research is a challenging undertaking. Therefore, the current study has utilized a quantitative approach to identifying the current challenges, research issues, and trends in relation to

CALL research in the context of Iran. The following research questions were formulated based on the objectives and purposes of this study:

1. Do Iranian CALL researchers' and teacher educators' attitudes differ in conducting CALL research?
2. Do Iranian CALL researchers' and teacher educators' perceptions differ in the challenges of conducting CALL research?
3. Do Iranian CALL researchers' and teacher educators' perceptions differ in their CALL research priorities?
4. Do Iranian CALL researchers' and teacher educators' perceptions differ in the importance of the knowledge types required for conducting CALL research?
5. Do Iranian CALL researchers' and teacher educators' perceptions differ in their preferred research designs suitable for CALL research?
6. Do Iranian CALL researchers' and teacher educators' perceptions differ in Iranian CALL researchers' knowledge of conducting CALL research?
7. Do Iranian CALL researchers' and teacher educators' perceptions differ in the factors affecting CALL researchers' professional development?
8. Do Iranian CALL researchers' and teacher educators' perceptions differ in Iranian CALL researchers' professional development status?

5. Methodology

5.1 Context

TEFL courses are offered by the majority of state and private universities in Iran. In many universities, CALL courses are offered at the M.A. and Ph.D. levels in higher education. Students must attend a national entrance

examination for university admittance for the M.A. and Ph.D. levels. Over the past years, there has been increasing interest in conducting CALL research among Iranian M.A. and Ph.D. students of TEFL and university professors. In the same way, the Iranian educational context is changing from a traditional educational system to a more technology-based and modern one. While a large body of research has been carried out on topics such as the efficacy of different technologies for language learning, attitudes of Iranian TEFL stakeholders towards CALL, Iranian teachers' and students' acceptance of CALL, and the obstacles and challenges Iranian CALL researchers face has been overlooked in the previous literature on CALL in Iran. Therefore, this mixed-methods study is to uncover the limitations and opportunities of CALL research in Iran using a stakeholder-based approach. The data for the study was collected from five major provinces of Iran namely, Tehran, Alborz, Ghazvin, Isfahan, and Fars. The participants were selected from different provinces of Iran in order to provide a representative sample for the study. For recruiting the participants, the cluster method of sampling was selected. The universities from which the participants were chosen were the ones that had a high national rank. The first language of all participants was Persian, while English was used as a foreign language by the participants. All the participants were those who had attended thesis-based (research-based) and coursework-based courses. The participants who had attended coursework-based courses without having written a thesis were excluded from the study.

5.2 Participants

More specifically, two cohorts of participants took part in this research (Table 1). The first cohort comprised 107 M.A. graduates/Ph.D. students of TEFL. All the participants had presented their MA thesis on a topic related to CALL and technology use in English teaching/learning. Besides, all the participants had published at least one research paper on CALL in an international/national journal and pointed out that their primary research interest was CALL. These participants had an average of five years of research experience on CALL-

related topics. The sample included 65 females and 42 males. In this paper, this group of participants is called CALL researchers. They were studying for their Ph.D. or had finished their M.A. studies in/from different reputable universities in Iran. The age range of the participants was 25-35 and they had 15.6 years of experience in computer and technology use. The CALL researchers perceived themselves to have a moderate level of digital literacy in the questionnaires. The second group of participants included seven university instructors (faculty members) who taught TEFL/Applied Linguistics. Based on the analysis of their research profiles and their own statements, they were interested in CALL research and had the experience of publishing several international/national publications and supervising/advising dissertations on CALL-related topics. Their age average was 46.4 years. They had taught TEFL for 15.2 years. This group of participants is called teacher educators in this study. All the participants took part in the study on a voluntary basis. All ethical considerations were explained to the participants and consent forms were submitted to them at the time of administering the questionnaires. Issues of confidentiality of the participants' information and their anonymity were also ensured and taken into account in this study.

Table 1

Profile of the Participants of the Study

Cohort 1

Total number of participants: 107 CALL researchers

Major: TEFL

Degrees: MA graduates (75.7%), Ph.D. candidates (24.3%)

Age range: 25-35 years

Average computer use experience: 15.6 years

Gender: 65 females, 42 males

Cohort 2

Total number of participants: 7 teacher educators of TEFL/Applied Linguistics

Degrees: Ph.D. in TEFL

Average age: 46.4

Years of TEFL teaching experience: 15.2

5.3 Instrumentation

Due to the fact that one important objective of the study was to compare the perceptions of the two cohorts of participants (i.e., CALL researchers and teacher educators) a quantitative approach using questionnaires was utilized. Since a relevant questionnaire on the purposes and objectives of the study was not available, a questionnaire was designed. A total of 78 items were developed for the questionnaire of the study. The questionnaire contained eight parts and was constructed based on a five-point Likert scale. The questionnaire was designed based on primary consultations with a group of five CALL experts about the current challenges, opportunities, and research priorities in the context of Iran. The consultations provided feedback and information about the current issues of CALL research in the context of Iran. The experts were university faculty members and had extensive national and international publications on CALL and educational technology. The other source for developing the questionnaire items was the previous literature on CALL, its research, challenges, and affordances (e.g., Beatty, 2010; Levy & Stockwell, 2006; Stockwell, 2012). The questionnaire section which focused on research designs was based on the research design classification proposed by Cohen, Manion, and Morrison (2011).

