Designing an Integrated CALL Evaluation Tool via a Technology Acceptance Model (TAM) Approach to Teach EFL: The Case of Vadana

Bahman Gorgian [a, *], Farzaneh Mir [a], Batool Nasiri [a]

[a] *Abadan Branch, Islamic Azad University, Iran*

A B S T R A C T

The evaluation of in-service teacher educators ' feedback on using Computer-Assisted Language Learning (CALL) processes is important for providing educational policymakers with the strengths and weaknesses of the Vadana platform. It proposes an integrated CALL evaluation scale (ICES) eliciting the in-service teacher educators' literacy of using CALL in their classrooms. The researchers in the current study used an exploratory cross-sectional research design to analyze university teacher educators' perceptions of using CALL following the technology acceptance model (TAM). The participants were 230 university teacher educators who attended in-service courses during the 2023-4 academic year. A validated researcher-made questionnaire was used to design an evaluation tool including 15 factors of ICES. Data analysis revealed significant differences between male and female in-service teacher educators' perceptions regarding learning theories, designing e-materials/tasks, roles, and students' (Ss) feedback. Moreover, there was a significant difference between Ph.D. and MA teachers' attitudes toward teaching/learning theories, digital literacy, CALL approaches, e-materials/tasks, roles, individual differences (IDs), feedback, and evaluation of the CALL process. Regression analysis showed that gender and educational levels are strong predictors of determining the significant correlations between the factors of ICES. Implications of the study suggest ICES can be implemented to evaluate in-service teachers' CALL programs in English as a foreign language (EFL) contexts.

Keywords: academic context; CALL; evaluation; ICES; teacher educator

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* Corresponding author: Department of English Language & Teaching, Abadan Branch, Islamic Azad University, Abadan, Iran
Email address: bahman.gorgian@iau.ac.ir

Introduction

Technology affects education regarding the use of CALL which has provided English as foreign language (EFL) teacher educators with an interactive manner through using digital pedagogy since the 1950s (Tseng et al., 2019; Wang & Stockwell, 2023; Wong, 2016; Zhang, 2020). This can be boosted by the evaluation of teachers' feedback and attitudes on the feasibility and usability of technology in developing countries (Chen et al., 2023; Jenßen et al., 2021; Tseng & Yeh, 2019). Later, communicative CALL focused on the role of communicative aspects to pass the behaviorist approach regarding learning since it can be regarded as creative processes of discovery, expression, and development in digital interaction. In addition, the integrative CALL theories criticized the communicative ones since their focus was on the form and function of the language in teaching vocabulary, grammar, and reading comprehension in the late 1980s and 1990s (Li et al., 2017). Therefore, it deals with form and function of English language teaching in communicative, authentic, and task-based environments including podcasts, iPods, Web-based language learning (WBLL), Web. 2, virtual reality 3D (Lin et al., 2017; Yan et al., 2024), Modular Object-Oriented Dynamic Learning Environment (Moodle), Mobile–Assisted Language Learning (MALL), Massive Open Online Courses (MOOCs) (Fang et al., 2019), and social media (e.g., Instagram, Telegram, YouTube, WhatsApp, Twitter, etc.). According to Thomas and Reinders (2012), over the last twenty years, there has been a movement in changing CALL from the behavioral phase to the communicative phase and finally to an integrative phase.

On the other hand, the evaluation tool used in this study has covered 15 factors affecting in-service teacher educators ' perceptions of CALL efficacy (Martin et al., 2020). Following Hesse and Helm's (2024) ideas, these factors make an integrated CALL evaluation feedback that provides teacher educators with a dynamic scale to examine CALL status in EFL and English as a second language (ESL) academic settings. CALL evaluation feedback is needed to evaluate digital platforms and gather data on the efficacy of pedagogical programs. This evaluation may cover various factors including teacher educators ' knowledge of teaching theories, learning theories, learners' affective factors, students' individual differences (IDs), CALL approaches, digital literacy (i.e., hardware/software), digital resources, teachers/students' roles, materials/tasks, e-facilitates, university official supports, curriculum efficacy, students' needs analysis, students' feedback, and evaluation in academic contexts.

Statement of the Problem and Purpose

There are ample studies that examined the learners' attitudes toward the use of CALL in EFL/ESL contexts (e.g., Ellis et al., 2016; Huang et al., 2020; Li & Tsai, 2017; Moffitt et al., 2020; Pirasteh, 2014; Rahimi & Hosseini, 2010; Rodríguez-Ardura & Meseguer-Artola, 2016; Smit, 2024; Xie, 2013; Zhang, 2020). However, a few studies (e.g., Dashtestani, 2012; Author, 2017) worked on teacher educators' CALL evaluation feedback regarding the technology acceptance model (TAM) developed by Davis (1985). Other studies (Cheng, 2012; El-Masri & Tarhini, 2017; Teo, 2014; Teo et al., 2019; Zaini & Mazdayasna, 2014) examined teacher educators' beliefs about using technology for pedagogical purposes. But they have not evaluated in-service teacher educators ' opinions on an integrated scale for evaluating CALL programs like Vadana. The research problem focuses on the research gap in preparing a digital platform evaluation tool that is usable for assessing the adequacy of the EFL digital environment. EFL teachers' perceptions and feedback may be a great source to provide us with a pool of data that forms a workable scale of CALL platform evaluation (Sadeghi & Ashegh Navaie, 2021). Thus, the current study focuses on the male and female in-service teacher educators' perceptions of e-teaching technology acceptance regarding their teaching experiences (Sharifi et al., 2018).

The significance of the study is to design a research tool for evaluating digital platforms that are used in virtual learning processes. This can be done via a thorough review of recent studies and projects of CALL approaches to teaching EFL/ESL. There is a need to develop such an evaluative tool to gather information from recent studies on CALL and extract factors that are effective in the qualification of digital platforms, especially in the COVID-19 pandemic and post-COVID pandemic eras. A reliable and valid CALL efficacy evaluation may help policymakers to use much more effective platforms to positively affect teaching and learning processes.