Specifically, the reliability of each section of the questionnaire was measured using Cronbach's Alpha test and the indices indicated high levels of reliability for each section of the questionnaire. Reliability values above 0.60 can be regarded as acceptable (Taber, 2018). Moreover, the overall reliability of the questionnaire was 0.745, which showed an acceptable level of reliability. Furthermore, after preparing the list of items, five CALL specialists reviewed and assessed whether the items were of the required level of quality for fulfilling the aims of the study. The specialists suggested revisions and the items were improved based on the feedback. The measure

was essential to maintain the content validity of the questionnaire. In addition to examining the content validity, exploratory factor analysis was applied to assess the factorial structure of the questionnaire and the factor loadings of the items. The factor analysis included information about the Kaiser-Meyer-Olkin (KMO) Test, Bartlett's test of Sphericity (Chi-Square), degrees of freedom (df), the p-value, and the number of factors associated with each section of the questionnaire. The KMO levels showed an acceptable range and the Chi-Square test was significant for all the sections of the questionnaire ($p \leq 0.05$). In addition, all the items of the questionnaire had factor loadings greater than 0.30.

In particular, in the final version of the questionnaire, eight sections were inserted. The sections comprised; Section 1: attitudes towards conducting CALL research (9 items, Cronbach's Alpha coefficient=0.842, KMO=0.858, Bartlett's test of Sphericity=306.862, df=36, $p=0.000$, number of factors=2), Section 2: challenges of conducting CALL research (12 items, Cronbach's Alpha coefficient=0.792, KMO=0.808, Bartlett's test of Sphericity=855.121, df=66, $p=0.000$, number of factors=3), Section 3: CALL research priorities in Iran (13 items, Cronbach's Alpha coefficient= 0.858, KMO=0.807, Bartlett's test of Sphericity=431.096, df=78, $p=0.000$, number of factors=3), Section 4: knowledge types required for conducting CALL research (7 items, Cronbach's Alpha coefficient= 0.831, KMO=0.814, Bartlett's test of Sphericity=277.636, df=21, $p=0.000$, number of factors=1), Section 5: preferred research designs suitable for CALL research (10 items, Cronbach's Alpha coefficient= 0.630, KMO=0.731, Bartlett's test of Sphericity=313.731, df=45, $p=0.000$, number of factors=3), Section 6: CALL researchers' knowledge of CALL research (7 items, Cronbach's Alpha coefficient= 0.744, KMO=0.783, Bartlett's test of Sphericity=141.370, df=21, $p=0.000$, number of factors=1), Section 7: Factors affecting CALL researchers' professional

development in conducting CALL research (10 items, Cronbach's Alpha coefficient= 0.839, KMO=0.843, Bartlett's test of Sphericity=497.517, $df=45$, $p=0.000$, number of factors=3), and Section 8: Iranian CALL researchers CALL research professional development status (10 items, Cronbach's Alpha coefficient= 0.653, KMO=0.764, Bartlett's test of Sphericity=335.813, $df=45$, $p=0.000$, number of factors=3).

5.4 Data analysis

Both descriptive (mean and standard deviation) and inferential statistics (parametric independent samples t-test) were considered for the analysis of the data. As for the reliability of the instrument, Cronbach's Alpha test was utilized. For validating the construct of the questionnaire, the exploratory option of factor analysis was used for each section of the questionnaire. Statistical Package for the Social Sciences (SPSS) version 16 was used for data analysis.

6. Findings

The findings of the study are presented based on the results related to each research question. The tables contain the mean, standard deviation, t, and p-value relevant to each item. For the purpose of comparability of the results, the results related to the CALL researchers and teacher educators are presented in one table.

6.1 Attitudes toward conducting CALL research

Table 2 reveals the descriptive and inferential analysis of the data about the participants' attitudes toward conducting CALL research. Overall, the data demonstrated the positive attitudes of the participants towards carrying out CALL research. The independent samples t-test also showed significant differences between the attitudes of the participants in items 1, 4, 6, and 9; however, no significant difference was identified in the rest of the items (five items). The total mean of the section provided evidence that while both

groups of participants held positive attitudes toward conducting CALL research, the teacher educators (Total M=4.42, Total SD= 0.463) were slightly more positive about conducting CALL research in comparison to CALL researchers (Total M=4, Total SD, 0.828). Based on the analysis of the data related to the perceived merits of conducting CALL research, the participants pointed out that “CALL research fosters the knowledge of language teaching”, “provides various research opportunities for researchers”, “provides tremendous publication opportunities for researchers”, “is interdisciplinary in nature”, and “leads to researchers’ professional development”.

Table 2

CALL Researchers’ and Teacher Educators’ Attitudes Toward Conducting CALL Research

Questionnaire Item	Participant	Mean	SD	t	sig
1. Conducting research on CALL is necessary for the Iranian EFL context	CALL Researcher	3.9	0.97	2.202	0.030*
	Teacher Educator	4.71	0.48		
2. Conducting research on the role of technology in EFL teaching fosters my knowledge of the language teaching	CALL Researcher	3.98	0.83	1.137	0.068
	Teacher Educator	4.57	0.53		
3. CALL provides numerous research opportunities for TEFL researchers	CALL Researcher	3.98	0.83	1.137	0.258
	Teacher Educator	4.57	0.53		
4. Conducting research on CALL can pave the way for technology integration in EFL courses in Iran	CALL Researcher	3.99	0.86	2.189	0.031*
	Teacher Educator	4.71	0.48		

Research on Computer ...

5. There are several publication opportunities in CALL-related journals	CALL Researcher	4.04	0.81	0.120	0.905
	Teacher Educator	4	0.57		
6. CALL research can be easily linked to various topics in applied linguistics	CALL Researcher	3.88	0.83	2.169	0.032*
	Teacher Educator	4.57	0.53		
7. This is a benefit that CALL research is interdisciplinary	CALL Researcher	4.05	0.90	0.135	0.893
	Teacher Educator	4	0.57		
8. Research on CALL can facilitate my professional development	CALL Researcher	3.90	0.82	0.329	0.743
	Teacher Educator	4	0.00		
9. It is interesting to link technology and language learning in my research	CALL Researcher	4.05	0.69	2.507	0.014*
	Teacher Educator	4.71	0.48		

Likert scales: 1. Strongly disagree; 2. Disagree; 3. Neither agree nor disagree; 4. Agree; 5. Strongly agree, ($p \leq 0.05$)

6.2. Challenges of conducting CALL research

The results of descriptive and inferential analysis shown in Table 3 illustrate that both groups of participants were aware of the possible challenges of conducting CALL research in the context of Iran. Apart from items 7 and 8, on which the participants did not have a general agreement, there was no significant difference between the perceptions of CALL researchers and teacher educators regarding the possible challenges included in the questionnaires. Both the CALL researchers and teacher educators emphasized the importance of some challenges such as “the lack of emphasis on CALL (research) in TEFL courses”, “the lack of digital facilities to conduct CALL research”, “the lack of funding for CALL researchers”, “the unimportant nature of CALL research in Iran”, “the high costs attached to

conducting CALL research”, “the lack of access to CALL software tools”, and “the lack of training on how to implement CALL research”.

Table 3

CALL Researchers and Teacher Educators' Perceptions of the Challenges of Conducting CALL Research

Questionnaire Item	Participant	Mean	SD	t	sig
1. I lack enough confidence to start carrying out research on CALL	CALL Researcher	3.91	0.96	1.292	0.199
	Teacher Educator	4.43	0.53		
2. I do not have enough knowledge of technology in order to conduct research on CALL	CALL Researcher	4.11	0.72	1.441	0.152
	Teacher Educator	3.71	0.48		
3. Not enough emphasis is placed on CALL (research) in our TEFL courses	CALL Researcher	3.94	0.89	0.993	0.323
	Teacher Educator	4.29	0.48		
4. There is a lack of digital facilities in EFL classrooms to conduct research on CALL	CALL Researcher	4.01	0.90	0.751	0.108
	Teacher Educator	4.57	0.53		
5. There is no funding by universities for researchers to conduct research on CALL	CALL Researcher	4.25	0.73	0.393	0.695
	Teacher Educator	4.14	0.37		
6. The use of technology for language learning is not a priority in Iran	CALL Researcher	4.11	0.81	0.547	0.585
	Teacher Educator	4.29	0.75		
7. There is a lack of access to CALL experts who are willing to collaborate on research projects	CALL Researcher	4.07	0.81	6.006	0.000*
	Teacher Educator	2.14	0.9		
8. I do not know about recent/suitable	CALL Researcher	4.21	0.64	5.378	0.000*

CALL research topics					
	Teacher Educator	2.86	0.69		
9. Conducting research on CALL requires spending high costs	CALL Researcher	4.33	0.73	1.150	0.253
	Teacher Educator	4	0.57		
10. CALL software tools/applications are not easily available in Iran in order to include them in research	CALL Researcher	4.17	0.84	0.078	0.938
	Teacher Educator	4.14	0.69		
11. There is a lack of training on how to conduct research on CALL	CALL Researcher	4.32	0.69	0.658	0.512
	Teacher Educator	4.14	0.38		
12. Conducting research on CALL is too time-consuming	CALL Researcher	3.99	0.82	0.881	0.380
	Teacher Educator	3.71	0.48		

Likert scales: 1. Strongly disagree; 2. Disagree; 3. Neither agree nor disagree; 4. Agree; 5. Strongly agree, ($p \leq 0.05$)

6.3 CALL research priorities in Iran

As shown in Table 4, the participants' perceptions of CALL research priorities were assessed and reported. The participants showed general agreement on CALL research priorities in Iran; however, significant differences were detected between the perceptions of the participants on items 2, 9, and 13. The research areas with a high priority pointed out by the participants include "research on CALL and teaching methodologies and approaches", "language learning skills and sub-skills, assessment and testing", "curriculum development", "learning theories", and "adult EFL learning".

Table 4

CALL Researchers and Teacher Educators' Perceptions of CALL Research Priorities in Iran

Questionnaire Item	Participant	Mean	SD	t	Sig.
1. Research on technology use in/and language teaching methods/approaches	CALL Researcher	4.24	0.77	0.623	0.335
	Teacher Educator	4.43	0.53		
2. Research on technology use in/and second language acquisition (SLA) research	CALL Researcher	3.07	1.11	3.526	0.001*
	Teacher Educator	4.57	0.53		
3. Research on technology use in/and language learning skills/sub-skills (reading, writing, speaking, listening, grammar, pronunciation, and vocabulary)	CALL Researcher	4.19	0.72	1.883	0.062
	Teacher Educator	4.71	0.48		
4. Research on technology use in/and language assessment/testing	CALL Researcher	3.93	0.78	0.688	0.493
	Teacher Educator	4.14	0.69		
5. Research on technology use in/and EFL materials development	CALL Researcher	3.18	1.05	1.679	0.096
	Teacher Educator	3.86	0.69		
6. Research on technology use in/and EFL curriculum development	CALL Researcher	3.94	0.98	0.149	0.882
	Teacher Educator	4	0		
7. Research on technology use in/and	CALL Researcher	4.07	0.75	1.740	0.085

Research on Computer ...

learning theories (e.g., behaviorism, cognitivism, social constructivism, etc.)	Teacher Educator	4.57	0.53		
8. Research on technology use in/and adult EFL learning	CALL Researcher	4.17	0.81	0.828	0.409
	Teacher Educator	4.43	0.53		
9. Research on technology use in/and children/young learners' EFL learning	CALL Researcher	3.13	1.24	2.717	0.008*
	Teacher Educator	4.43	0.78		
10. Research on technology use in/and English for specific/academic purposes (ESP/EAP)	CALL Researcher	3.66	1.04	0.486	0.628
	Teacher Educator	3.86	0.37		
11. Research on technology use in/and discourse analysis	CALL Researcher	2.79	1.24	0.733	0.456
	Teacher Educator	3.14	0.69		
12. Research on technology use in/and learners'/teachers'	CALL Researcher	3.78	0.88	0.669	0.505
attitudes	Teacher Educator	4	0		
13. Research on technology use in/and teacher	CALL Researcher	2.89	1.27	2.874	0.005*
training/education	Teacher Educator	4.29	0.48		