Literature Review

In-service teachers in EFL classrooms could be the sources of feedback to gather information on the strengths and weaknesses of CALL programs. This makes the educational policymakers design an ICES as a scale for CALL assessment in pedagogical contexts (Author, 2017; Martin et al., 2020). Therefore, teachers may use CALL approaches to teach EFL and gather data on the efficacy of such methods. Other processes could be adapting, revising, or altering the CALL process tailored to the learners' needs. Teacher acceptance of technology refers to a theoretical model of the TAM that focuses on teachers' beliefs and ideas on the usability of CALL models facilitating English language teaching (Cuhadar, 2014; Nikou & Economides, 2019; Wong, 2016). Other variables affecting CALL evaluation are considered moderators like educational level and gender (Venkatesh et al., 2016).

The TAM developed by Davis (1985) has provided researchers with ample data on the users' intentions and beliefs of virtual learning environments as a theory of users' beliefs on the use of technology as a habit that triggers learning. The scale of CALL evaluation feedback focused on teacher educators ' knowledge of using CALL in their classrooms. The teacher educators ' ideas on the strengths and weaknesses of using CALL may be a neglected area of investigation in the EFL departments (Arteaga Sánchez & Duarte Hueros, 2010).

Table 1
Theoretical Background of Variables Including in ICES

Item	Category	Source	Definition	Example
1	Teaching theories (TT)	Tseng & Yeh (2019); Oz, Demirezen & Pourfeiz (2015); Pirasteh (2014); Mahdi (2013). Thomas & Reinders (2012)	Instructors need to gain knowledge of teaching theories.	behaviorists, cognitivists, mentalists, functionalists, etc.
2	Learning theories (LT)	Alhamami (2018); Ellis et al. (2016); Chen et al. (2023)	Instructors need to gain knowledge of learning theories, in- and out-of-school computer science (CS) learning opportunities	S-R psychology, cognitive-code learning, top-down, bottom-up, integrative model, etc. multinomial propensity score weighting analysis Software and hardware familiarity
3	Instructors' digital literacy (IDL)	Author (2017); Alibakhshi & Mohammadi (2016); Author et al. (2011); Li & Ni (2011), Hesse & Helm (2024), Saito et al. (2023)	Adequate knowledge of computer literacy, use of digital pedagogy, teacher education	deeper understanding of the initial conditions, and effective training courses of the teacher-students
4	CALL approaches (CA)	Zhang (2020); Tseng et al. (2019); Wong (2016); Woollard (2011)	Knowledge of CALL methods, theories and procedures	(A)synchronous, blended, virtual, etc.
5	Available digital resources & e-facilities (ADRE)	Li et al. (2017); Martin et al. (2020); Hesse & Helm (2024)	Familiarity with websites and pedagogical programs; Know how to prepare computer facilities and arrange places for computer labs and classes	MOOC, MOODLE, MALL, CMC, etc.; Internet infrastructures, fast internet, labs, PCs, etc.
6	University officials' support (UOS)	Harvey-Scholes (2018); Author (2008)	Examine the university officials' abilities and potentialities to support digital classes	University budgeting on providing the instructors with hardware and software materials
7	Curriculum efficacy (CE)	Yeh & Tseng (2020); Azizinezhad & Hashemi (2013); Zamani (2010); Smit et al. (2024)	Appropriate CALL curriculum focusing on digital instruction, teachers' awareness of CS and attitudes programs	Ability to adjust the available curriculum to the learners' needs, pedagogical content knowledge (PCK)
8	Designing e-materials & tasks (DET)	Pourhosein Gilakjani (2013); Pachler & Daly (2011)	Ability to design digital tasks and materials tailored to the Ss' proficiency level	Design tasks, homework, exercises, tests
9	Teacher educators (Instructors) roles (IR)	Pourhosein Gilakjani & Lai–Mei (2012); Bordbar (2010)	Familiar with the instructors & Ss' roles in running	Users, facilitators, coaches, communicators and collaborators.
10	Ss' roles (SR)	Aydin (2018); Pourhosein Gilakjani (2013); Riasati et al. (2012)	digital classes to meet the objectives	Users, experiencers, collaborators, and communicators
11	Ss' needs analysis (SNA)	Moffitt et al, (2020); Zhang (2020); Huang et al. (2020); Dashtestani (2012)	Determine the exact Ss' needs before, during and after class administration	Instrumental or integrative needs
12	Ss' IDs (SID)	Inan & Lowther (2010); Barber & Cooper (2012)	Ss' IDs may be various and affect their taste in attending digital classes	Age, gender, learning styles, learning strategies
13	Ss' affective factors (SAF)	Dörnyei (2019 a, b); Pourhosein Gilakjani & Sabouri (2014); Rahimi et al. (2011); Arteaga Sánchez & Duarte Hueros (2010)	Ss' internal and external motivations, attitudes, and anxiety	The Ss' preferences, worries, concerns, etc.
14	Ss' feedback (SF)	Nikou & Economides (2019); Venkatesh, Thong & Xu (2016); Rahimi & Yadollahi (2011); Cuhadar (2014)	Ss' perceptions and opinions on the efficacy of CALL approaches	Peer, pair, teacher, and student feedback could be positive, neutral or negative
15	Evaluation of CALL process (ECP)	Moffitt et al, (2020); Venkatesh et al. (2016); Davis (1985)	Dynamic evaluation of all the categories interrelated to examine CALL status in an academic setting	ICES as a scale of CALL evaluation; the effects of 14 categories on each other

Table 1 displays the extraction of 15 factors regarding their theoretical background. These factors are included in ICES as a research tool to evaluate teachers' feedback regarding digital platform of Vadana that has been used in Iran. This research tool may be useful to evaluate the efficacy of other digital platforms for teaching EFL/ESL. It also intended to compare these categories regarding two effective moderators of gender and educational level among the participants.