Likert scales: 1. Not a priority; 2. Low priority; 3. Medium priority; 4. High priority; 5. Essential, ($p \leq 0.05$)

6.4 Knowledge types required for conducting CALL research

The quantitative analysis of the data provided insights into the required knowledge types for carrying out CALL research (Table 5). The results of the

independent samples t-test showed no significant difference between the perceptions of the two groups of participants about the knowledge types required for conducting CALL research. The participants had a consensus that all the knowledge types provided in the questionnaire were important for a CALL researcher. These knowledge types include “the knowledge of major language learning software tools”, “the knowledge of research designing”, “the knowledge of topics in the field of educational technology”, “the basic knowledge of IT/computers”, “the knowledge of language teaching methodologies”, “the knowledge of pedagogical principles”, and “the knowledge of the educational use of technology”.

Table 5

CALL Researchers and Teacher Educators' Perceptions of Knowledge Types Required for Conducting CALL Research

Questionnaire Item	Participant	Mean	SD	t	Sig.
1. Knowledge of recent/major language learning software tools/applications	CALL Researcher	4.35	0.93	1.033	0.304
	Teacher Educator	4.71	0.48		
2. Knowledge of designing research on technology and language learning	CALL Researcher	4.01	1.01	0.995	0.304
	Teacher Educator	4.43	0.53		
3. Knowledge of current topics of interest in the field of educational technology/CALL	CALL Researcher	4.36	0.88	1.063	0.290
	Teacher Educator	4.71	0.48		
4. Basic knowledge of computer science/IT	CALL Researcher	3.93	0.87	0.626	0.532
	Teacher Educator	4.14	0.37		
5. Knowledge of language learning theories/methodologies	CALL Researcher	4.02	0.82	0.389	0.698
	Teacher Educator	4.14	0.69		
6. Knowledge of pedagogical theories/principles	CALL Researcher	4.05	0.95	0.654	0.514

Research on Computer ...

	Teacher Educator	4.29	0.48		
7. Knowledge of the use of technology in educational contexts	CALL Researcher	4.23	0.93	0.543	0.588
	Teacher Educator	4.43	0.53		

Likert scales: 1. Not important at all; 2. Slightly important; 3. Moderately important; 4. Important; 5. Very important, ($p \leq 0.05$)

6.6 Research designs suitable for CALL research

Based on the values shown in Table 6, items 1 and 4 indicate significant differences between the perceptions of the two groups of participants based on the results of the independent samples t-test. The participants in both groups were of the same opinion that there was a high priority for some CALL research designs, namely, “cross-sectional studies”, “correlational studies”, and “experimental research studies”. The other research designs were not of high priority based on the perceptions of the participants in the study.

Table 6

CALL Researchers and Teacher Educators' Perceptions of Preferred Research Designs for CALL Research

Questionnaire Item	Participant	Mean	SD	t	Sig.
1. Naturalistic/ethnographic research	CALL Researcher	3.08	1.21	3.210	0.002*
	Teacher Educator	4.57	0.53		
2. Historical research	CALL Researcher	1.71	0.98	1.132	0.260
	Teacher Educator	1.29	0.48		
3. Cross-sectional studies (e.g., Surveys)	CALL Researcher	4	1.1	0.651	0.516
	Teacher Educator	4.29	0.75		
4. Longitudinal studies	CALL Researcher	3.3	1.16	2.510	0.013*
	Teacher Educator	4.43	0.78		

5. Case studies	CALL Researcher	3.12	1.24	0.740	0.461
	Teacher Educator	3.57	0.53		
6. Correlational research	CALL Researcher	3.96	1.13	0.630	0.530
	Teacher Educator	3.86	0.9		
7. Ex post facto research	CALL Researcher	3.44	1.13	1.684	0.095
	Teacher Educator	2.71	0.75		
8. Experimental research	CALL Researcher	4.69	0.88	0.335	0.724
	Teacher Educator	4.57	0.53		
9. Action research	CALL Researcher	3.40	1.16	1.660	1.00
	Teacher Educator	4.14	0.69		
10. Research review/ meta-analyses	CALL Researcher	4.14	1.30	1.165	0.274
	Teacher Educator	3.57	0.53		

Likert scales: 1. Not a priority; 2. Low priority; 3. Medium priority; 4. High priority; 5. Essential, ($p \leq 0.05$)

6.6 Call researchers' knowledge of conducting CALL research

The results included in Table 7 indicate that both the CALL researchers and teacher educators perceived that Iranian CALL researchers had a moderate level of competence in conducting CALL research. Moreover, there was a high level of consensus between the perceptions of the two groups based on the results of the independent samples t-test. The significant difference between the participants' perceptions was only observed in item 7. The CALL researchers and teacher educators had a general agreement on the low to moderate competence of Iranian CALL researchers on "the knowledge of recent/major language learning software tools studies", "the knowledge of designing research on technology and language learning", "the knowledge of current topics of interest in the field of educational technology/CALL", and

“the basic knowledge of computer/IT”; however, the participants pointed out that Iranian CALL researchers were competent in “language learning theories/methodologies”, and “pedagogical theories/principles”.