According to Gorjian et al. (2011), CALL is a very flexible approach to teaching EFL learners using blended, synchronous, or asynchronous modalities. Now, CALL has become a part of the pedagogical process affecting the development of language learning in both EFL/ESLcontexts. Teaching technology has opened new areas of CALL approaches to EFL teacher educators and it has changed all aspects of the educational, business, and economic sectors of our world (Harvey-Scholes, 2018). Nowadays, computers are more needed than before since without the use of data processing, systems cannot be run (Smit, 2024). According to Woollard (2011), English language teachers may find CALL as a tool for developing their language materials and new programs.

Azizinezhad and Hashemi (2013) examine digital tools for learning EFL that are increasingly developing in academic contexts including visualizers, internet, laptops, language simulator software, and weblogs. They note that in-service teacher educators need to know how to teach language skills using online/offline multimedia courses. Therefore, this aspect of digital engagement with screen imagery affects not only the teachers' class management but also those who are involved in pedagogical programming (Oz et al, 2015). Digital literacy can be seen as an immediate part of technology (Amhag et al., 2019; Author, 2008). Familiarity with the technology of using digital facilities and working with computers may help in-service teachers do new things; make their webpages, blogs, exercises, homepages, communicative applications, etc. (Barber & Cooper, 2012; Zamani, 2010).

The rationale for designing ICES is the need to evaluate digital platforms' efficacy following the theoretical background of the TAM. These 15 factors are selected based on the literature of the study that focuses on the importance of evaluation processes in any educational setting. The use of digital pedagogy in teaching and learning EFL/ESL context is popular. Thus, there is a need to evaluate the quality of such platforms and uncover their strengths and weaknesses. The research questions of the study are as follows:

RQ1. What are EFL in-service teacher educators' perceptions concerning ICES factors in academic contexts?

RQ2. To what extent do gender and educational level affect in-service teacher educators' beliefs toward the CALL evaluation scale?

Method

Design of the Study

The current study was conducted based on exploratory descriptive cross-sectional research in terms of a qualitative design. The objective of this research was threefold. First, it aimed to design a questionnaire on a 5-point Likert scale (Moffitt et al, 2020). Second, it was conducted to elicit the in-service teacher educators' perceptions of moderators of educational level and gender. Finally, participants' demographic information like age, gender, educational level, professional ranks, and years of experience were gathered to precisely design a validation scale of Vadana in Iranian contexts. The conceptual model of ICES is displayed in Figure 1.
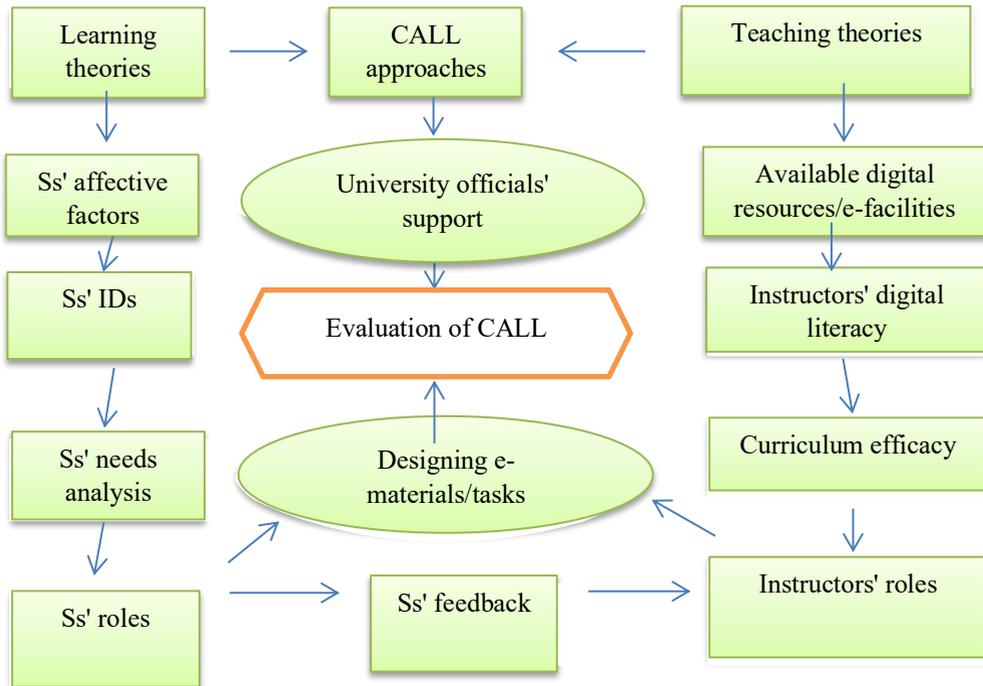
| Learning theories | → | CALL approaches | ← | Teaching theories |

Ss' affective factors

University officials' support

Available digital resources/e-facilities

Ss' IDs

Evaluation of CALL

Instructors' digital literacy

Ss' needs analysis

Designing e-materials/tasks

Curriculum efficacy

Ss' roles → Ss' feedback → Instructors' roles

Figure 1. Research Design of ICES for Validation of Vadana (i.e., digital) Platform

Figure 1 indicates a conceptual scale to assess the teacher educators' knowledge of technology in the actual use in the classroom. It evaluates learners' feedback and integrates it with their observations to assess Vadana's strengths and weaknesses. It covers all internal and external factors affecting both learners' and teachers' attitudes toward the use of Vadana in e-learning environments. Teacher educators' attitudes refer to design, models, resources, facilities, and pedagogical activities in virtual learning contexts (Saito et al, 2023).

Participants

Participants of the study were Ph.D. and MA English teacher educators who took part in the project after filling in the consent letters of participation. They were told that their privacy was observed and they were free if they needed to leave the project at any time. They were also ensured that they could access the results of the study when it was done. They were teaching EFL at Khuzestan University, Iran. They were selected through simple random sampling , a technique in which the total population is divided into subgroups that are homogeneous in educational level, age, or gender (Plonsky & Oswald, 2012). The participants were 132 female and 98 male English teacher educators aged 25 to 58 (M=31.70; SD=0.62). Their experience varied between 2 and 24 years (M=7.53; SD=0.49). Moreover, they were all Iranians and their first language was Persian. Characteristics of participants are displayed in Table 2.

Table 2
Characteristics of Participants

Variables	Profile	N	%
Professional rank	Professor	6	2.61
	Associate	14	6.09
	Assistant	38	16.52
	Lecturer	172	74.78
Educational level	PhD	99	43.04
	MA	131	56.96
Age	+40	35	15.22
	-40	195	84.78
Year of experience	+5	64	27.83
	-5	166	72.17
Gender	Female	132	57.40
	Male	98	42.60

Instrumentation

The evaluation tool (i.e., ICES) for assessing the Vadana platform was constructed based on the literature review (see Table 1). It includes two parts. The first part deals with the participants' demographics including professional rank, educational level, age and gender, teaching courses, name of the university, and college. Their names were not asked for their privacy. The main issues concerned with TAM included 15 factors with 75 items on a 5-point Likert scale questionnaire. Each category of ICES included five items. The choices ranged from 1=Strongly Disagree (SD) to 5=Strongly Agree (SA). Each choice was numbered to quantify the choices easily. Therefore, each item can be quantitatively scored from one to five points. The minimum score for each item was 75 and the maximum was 375. The mean of each item was determined as 2.5 (Author, 2017). Thus, the mean which is less than 2.5 in each item can be assumed as an unaccepted item while above this mean could be acceptable.

The validation tool followed Rodríguez-Ardura and Meseguer-Artola (2016). In a pre-test, 20 percent (N=46) of EFL teacher educators (females, N=15; males, N=8) other than the research sample of the study were selected based on a convenient sampling method. After filling in the consent letters, they participated in the study. Internal consistency of the questionnaire was calculated through Cronbach alpha and the reliability index was α=.825 as an acceptable value. It is regarded as the measurement of convergent validity (CV) that addresses the *degree to which a personality measure is correlated with measures, items or tasks that should tap the* same construct should be greater than 0.7 (Hair et al, 2017). The convergent validity of the ICES was met after minor modifications.

Table 3
Validation of ICES, Internal Reliability, Item-to-Total Correlation and Convergent Validity (CV)

Factors	Items	α	Item total correlation	CV	Factors	Items	α	Item total correlation	CV
Teaching theories (TT)		0.914		0.853	*Teacher educators' roles (TR)*		0.771		0.930
	TT1		0.769			IR1		0.744	
	TT2		0.644			IR2		0.705	
	TT3		0.789			IR3		0.799	
	TT4		0.758			IR4		0.846	
	TT5		0.821			IR5		0.766	
Learning theories (LT)		0.911		0.903	*Ss' roles (SR)*		0.894		0.868
	LT1		0.811			SR1		0.681	
	LT2		0.785			SR2		0.830	
	LT3		0.801			SR3		0.642	
	LT4		0.835			SR4		0.687	
	LT5		0.612			SR5		0.734	
Instructors' digital literacy (IDL)		0.935		0.878	*Ss' needs analysis (SNA)*		0.910		0.987
	IDL 1		0.699			SNA1		0.765	
	IDL 2		0.852			SNA2		0.810	
	IDL 3		0.836			SNA3		0.763	
	IDL 4		0.657			SNA4		0.642	
	IDL 5		0.746			SNA5		0.731	
CALL approaches (CA)		0.743		0.914	*Ss' IDs (SID)*		0.839		0.913
	CA1					SID1		0.711	
	CA2		0.811			SID2		0.736	
	CA3		0.789			SID3		0.829	
	CA4		0.836			SID4		0.813	
	CA5		0.661			SID5		0.764	
Available digital resources & e-facilities (ADRE)		0.831		0.988	*Ss' affective factors (SAF)*		0.946		0.829
	ADRE1		0.781			SAF1		0.719	
	ADRE2		0.809			SAF2		0.846	
	ADRE3		0.625			SAF3		0.891	
	ADRE4		0.703			SAF4		0.789	
	ADRE5		0.633			SAF5		0.867	
University officials' support (UOS)		0.881		0.958	*Ss' feedback (SF)*		0.794		0.948
	UOS1		0.825			SF1		0.867	
	UOS2		0.722			SF2		0.869	
	UOS3		0.677			SF3		0.866	
	UOS4		0.814			SF4		0.847	
	UOS5		0.837			SF5		0.864	
Curriculum efficacy (CE)		0.769		0.906	*Evaluation of CALL process (ECP)*		0.890		0.930
	CE1		0.846			ECP1		0.781	
	CE2		0.655			ECP2		0.861	
	CE3		0.740			ECP3		0.881	
	CE4		0.839			ECP4		0.694	
	CE5		0.719			ECP5		0.847	
Designing e-materials & tasks (DET)		0.903		0.894					
	DET1		0.751						
	DET2		0.699						
	DET3		0.744						
	DET4		0.843						
	DET5		0.709						

Procedure

A cross-sectional method was used for collecting data through a validation research tool following Myers et al (2010). The focus of the study was to examine ICES variables among EFL instructors at the universities who were involved in the Vadana platform. This platform was mostly used during the COVID-19 pandemic for teaching virtual courses. These days, it is used to teach EFL in pre-requisite and general English courses. The research tool included a researcher-made questionnaire that was designed based on several articles (see Table 1) which gave some hints to categorize all the important scholars' viewpoints concerned with CALL and digital pedagogy. Finally, 15 categories were determined and formed the ICES evaluation tool. After pre-testing ICES and examining the reliability and validity of the research tool, the researchers followed the ethical values of gathering data. Data collection was done anonymously. The consent letters were attached to the questionnaire. The participants filled in the demographics and selected the boxes in 5-point Likert scales ranging from SA (5) to SD (1). They did the task in the allotted time of 60 minutes. They completed the ICES in the spring semester of the academic year of 2023-2024. The collected copies were 250 but 20 copies were incomplete or inappropriate for data analysis.

The collected data of ICES were examined through inferential statistics of linear regression analysis and independent samples t-test. Linear regression analysis was used as predictive analysis to indicate the strength of variables (i.e., gender and educational level) in predicting the participants' mean scores relationships concerning ICES. This analysis followed three purposes to determine the strength of predictors, report an effect size of the variables, and trend forecasting. The variables of gender and educational level were moderator variables in the current research.