Table 7

CALL Researchers and Teacher Educators' Perceptions of CALL Researchers' Knowledge of Conducting CALL Research

Questionnaire Item	Participant	Mean	SD	t	Sig.
1. Knowledge of recent /major language learning software tools/applications	CALL Researcher	3.59	1.31	1.753	0.084
	Teacher Educator	2.71	0.75		
2. Knowledge of designing research on technology and language learning	CALL Researcher	3.35	1.33	0.694	0.489
	Teacher Educator	3	0.81		
3. Knowledge of current topics of interest in the field of educational technology/CALL	CALL Researcher	2.24	0.85	0.535	0.597
	Teacher Educator	2.57	0.53		
4. Basic knowledge of computer science/IT	CALL Researcher	3.84	1.46	0.738	0.462
	Teacher Educator	3.42	0.53		
5. Knowledge of language learning theories/methodologies	CALL Researcher	3.92	1.27	0.445	0.657
	Teacher Educator	4.14	0.69		
6. Knowledge of pedagogical theories/principles	CALL Researcher	3.64	1.13	0.435	0.665
	Teacher Educator	3.85	0.9		
7. Knowledge of the use of technology in educational contexts	CALL Researcher	4.48	1.02	2.705	0.008*
	Teacher Educator	3.42	0.53		

Likert scales: 1. Not competent at all; 2. Low level of competence; 3. Moderate level of competence; 4. Competent; 5. High level of competence, ($p \leq 0.05$)

6.7 Factors affecting CALL researchers' professional development in conducting CALL research

Table 8 reveals that apart from item 2 about which the participants showed a significant difference in perceptions, there was general agreement between the perceptions of the participants regarding the other items of the questionnaire based on the results of the independent samples t-test. The participants of both groups agreed that factors such as attending “international CALL conferences”, “research collaboration with other CALL researchers”, “reading articles from credible CALL journals”, “attending CALL workshops, attending computer/IT courses”, “attending workshops on research methodologies”, “reading CALL-related books”, and “joining international CALL communities” were important or very important for the researchers’ professional development in CALL research.

Table 8
CALL Researchers and Teacher Educators’ Perceptions of Factors Affecting CALL Researchers’ Professional Development in Conducting CALL Research

Questionnaire Item	Participant	Mean	SD	t	Sig.
1. Attending international CALL conferences	CALL Researcher	4	0.92	1.584	0.116
	Teacher Educator	4.57	0.53		
2. Attending national CALL conferences	CALL Researcher	3.01	1.32	2.219	0.028*
	Teacher Educator	4.14	0.69		
3. Research collaboration with other CALL researchers	CALL Researcher	4.47	0.86	1.003	0.318
	Teacher Educator	4.14	0.69		
4. Reading articles from credible CALL journals	CALL Researcher	4.06	1.01	0.938	0.350
	Teacher Educator	4.42	0.53		
5. Attending CALL workshops	CALL Researcher	3.97	0.91	0.895	0.372
	Teacher Educator	4.28	0.48		

Research on Computer ...

6. Attending computer/IT courses	CALL Researcher	3.92	1.04	0.170	0.865
	Teacher Educator	3.85	0.69		
7. Attending workshops on research methodologies	CALL Researcher	3.92	1.04	0.187	0.008*
	Teacher Educator	3.85	0.57		
8. Reading books related to CALL issues	CALL Researcher	4.17	1.06	0.086	0.932
	Teacher Educator	4.14	0.37		
9. Reading books related to research methodologies	CALL Researcher	4.14	1.14	0.323	0.748
	Teacher Educator	4	0		
10. Joining international CALL communities/groups (on the Internet or social network sites)	CALL Researcher	4.38	1.14	1.126	0.263
	Teacher Educator	4	0		

Likert scales: 1. Not important at all; 2. Slightly important; 3. Moderately important; 4. Important; 5. Very important, ($p \leq 0.05$)

6.8 Iranian CALL researchers' CALL research professional development status

As shown in Table 9, there were both significant differences and general agreement between the perceptions of the participants. Both the CALL researchers and teacher educators believed that Iranian CALL researchers *rarely* “attend international conferences”, “have research collaboration with other CALL researchers”, and “attend CALL workshops”. They also believed that Iranian CALL researchers occasionally “read research methodology books” and “join international CALL communities”.

Table 9

CALL Researchers and Teacher Educators' Perceptions of Iranian CALL Researchers' CALL Research Professional Development Status

Questionnaire Item	Participant	Mean	SD	t	Sig.
1. Attending international CALL conferences	CALL Researcher	1.52	0.99	1.005	0.317
	Teacher Educator	1.14	0.37		

2. Attending national CALL conferences	Educator	1.50	1.02	2.729	0.007*
	CALL Researcher	2.57	0.53		
3. Research collaboration with other CALL researchers	Teacher Educator	2.04	1.29	0.095	0.925
	CALL Researcher	2	0.57		
4. Reading articles from credible CALL journals	Teacher Educator	3	1.22	2.118	0.036*
	CALL Researcher	2	0.81		
5. Attending CALL workshops	Teacher Educator	2.04	1.14	1.529	0.129
	CALL Researcher	2.71	0.48		
6. Attending computer/IT courses	Teacher Educator	2.10	1.18	0.401	0.689
	CALL Researcher	2.28	0.75		
7. Attending workshops on research methodologies	Teacher Educator	1.77	1.20	2.353	0.020*
	CALL Researcher	2.85	0.37		
8. Reading books related to CALL issues	Teacher Educator	3.39	1.16	1.848	0.067
	CALL Researcher	2.57	0.53		
9. Reading books related to research methodologies	Teacher Educator	2.80	1.36	0.654	0.514
	CALL Researcher	3.14	0.37		
10. Joining international CALL communities/groups (on the Internet or social network sites)	Teacher Educator	3.35	1.37	0.677	0.500
	CALL Researcher	3	0.57		

Likert scales: 1. Never; 2. Rarely; 3. Occasionally/sometimes; 4. Usually; 5. Always, ($p \leq 0.05$)

7. Discussion and Conclusion

The analysis of the results of the questionnaire about the participants' attitudes towards conducting CALL research revealed that there was a general agreement between CALL researchers and teacher educators that conducting CALL research can be beneficial. They believed that conducting CALL research can improve the understanding of language teaching, propose new research topics and opportunities, lead to better professional development, facilitate interdisciplinary understanding and practice, and provide publication opportunities. There were both significant and insignificant differences between the attitudes of the two groups of participants. It can be argued that CALL research is a popular and favorable practice among Iranian CALL researchers and they are aware of the benefits and opportunities CALL research can provide to them. Taking this positive response into account, we can be optimistic that further CALL research will be conducted by Iranian CALL researchers. This positive attitude is promising since it can pave the way for a more technology-enhanced language teaching and learning practice in the EFL context of Iran. Educational planners, university instructors, and educational policymakers of higher education in Iran should pave the way for and facilitate the process of conducting CALL research by helping and funding students to focus their thesis projects and research papers on CALL and topics relevant to educational technology. The results are commensurate with the findings of previous studies which showed CALL researchers' interest in carrying out research on different CALL research topics (e.g., Golonka et al., 2014; Zhao, 2003).

Despite these positive perspectives and positions, undertaking CALL research in the context of Iran appears to be a challenging task. Challenges such as the lack of emphasis on CALL (research) in TEFL courses, the lack

of digital facilities to conduct CALL research, the lack of funding for CALL researchers, the unimportant nature of CALL research in Iran, the high costs attached to conducting CALL research, the lack of access to CALL software tools, and the lack of training on how to implement CALL research seemed to be serious and significant ones which require the attention of all stakeholders of higher education in Iran. There are some financial issues regarding implementing CALL research that can be accommodated by educational planners and policymakers of the Ministry of Science, Research, and Technology of Iran. There are some problems linked to the unavailability of facilities and software tools as well. One important condition for successful CALL research projects is to provide the infrastructures and pertinent hardware and software tools and applications. A repertoire of CALL software tools that cannot be accessed by individual researchers, but can be purchased/accessed by organizations and universities, can be provided by universities. Provided that all digital facilities and requirements are available, CALL researchers can choose more suitable and, at times, necessary topics in the realm of educational technology. The last issue is about training CALL researchers to focus their CALL research. This might imply that different competencies should be developed in M.A. and Ph.D. students and that their digital literacies and knowledge of research methodologies should be updated and fostered from time to time. The results indicated that all the contextual, methodological, and epistemological challenge types (Colpaert, 2013) exist in the CALL research context of Iran, while contextual challenges of CALL research appear to be more influential than the other challenges.

The next research question investigated research priorities in relation to CALL and language teaching. There was very little difference between the perceptions of the CALL researchers and teacher educators. The top priorities for both groups included research on CALL and teaching methodologies and

approaches, language learning skills and sub-skills, assessment and testing, curriculum development, learning theories, and adult EFL learning. As Beatty (2010) warns, CALL researchers often follow their research priorities without considering the importance of CALL research frameworks and agendas. Therefore, caution should be exercised about the research priorities pointed out by the Iranian CALL researchers and teacher educators. Furthermore, the research designs the participants preferred included cross-sectional studies, correlational studies, and experimental research. Interestingly, the teacher educators referred to the importance of ethnographic and naturalistic studies, longitudinal studies, and action research as well, while the CALL researchers did not have a consensus on the importance of these research designs. This is an important finding showing that the teacher educators might be more aware and cognizant of some necessary research designs, while the CALL researchers, who had less experience, were not aware of the benefits of these designs for CALL research. Overall, it can indicate the fact that Iranian CALL researchers might not be interested in all or some research designs since they do not have adequate knowledge about them or they find them difficult to implement in the context of Iran. This finding is in line with the findings of previous research, which indicated research design-based problems related to CALL research (Felix, 2005; Golonka et al., 2014).

Regarding the importance of the knowledge types required for conducting CALL research, the participants regarded the knowledge of major language learning software tools, the knowledge of research designing, the knowledge of topics in the field of educational technology, the basic knowledge of IT/computers, the knowledge of language teaching methodologies, the knowledge of pedagogical principles, and the knowledge of educational use of technology as important or very important ones for conducting CALL

research. With regard to CALL researchers' actual knowledge, the CALL researchers and teacher educators had a general agreement on the low to moderate competence of Iranian CALL researchers about recent/major language learning software tools, designing research on technology and language learning, current topics of interest in the field of educational technology/CALL, and basic knowledge of computer/IT; however, the participants pointed out that Iranian CALL researchers were competent in language learning theories/methodologies, and pedagogical theories/principles. This finding can be an effective and appropriate reference for CALL courses that are presented in TEFL programs in Iran. Teaching these knowledge types can be added to the curriculum/syllabus of TEFL at least for those who are interested in conducting CALL research. The finding can confirm the results of previous studies which indicated CALL research lack of rigor (Beatty, 2010; Hubbard, 2005; Liu et al., 2002). One reason for the lack of scientific rigor can be linked to CALL researchers' low levels of competence in identifying and using various research methodologies and approaches.

Even though both the CALL researchers and teacher educators pointed out the importance of taking some measures in order to facilitate CALL researchers' professional development in conducting CALL research, the CALL researchers did not take the relevant measures in order to develop their knowledge on conducting CALL research. The participants mentioned that attending international CALL conferences, research collaboration with other CALL researchers, reading articles from credible CALL journals, attending CALL workshops, attending computer/IT courses, attending workshops on research methodologies, reading CALL books, and joining international CALL communities were important or very important in their CALL research professional development, while both the CALL researchers and teacher

educators believed the CALL researchers rarely did such activities. This issue may be directly linked to CALL researchers' low motivation to improve their professional knowledge and expertise despite their positive attitudes toward CALL research. The problem can be solved by considering some awareness-raising measures on the importance of professional development in the field of CALL research. This awareness should be provided by university instructors and professors for young researchers who need a high level of motivation and knowledge in order to carry out quality CALL research.