Results

Instructors' Perceptions of ICES

Data were analyzed in two stages. In the first one, the reliability and validity of the questionnaire were met to develop a valid scale to gather data from the instructors who teach EFL in 20 universities of Khuzestan province. The second phase dealt with the effect of two moderator variables of gender and educational level on instructors' beliefs about using CALL. The scores of the items were tested by the Kolmogorov-Smirnov (KS) test to estimate the normality of score distribution. When the normality of data was met, parametric statistics of linear regression and independent samples t-test were used to compare the participants' moderating variables by using SPSS, version 24. Hedges' g is used to calculate the effect size of male and female variables since the sample sizes are different in the number of participants. The effect size of the means examines whether the difference is effective. The effect size (Plonsky & Ozwald, 2012) was proposed for comparisons of the mean scores as small (G=.60), medium (G=1.00), and large (G=1.40). The effect sizes are reported in the results that are medium or large. According to Faul et al (2009), appropriate sample size calculation and power analysis have become major issues in research and analysis. Thus, the G*Power software supports sample size and power calculation for statistical methods like F, t, χ^2, z, and exact tests.

Table 4

Teacher Educators' Perceptions of Gender Role Influencing ICES Factors

Factors	Gender (Female, F; Male, M)	Mean	SD	S. E	*t*	*p*	*g*
TT	F	2.05	.69	.06	.86	.38	0.13
	M	1.97	.55	.05			
LT	F	2.21	.91	.07	3.51	.00	0.47
	M	1.79	.88	.08			
IDL	F	1.92	.99	.08	.88	.37	0.12
	M	1.80	1.01	.10			
CA	F	1.29	.45	.03	2.00	.04	0.12
	M	1.17	.45	.04			
ADRE	F	1.30	.48	.04	1.75	.08	0.24
	M	1.19	.39	.04			
UOS	F	1.17	.38	.03	.01	.98	0.03
	M	1.18	.42	.04			
CE	F	1.45	.62	.05	.32	.74	0.05
	M	1.42	.57	.05			
DET	F	2.34	1.36	.11	2.19	.02	0.30
	M	1.96	1.12	.11			
TR	F	2.18	1.26	.11	2.02	.04	0.27
	M	1.86	1.08	.10			
SR	F	1.30	1.29	.11	.81	.41	0.57
	M	2.96	1.03	.10			
SNA	F	2.65	1.22	.10	.58	.56	0.08
	M	2.56	1.07	.10			
SID	F	2.88	1.22	.10	1.47	.14	0.20
	M	3.12	1.17	.11			
SAF	F	2.62	.99	.08	.53	.59	0.08
	M	2.69	.80	.08			
SF	F	3.18	.99	.08	2.65	.00	0.36
	M	2.83	.94	.09			
ECP	F	3.19	1.13	.09	.21	.81	0.04
	M	3.15	.76	.07			

Table 4 shows significant differences between male and female teacher educators' perceptions of the factors of LT, DET, IR, and SF. The effect size of the comparisons is small since all the effect sizes are less than g=.60. In other words, males' and females' opinions are close to each other. Linear regression analysis is calculated to measure the predictive power of each variable (i.e., female vs. male) determining the strength of predictability.

Table 5
Simple Linear Regression of Gender

Gender (F vs. M)	df	Sum of Squares	Mean Square	R	R2	F	*P*
Regression	1	4.18	4.18	0.75	0.57	17.48	0.001
Residual	13	3.11	0.23				
Total	14	7.29	0.52				

Table 5 indicates that overall regression is F with df (1, 13) equals 17.84, p=0.001. Thus, there is a significant correlation between males' and females' perceptions regarding the importance of CALL in ICES. Correlation (R) equals 0.75 which means there is a strong direct relationship between males' and females' perceptions of the factors affecting ICES. Square correlation (R2) equals 0.57 which means 57 % of male teachers' variables can be explained by females' ones.

Table 6
Teacher Educators' Educational Level Affecting ICES (PhD, N=99 vs. MA, N=131)

Factors	Educational level	Mean	SD	S. E	*t*	*p*	*g*
TT	PhD	2.31	.54	.05	6.56	.00	0.87
	MA	1.80	.61	.05			
LT	PhD	2.45	.90	.09	6.40	.00	0.85
	MA	1.72	.81	.07			
IDL	PhD	2.07	.99	.09	2.62	.00	0.24
	MA	1.83	.98	.08			
CA	PhD	1.37	.48	.04	3.84	.00	0.52
	MA	1.14	.41	.03			
ADRE	PhD	1.31	.46	.04	1.85	.06	0.24
	MA	1.20	.46	.03			
UOS	PhD	1.21	.41	.04	1.32	.18	0.16
	MA	1.15	.35	.03			
CE	PhD	1.54	.65	.06	2.25	.02	0.31
	MA	1.36	.54	.04			
DET	PhD	2.62	1.44	.14	4.77	.00	0.64
	MA	1.84	1.02	.08			
TR	PhD	2.42	1.35	.13	4.23	.00	0.56
	MA	1.77	.98	.08			
SR	PhD	2.70	1.45	.14	2.10	.03	0.28
	MA	3.03	.92	.08			
SNA	PhD	2.66	1.37	.13	.60	.54	0.08
	MA	2.57	.97	.08			
SID	PhD	2.69	1.26	.12	3.23	.00	0.43
	MA	3.20	1.11	.09			
SAF	PhD	2.58	1.12	.11	1.01	.31	0.13
	MA	2.70	.72	.06			
SF	PhD	3.24	1.06	.10	2.81	.00	0.38
	MA	2.87	.89	.07			
ECP	PhD	3.23	1.23	.12	.835	.40	0.11
	MA	3.12	.75	.06			

Table 6 reveals significant differences between Ph.D. and MA participants' attitudes concerned with TT, LT, IDL, CA, DET, IR, SID, SF, and ECP. The effect size in all comparisons is small since they are less than g=.60 except for TT, LT, and DET since their effects are less than g=.1.00.