8. Limitations and recommendations

The study can have direct messages and implications for educational directors, Ministry officials and policymakers. The first implication is that technology is used in educational contexts at a rapid speed and research on its parameters and effectiveness for the specific context of Iran is of utmost importance. CALL researchers cannot implement large-scale and national CALL research projects if those who are responsible do not pay adequate attention to CALL researchers' needs, expectations, and limitations. The other implication is for university instructors in that they can train young CALL researchers for the knowledge types and skills they require in order to be involved in high-quality and successful CALL research. Similar studies on the challenges of CALL research can be considered in other countries, especially those contexts which are constrained due to educational and pragmatic limitations. The results of such studies can inform both the practice and research of TEFL/CALL in terms of its effectiveness and dynamism.

Based on the findings of the study, some practical recommendations can also be made. CALL research is a dynamic enterprise for which both international and national aspects should be taken into account. CALL researchers in Iran and other countries should become aware of the challenges and opportunities which exist in their local context and strive to

socialize themselves into international CALL communities of practice. Being involved in international research projects and attending international conferences on CALL can be a proper opportunity for CALL researchers in order to develop their research identities and facilitate their professional development. Educational directors and policy-makers should invest in research on educational technology and pave the way for removing contextual and pragmatic constraints on CALL research. In order to conduct CALL research properly, it is paramount that issues such as infrastructural constraints, hardware, and software availability, and CALL researchers' research competence be considered and appropriate measures be taken in order to enhance the quality of CALL research. Teacher educators and teacher education programs should foster CALL researchers' competence in order to conduct CALL research. CALL research has specific parameters and complications which might be at times different from the ones related to EFL/educational research. Finally, it is important to identify teacher educators and CALL researchers' perceptual mismatches regarding CALL research and provide both groups with practical and context-specific solutions in order to resolve the challenges and problems of conducting CALL research in Iran and other countries.

The study was not without some limitations. The first limitation was that finding participants who were interested in CALL and who had published in CALL journals was not an easy undertaking and due to this limitation, a great number of participants were removed from participating in the study, thus it reduced the sample size of the study. The second limitation was the quantitative nature of the study. More qualitative and process-based studies on the same topic can be carried out in order to gain a more comprehensive and in-depth understanding of the challenges and opportunities of conducting CALL research. The other limitation was that the study relied on the

perceptions of the participants. While these perceptions can be valuable and credible, future research can be directed toward analyzing the actual situation and challenges of carrying out CALL research in the context of Iran. More importantly, the comments and perspectives of educational planners, policymakers, and Ministry directors could help enrich the study, but access to those individuals was not possible in spite of the fact that several attempts were made to include these individuals in the study.

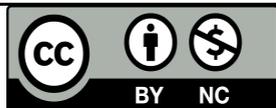
References

- Afzali, K., & Salehi, S. (2022). Collaborative Reflection Through Blogs: Discoursal Patterns and Iranian EFL Pre-service Teachers' Comments. *Teaching English Language, 16*(1), 141-166.
- Álvarez Valencia, J. A. (2016). Language views on social networking sites for language learning: The case of Busuu. *Computer Assisted Language Learning, 29*(5), 853-867.
- Beatty, K. (2010). *Teaching and researching computer-assisted language learning* (2nd ed.). Longman Pearson.
- Boers, F., Warren, P., Grimshaw, G., & Siyanova-Chanturia, A. (2017). On the benefits of multimodal annotations for vocabulary uptake from reading. *Computer Assisted Language Learning, 30*(7), 709-725.
- Chang, W. C., Liao, C. Y., & Chan, T. W. (2019). Improving children's textual cohesion and writing attitude in a game-based writing environment. *Computer Assisted Language Learning, 1-26*.
- Chen, L. (2012). The research on the effects of computer-assisted language learning on English teaching. *Paper presented at the 2nd International Conference on Consumer Electronics, Communications and Networks (CECNet) Yichang*.
- Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education (7th Ed.)*. Routledge.
- Colpaert, J. (2013). Peripatetic considerations on research challenges in CALL. *CALICO Journal, 30*, 272-279.
- Dashtestani, R. (2012). Barriers to the implementation of CALL in EFL courses: Iranian EFL teachers' attitudes and perspectives. *The JALT CALL Journal, 8*(2), 55-70.
- Dashtestani, R. (2019). Teaching EFL with interactive whiteboards: Do the benefits outweigh the drawbacks? *Language Horizons, 3*(1), 207-224.
- Dashtestani, R. (2016). Moving bravely towards mobile learning: Iranian students' use of mobile devices for learning English as a foreign language. *Computer Assisted Language Learning, 29*(4), 815-832.

- Dashtestani, R. (2014). An analysis of English for academic purposes students' use of Wikipedia as a resource for learning academic English. In J.-B. Son (Ed.), *Computer-assisted language learning: Learners, teachers and tools* (pp. 69-96). APACALL Book Series Volume 3. Newcastle upon Tyne, UK: Cambridge Scholars Publishing.
- Ebrahimzadeh, M., & Alavi, S. (2016). Motivating EFL students: E-learning enjoyment as a predictor of vocabulary learning through digital video games. *Cogent Education*, 3(1), 1255400.
- Felix, U. (2005). Analysing recent CALL effectiveness research – Toward a common agenda. *Computer Assisted Language Learning*, 18(1-2), 1-32.
- Garrett, N. (2009). Computer-assisted language learning trends and issues revisited: Integrating innovation. *The Modern Language Journal*, 93, 719-740.
- Golonka, E. M., Bowles, A. R., Frank, V. M., Richardson, D. L., & Freynik, S. (2014). Technologies for foreign language learning: a review of technology types and their effectiveness. *Computer Assisted Language Learning*, 27(1), 70-105.
- Hamidnia, M., Ketabi, S., & Amirian, Z. (2020). Feeding Written Corrective Feedback Forward: English Language Learners' Writing Improvement in a Portfolio-Keeping Atmosphere. *Teaching English Language*, 14(1), 31-70. doi: 10.22132/tel.2020.100594
- Hedayati, H. F., & Marandi, S. S. (2014). Iranian EFL teachers' perceptions of the difficulties of implementing CALL. *ReCALL*, 26(3), 298-314.
- Hsu, H. C. (2019). Wiki-mediated collaboration and its association with L2 writing development: an exploratory study. *Computer Assisted Language Learning*, 32(8), 945-967.
- Hubbard, P. (2005). A review of subject characteristics in CALL research. *Computer Assisted Language Learning*, 18(5), 351-368.
- Hwang, W. Y., Shih, T. K., Ma, Z. H., Shadiev, R., & Chen, S. Y. (2016). Evaluating listening and speaking skills in a mobile game-based learning environment with situational contexts. *Computer Assisted Language Learning*, 29(4), 639-657.
- Inceoglu, S., Chen, W. H., & Lim, H. (2023). Assessment of L2 intelligibility: Comparing L1 listeners and automatic speech recognition. *ReCALL*, 35(1), 89-104.
- Khadangi Barani, A., & Mousapour Negari, G. (2022). Fostering EFL Learners' Pragmatics Awareness, Incidental Pragmalinguistic Learning, and Speaking Ability Through Video-Based Pragmatic Tests. *Teaching English Language*, 17(1), 81-106. doi: 10.22132/tel.2022.163130
- Khodi, A., Khezerlou, H., & Sahraei, H. (2022). Dependability and utility of using e-portfolios in assessing EFL learners' speaking proficiency. *Computer Assisted Language Learning*, 1-23.

- Lee, S. M. (2022). Factors affecting incidental L2 vocabulary acquisition and retention in a game-enhanced learning environment. *ReCALL*, 1-16.
- Levy, M., & Stockwell, G. (2006). *CALL Dimensions: Options and Issues in Computer Assisted Language Learning*. Lawrence Erlbaum Associates.
- Levy, M., Hubbard, P., Stockwell, G., & Colpaert, J. (2015). Research challenges in CALL. *Computer Assisted Language Learning*, 28(1), 1-6. DOI: 10.1080/09588221.2014.987035
- Liu, M., Moore, Z., Graham, L., & Lee, S. (2002). A look at the research on computer-based technology use in second language learning: A review of the literature from 1990–2000. *Journal of Research on Technology in Education*, 34(3), 250-273.
- Ma'azi, H., & Janfeshan, K. (2018). The effect of Edmodo social learning network on Iranian EFL learners writing skill. *Cogent Education*, 5(1), 1536312.
- Mohsen, M. A. (2016). Effects of help options in a multimedia listening environment on L2 vocabulary acquisition. *Computer Assisted Language Learning*, 29(7), 1220-1237.
- Nami, F., & Marandi, S. S. (2014). Wikis as discussion forums: exploring students' contribution and their attention to form. *Computer Assisted Language Learning*, 27(6), 483-508.
- Pham, V. P. H., & Usaha, S. (2016). Blog-based peer response for L2 writing revision. *Computer Assisted Language Learning*, 29(4), 724-748.
- Pollard, A. (2006). Challenges facing educational research educational review guest lecture 2005. *Educational Review*, 58(3), 251-267.
- Rahimi, M., & Fathi, J. (2021). Exploring the impact of wiki-mediated collaborative writing on EFL students' writing performance, writing self-regulation, and writing self-efficacy: a mixed methods study. *Computer Assisted Language Learning*, 1-48.
- Stockwell, G. (Ed.). (2012). *Computer Assisted Language Learning: Diversity in Research & Practice*. Cambridge University Press.
- Sun, Z., Lin, C. H., You, J., Shen, H. J., Qi, S., & Luo, L. (2017). Improving the English-speaking skills of young learners through mobile social networking. *Computer Assisted Language Learning*, 30(3-4), 304-324.
- Sydorenko, T., Smits, T. F., Evanini, K., & Ramanarayanan, V. (2019). Simulated speaking environments for language learning: insights from three cases. *Computer Assisted Language Learning*, 32(1-2), 17-48.
- Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273-1296.
- Tsai, S. C. (2017). Effectiveness of ESL students' performance by computational assessment and role of reading strategies in courseware-implemented business translation tasks. *Computer Assisted Language Learning*, 30(6), 474-487.
- Wang, W., & Jiang, L. (2021). Writing on WeChat moments: impact on writing performance and learner autonomy. *Computer Assisted Language Learning*, 1-29.

- Wei, W., & Zheng, Y. (2017). An investigation of integrative and independent listening test tasks in a computerized academic English test. *Computer Assisted Language Learning*, 30(8), 864-883.
- Whyte, S., Schmid, E. C., van Hazebrouck Thompson, S., & Oberhofer, M. (2014). Open educational resources for CALL teacher education: the iTILT interactive whiteboard project. *Computer Assisted Language Learning*, 27(2), 122-148.
- Williamson, B., Potter, J., & Eynon, R. (2019). New research problems and agendas in learning, media and technology: The editors' wishlist. *Learning, Media and Technology*, 44(2), 87-91.
- Xu, Q., & Peng, H. (2017). Investigating mobile-assisted oral feedback in teaching Chinese as a second language. *Computer Assisted Language Learning*, 30(3-4), 173-182.
- Xu, Z., Banerjee, M., Ramirez, G., Zhu, G., & Wijekumar, K. (2019). The effectiveness of educational technology applications on adult English language learners' writing quality: A meta-analysis. *Computer Assisted Language Learning*, 32(1-2), 132-162.
- Yu, J., Zhou, X., Yang, X., & Hu, J. (2022). Mobile-assisted or paper-based? The influence of the reading medium on the reading comprehension of English as a foreign language. *Computer Assisted Language Learning*, 35(1-2), 217-245.
- Zhao, Y. (2003). Recent developments in technology and language learning: A literature review and meta-analysis. *CALICO*, 21(1), 7-27.



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