Table 7
Simple Linear Regression of Educational Level

Educational Level (PhD vs. MA)	df	Sum of Square	Mean Square	R	R2	F	P
Regression	1	6.06	6.06	0.87	0.76	41.91	0.001
Residual	13	1.88	0.14				
Total	14	7.95	0.56				

Table 7 shows F with df (1, 13) equals 41.91, p=0.001. Since the p-value is less than 0.05, there is a significant correlation between the Ph.D. and MA participants' means of factors determining ICES. Correlation (R) equals 0.87 which means there is a strong relationship between Ph.D. and MA perceptions of the factors influencing ICES. The square correlation (R2) is 0.76 which indicates that 76 % of factors among the Ph.D. variable can be explained by the MA variable. Figure 2 illustrates the moderate variables of gender and educational level.
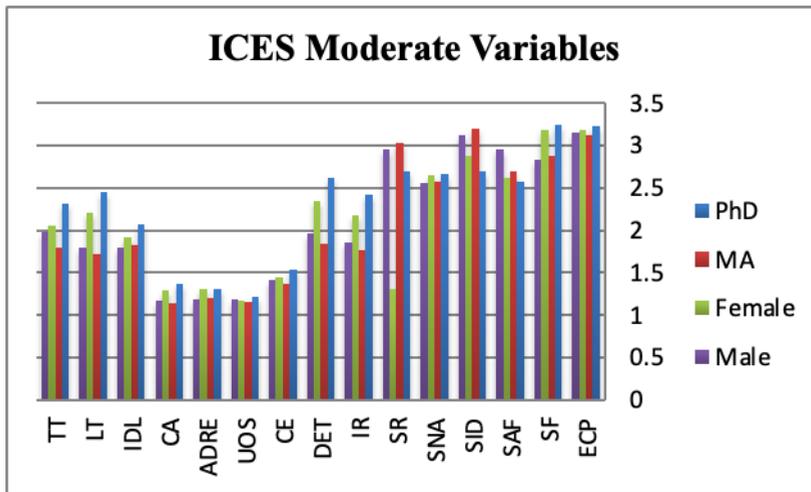
Figure 2. Moderate Variables of Gender and Educational Level in ICES

Discussion

The current study had two objectives including the validation of a research tool for assessing CALL implementation in academic contexts and the practical use of this tool (i.e., ICES) to measure the teacher educators' perceptions of the CALL status in their classes regarding two moderators of gender and educational levels.

The first research question refers to 15 factors affecting the efficacy of the Vadana platform. Females and males' ideas are significantly different in LT, CA, DET, IR, and SF. Ph.D. and MA teacher educators' opinions are significantly different regarding TT, LT, TDL, CA, CR, DET, IR, SR, SID, and SF. ADRE, UOS, SNA, SAF, and ECP are not significantly different regarding both gender and educational level. Therefore, we may discuss this result in terms of three stages.

Firstly, female and male teacher educators' perceptions are different in five factors (i.e., LT, CA, DET, IR, and SF) which means they need to be exposed to pre- or in-service courses. This is in line with other scholars (e.g., Cuhadar, 2014; Author, 2017). Accordingly, their studies reveal that teachers need to gain adequate knowledge of learning theories (LT) related to CALL approaches (CA) and theoretical assumptions of Ss' learning styles. This is consistent with several researchers (e.g., Amirah Sarudin et al, 2019; Boardman, 2019; Jasmine & Connolly, 2015) who emphasize learners' multisensory abilities in learning. They note that those teachers also need to design e-materials and tasks (DET). This ability makes the teachers competent in using authentic materials to tailor effective tasks for pedagogical purposes. This is matched with Li and Ni's (2011) findings that English language teachers should be familiar with CALL or digital platforms. Furthermore, these teachers can play the roles of facilitators, coaches, leaders, and even software programmers.

Secondly, English language teachers should know how to operate computer devices and have adequate familiarity with available resources that are useful for teaching language skills. Furthermore, they should recognize their Ss' feedback (SF) which helps them to be sensitive to learners' motivation, attitudes, anxiety, and feelings. This finding agrees with Ho and Kuo (2010) who state this sensitivity can affect the learners' intrinsic and extrinsic motives toward using digital learning.

Thirdly, the lack of significant differences in factors of TT, IDL, ADRE, UOS, CE, SR, SNA, SID, SAF, and ECP reveals that both female and male teacher educators have shared background knowledge of the above factors. They believe that teachers should know teaching theories regarding digital pedagogy and related resources. The university officials should provide teachers with adequate CALL support based on the recent curriculum. Moreover, they should be familiar with learners' affective factors (e.g., anxiety, attitude, motivation, etc.) to work in digital platforms. The main concern is to know how to evaluate the digital programs, apps, and platforms and use the appropriate ones in their blended or virtual classes. However, Ph.D. teachers showed a deeper knowledge of these issues compared with MA holders. In sum, all these shared concerns may be gained through training to put the theories of CALL into practice (Saito et al, 2023).

Findings refer to the teacher educators' educational level (i.e., Ph.D. vs. MA) related to their opinions that are significantly different regarding TT, LT, TDL, CA, CR, DET, IR, SR, SID, and SF. The results indicate that the educational level is an important factor in using CALL. The Ph.D. teacher educators' average mean scores of the above factors are greater than the MA teacher educators' average mean scores at a significant level. In other words, PhD professors can access computer facilities more than MA teacher educators. The accessibility of digital facilities can help Ph.D. teachers perform better than MA teacher educators who use digital pedagogy. All these differences may make these two groups differ in 10 factors of the ICES. In sum, the educational level is a more important moderator than gender since the significant differences are deeper in the educational level with 10 factors that are significantly different. Educational policymakers may think of bridging this gap by focusing on MA teachers more than their Ph.D. counterparts. This can be done through pre-and in-service digital workshops, compensatory courses, etc.

Phase three addresses the shared factors that are not significantly different among all the participants regardless of gender and educational position. These factors include ADRE, UOS, SNA, SAF, and ECP. In other words, the participants agree on the lack of these factors in their universities. They refer to these challenges such as unavailable digital resources which are in line with Li and Cummins (2019) who have noted that the lack of university officials supporting CALL expenditures can hinder CALL processes. In addition, there is a need to focus on learners' needs analysis following Azizinezhad and Hashemi (2013), Yeh and Tseng (2020), and Zamani (2010). Findings show that these three stages should be taken into account for any evaluation of

CALL processes regarding the teachers' feedback on using CALL as an effective approach to teaching EFL.

The second research question asks how CALL assessment feedback factors are different from teacher educators' perspectives. Results showed that using technology and recent techniques might enhance desirable language learning. Responses to the questionnaire indicate that teacher educators are interested in technology especially, familiarity with CALL approaches. Regarding the progress of developing countries (i.e., including Iran) in using technology and digital learning and teaching, teachers should start to adopt these new instructional tasks to motivate their learners for better learning. The responses to the first part of the questionnaire showed that male teachers are more familiar with CALL and digital learning than their female counterparts are. However, both groups believe that digital teaching and learning enhance EFL. Moreover, both groups showed a positive attitude toward using CALL for language teaching. The male teachers' digital literacy may be based on their cultural background in the Iranian context. This means that males have a chance to be in computer clubs more than their female peers do since cultural values in Iran do not allow girls to go to internet cafes and clubs exposed to computer games and chat rooms. Cultural and religious limitations may cause a barrier for the girls to gain less computer literacy and this can affect their computer competency in the future. Thus, when they become school or university teachers, they lack knowledge of computer use and inevitably become poor computer users. This finding is in line with several scholars (e.g., Dashtestani, 2012; Yan et al., 2024) who stated that EFL teachers' computer literacy affects the use of digital platforms in teaching EFL/ESL in a pedagogical context. While they proposed different ideas on the male and female learners' motivation for using CALL in the classrooms, they generally believe that the role of digital platforms in facilitating language learning processes cannot be ignored.

Findings explore the effectiveness of teachers' educational levels influencing university and their expertise in using Vadana. This agrees with Zadney et al (2020) who show that educational level is a determining factor among CALL users. Ph.D. teachers are more familiar with CALL facilities and resources than their MA counterparts are. This is also consistent to Smit's (2024) findings that CS and familiarity with CALL may be the result of their educational background. The majority of the participants hold an MA (N=131) and this confirms that their digital literacy is poor comparing the Ph.D. instructors. Therefore, the significant difference between Ph.D. and MA teacher educators' perceptions can be seen in 10 factors out of 15. The Ph.D. teacher educators' responses show that their digital competency is better than MA participants. Ph.D. teacher educators addressed the main challenges concerned with the lack of digital facilities due to university official support causing shortages of CALL equipment and educational hardware and software.

The lack of correlation between the EFL curriculum and teaching courses affects teacher educators' use of CALL approaches. The compensation for the lack of these facilities may be the use of workshops, training courses, and CALL programs that end in academic certificates for both female and male teacher educators. Moreover, the teachers should be trained on using available facilities like MALL, social media, and computer mediated communication (CMC) which are useful and available to compensate for these shortcomings. CALL modalities like blended and asynchronous teaching activities are also helpful in environments in which the internet is very slow. In sum, we may propose three CALL environments following the ICES factors proposed by Ph.D. participants: (1) poor CALL environments in which the total means of these 15 factors are less than 2.5 in each factor, (2) moderate CALL environments with the average of from 2.5 to 3.5, and (3) the strong CALL environments between 3.5 and 5.

Findings indicate a correlation between male and female teacher educators' perceptions of using the Vadana platform in academic contexts. This positive correlation is seen when participants agree with each other on the effectiveness of 10 factors including TT, IDL, ADRE, UOS, CE,

SR, SNA, SID, SAF, and ECP. The square correlation (R2) shows that 57 % of male teachers' variables can be predicted by female ones. It means the strength of predictability power can be seen in these two variables. It shows a strong correlation since it is greater than .70 on the one hand and it shows that one variable predicts the agreement of both females and males on the shared factors.

The strong correlation between female and male teacher educators can be seen in the factors that address the lack of CALL programs in the educational curriculum which is caused by a lack of financial resources. This agrees with Yan et al (2024) who emphasize digital pedagogy faces several problems that educational policymakers should take into account. The major problem is concerned with the lack of digital teaching training to use computers for language teaching and learning purposes. Results also indicate several factors prevent teachers from using technology in the classrooms. These factors include inadequate experience in using digital tools, lack of training programs in computer pedagogical facilities, and ineffective curricula addressing the use of computers in teaching courses. Moreover, financial problems could be one of the major problems that hinder digital pedagogy progress.

Ph.D. and MA teacher educators' perceptions are matched on the use of Vadana in academic contexts. In other words, the predictability power of one variable can be predicted by another variable since there is a close relationship between both groups' perceptions. Although there are significant differences between Ph.D. and MA teacher educators on several factors, they agree on the factors like ADRE, UOS, SNA, SAF, and ECP since the total correlation is greater than .70. Findings of the current research indicate that both groups focus on the major problem that refers to the lack of digital resources and university official supports. Students' needs analysis and their affective factors could be the other concerns of the teacher educators. This is matched with Arteaga Sánchez and Duarte Hueros (2010) who address the digital environment of internal and external factors. Findings show that both groups address the external factors prohibiting CALL utilities more than internal factors. While the former refers to teachers' CALL competency, the latter deals with computer facilities and logistics that are out of the hands of teachers practicing CALL in their classrooms. These concerns are mentioned in the previous studies as the barriers to the implementation of CALL in the Iranian context (e.g., Alibakhshi & Mohammadi, 2016). Hesse, and Helm's (2024) findings are in line with the results of the current research that there is a great demand to train teachers in the use of digital pedagogy. To design deeper understanding of the initial conditions, and effective training courses, computer literacy needs of the teacher-students are required. These needs may extend to subjective needs that are related to students and teachers' personal characteristics, including age, semester attended, gender, self-concept and, most importantly, digital subjects and material literacy. Moreover, external factors such as the insufficient budget for purchasing computer facilities and lack of administrative support are common problems in most contexts like the setting of Iran. However, it is necessary to use CALL in higher educational settings for teaching the English language. As a result, university language labs need to be equipped with these facilities for teaching languages.

Conclusion

The participants of this study agreed that CALL facilities at their university are poor and they do not access new technology in the classroom. Therefore, the majority of teachers confirmed that these facilities are not used in their classrooms and they have to run classes in traditional methods such as F2F mode using blackboards and pen and paper methods due to the lack of CALL support. They also believed that university officials did not support digital pedagogy. Thus, there is a need for professional training in digitalization for teacher educators to provide them with the knowledge of using digital tools primarily for the course objectives. They believed teachers need

extensive pedagogical support in designing digital teaching materials. Moreover, they stated that teacher educators should identify their pedagogical context aligned with available digital tools to increase teaching efficacy (Jenßen et al, 2021). These shortcomings may affect university teachers' incentives to use CALL facilities. Having adequate technical support, teachers can use CALL at different academic schools (Martin et al, 2020). Thus, there is a need for enough CALL facilities. It seems that these facilities at universities are not adequate and less extensive than those at the same places abroad in the Iranian context. Thus, computer technology is rarely used in these learning centers. This result is matched with the Author (2008) who states that these barriers make some Iranian teachers believe F2F interaction is more effective than CALL approaches to teaching EFL.

Theoretical implications

There are several studies that address teachers' theoretical issues concerning the CALL approach to teaching the English language (e.g., Aydın, 2018; Azizinezhad & Hashemi, 2013; Bordbar, 2010; Moffitt et al, 2020; Ozturk, 2013; Pourhosein Gilakjani, 2013; Pourhosein Gilakjani & Lai–Mei, 2012; Pourhosein Gilakjani & Sabouri, 2014; Venkatesh et al, 2016). The current study may provide the readers with a comprehensive theoretical scale that has not appeared in the related CALL research, especially in EFL contexts. The central part of this scale is teacher educators' evaluation feedback through which the whole CALL process can be evaluated, revised, and tailored to the needs and wants of the policymakers who are responsible for running digital pedagogy for higher education. Several factors are gathered from the pool of data coming from the participants of the study. Gender and educational levels are the variables that confirm that there is a need for pedagogical investment in digital literacy among MA teacher educators and lecturers. They need to be trained and acquire theoretical assumptions of CALL approaches before practicing EFL teaching. They also need to arrive at equity in training which means arriving at the Ph.D. teachers' knowledge of CALL.

The theoretical assumptions considered in designing the ICES scale can be integrated since it deals with theoretical issues such as the theories of teaching and learning EFL/ESL languages, learning styles, affective factors need analysis, etc. This scale can be used to evaluate the whole CALL process and depicts the strengths and weaknesses of CALL implementations in any academic context.

Practical implications

The implications of the present study suggest that teachers' feedback on the use of CALL is the first concern. Teachers are in charge of managing CALL procedures in the classrooms. This is the responsibility of educational policymakers to provide English language teachers with computer knowledge after receiving their ideas on the strengths and weaknesses of external and internal factors. All these factors are involved in the designing of the ICES scale. This scale could be practical since it passed the validation processes and was practically assessed among teacher educators in several academic contexts. The other practical aspect of this study is to elicit the teacher educators' knowledge in female/male and Ph.D./MA groups with a strong correlation index. This shows that the items can gather reliable data to evaluate CALL approaches with high accuracy.

Practical implications of the study address the CALL practitioners including both teacher educators and educational policymakers and provide them with appropriate information. This is consistent with Wang and Stockwell (2023) who emphasize the role of teaching methods and policies that should be aligned with modern technology in the world. About this, there is a need to follow several steps to boost digital pedagogy concerned with the current study. Firstly, there is

a need for cooperating among teacher educators, educational policymakers, curriculum developers to examine data gathered by the ICES scale and remove the barriers reported by teachers, and maintain the strengths of CALL approaches (Hu et al, 2003). Secondly, internet facilities and websites should be used for synchronous classes. Thirdly, digital facilities should be available at the universities. Fourthly, teacher-training courses should be designed for new teachers to learn adequate computer literacy and digital teaching. They also need to learn how to use effective websites in searching, designing, and preparing English materials. Finally, English language teachers should be competent enough to run virtual and collaborative teaching courses.

There are several limitations in the current study such as the small size of the sample. If there are larger samples than this, future researchers may arrive at much more reliable results that could be generalizable to other ESL/EFL contexts. This study has examined two moderators to test the applicability of the ICES scale. More moderator variables such as teacher educators IDs (Martin et al., 2020), age, attitudes, motivation, personality, teaching styles, and level of anxiety could be assessed through ICES. The setting of the study was academic and the universities of one province in Iran were included in this research. Other educational institutes, high school, and primary school teachers could participate in similar investigations.

In sum, ICES, following TAM (El-Masri & Tarhini, 2017), has examined the movement toward the use of CALL in Iran. Results of ICES show that internal factors (i.e., teachers' appreciation of CALL, gaining digital literacy, following digital technology) are in progress. The main challenge goes with external factors (i.e., changing the educational policymakers' minds, appropriate budget, CALL programs, and efficient curriculum). Moving toward the use of CALL platforms like Vadana is slow in Iran but steady since teachers' incentives are at hand but the availability of external factors is in progress.

Acknowledgments

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Bahman Gorjian is an Associate Professor of Applied Linguistics and he is currently teaching English language learning theories, research methodology in TEFL, and language skills. He has published several articles and books concerned with EFL/ESL. His academic affiliation is: Department of English Language Teaching, Abadan Branch, Islamic Azad University, Abadan, Iran.

Farzaneh Mir is an Assistant Professor of TEFL and she is teaching English language learning courses, testing, and language skills. Her academic affiliation is: the Department of English Language Teaching, Abadan Branch, Islamic Azad University, Abadan, Iran

Batool Nasiri is a Ph.D student and an instructor of Linguistics and she is teaching linguistics, general, and pre-requisite courses. Her academic affiliation is: the Department of English Language Teaching, Abadan Branch, Islamic Azad University, Abadan, Iran.