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Teachers' Perspectives and Attitudes towards Computer-Assisted Language Learning (CALL)

Burhan OZFIDAN[1], Lynn BURLBAW[2]

Abstract

Using technology in language learning can develop practices for students through experiential learning, enhance student achievement, motivate students to learn more, encourage greater interaction between teachers and students and students and peers, increase authentic materials for study, escape from a single source of information, enlarge global understanding, and emphasize individual needs. The purpose of the study was to measure the perspectives of teachers regarding computer-assisted language learning (CALL) and create a better understanding of CALL. The study had 186 participants (114 female and 72 male), all of whom were K-12 teachers in the United States. The first phase of the study used exploratory factor analysis to reveal the underlying structure of a relatively large set of variables. The second phase of the study used descriptive analysis to measure perspectives and attitudes towards CALL. The results of the study highlighted that teachers have affirmative perspectives and attitudes for using technology in their classrooms. Teachers considered computer technology as a useful teaching tool that can improve ways of teaching by expanding the learning experiences of students in real and authentic contexts and offering them a variety of language inputs.

Keywords: CALL, technology-integrated learning, teachers' perspectives and attitudes, social interactions, experiential learning.

Introduction

Technology has terrifically impacted not only the way people live but also the way people do their jobs. It was very difficult to predict that availability of technology would be so widespread a few decades ago. Today, almost every aspect of our lives involves the use of computers. It was inevitable that technological

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tools would attract teachers' attentions as they have been an integral part of our lives. Integration technology in language learning is called Computer-Assisted Language Learning (CALL). CALL has gradually become a critical part of the language-learning process over the past decade. CALL, in broad terms, is defined as "the search for and study of applications on the computer in language teaching and learning" (Levy, 1997: 1). CALL is usually regarded as the use of computers as a help to present the language material. Schofield (1995) defined "CALL as any kind of language learning or teaching activity done by using computers" (p.165) Another definition of CALL that accommodates its changing nature is "any process in which a learner uses a computer and, as a result, improves his or her language" (Beatty, 2003, p.7). The term is generally used to refer to "the area of technology and second language teaching and learning" (Chapelle, 2001: 3). CALL, according to Beatty (2003), includes language learning and teaching materials, technologies, pedagogical modes and theories of instruction. Currently, CALL is used regularly in a variety of instructional situations.

Much research has emphasized that using technology in the classroom increases student learning language. Levy (1997) noted that using technology in the classroom helps students to learn language in three ways: a "computer as tutor (offers tutoring to students), computer as stimulus (improves synthetic and analytic thinking of students), and computer as tool (e.g., grammar checking, word processing, collaborative writing, and Internet)" (p. 154). Therefore, technology should be integrated into the teaching and learning process. Thus, using technology in the classroom enhance not only instructional effectiveness and efficiency but also promote constructive social interactions and increase students' motivation for learning (Beatty, 2013).

Research highlights that teachers should integrate information and communication technology in their classrooms to support their constructive thinking and engage in cognitive operations (Stockwell, 2012; Teo, 2006). Computers in teaching modern foreign languages have been recognized as a valuable teaching instrument. Using technology in language learning, according to Zou, Yan, and Li (2020), can "develop practices for students through experiential learning, enhance student achievement, motivate students to learn more, encourage greater interaction between teachers and students and students and peers, increase authentic materials for study, escape from a single source of information, enlarge global understanding, and emphasize individual needs" (p. 520).

In this process, computer-assisted language learning has become an essential element. Computer-assisted language learning or CALL is "any process in which a learner uses a computer and, as a result, improves his or her language" (Beatty, 2013: 8). CALL can provide opportunities for cooperative learning and can improve communication and interpersonal abilities. Teo (2006) highlighted that the perspectives and attitudes of teachers towards computer-assisted language learning (CALL) play an essential role in the academic accomplishment of students. Likewise, Zou and Thomas (2019) affirmed that the perspectives and

attitudes of teachers towards CALL should be considered a key predictor in terms of student success in learning a language. The purpose of the study is to measure the perspectives of teachers regarding CALL and gain a better understanding of CALL.

Literature Review

Current advances in computer-based learning have changed the roles of language learners and teachers. Because learners control their own learning in a technology-enhanced learning environment, they are expected to be active participants in the learning process rather than passive recipients (Brown, 1991). Those learners are new demands that teachers face to integrate new technologies into the second/ foreign language classroom. In order to provide students with linguistic skills, meaningful communication and culture, teachers also look for better ways. Lam and Lawrence (2002) highlighted that "using computers in a communicative classroom brings about the shift of traditional teacher-student roles" (p.54). Learners by gathering information and negotiating meaning themselves could manage their own learning process in the technology-enhanced environment. The classroom became more learner-centered, that is, learners were able to make their decisions and became responsible for their work more independently. On the other hand, the teachers became a "facilitator, a resource person and a counselor rather than the only authority and decision-maker" (p. 305). Bancheri (2006) also asserted that the role of teachers is not only to transmit new knowledge in the new era of technology, but to give students tools to develop knowledge and recognize the value of what they see in books and software as well as on the Internet. In addition, Jeong (2006) emphasized that "the role of teachers in EFL settings is more crucial than ever before because teachers are able to motivate students and try to create language learning environments which are non-threatening, meaningful and affectively supportive" by using technology (p.49).

Currently, the most widely accepted method for language learning is the communicative approach. This approach emphasizes the need for interpersonal communication and focuses on opportunities to interpret, express, and negotiate meaning in real-life situations (Wang, Lin, Hwang, & Liu, 2019). In addition to the fact that this methodology is the most widely accepted in the language learning community, it also aligns with the National Standards for Education and provides students with the best opportunity to learn (Chun, Kern, & Smith, 2016; Ozfidan, & Mitchell, 2020). All teachers should strive to provide their students with all the tools they need to succeed in the classroom and beyond. In this context, technology can encourage new ways that students can communicate with one another (Chun *et al*., 2016).

According to Stockwell (2012), with current advances in technology, interest in obtaining reading materials for computer-assisted language learning (CALL) is

growing, which is any process for which a learner uses a computer and improves his/her language learning as a result. Many second language learners are naturally drawn to learning that is mobile and interactive; CALL provides students with just that while also aligning with strategic educational goals related to technology (Tafazoli, María, & Abril, 2019; Kocabas, Ozfidan, & Burlbaw, 2018). CALL has also been shown to aid in improving student retention of concepts and overall achievement levels as well as allowing for the differentiation of learning, all of which teachers should encourage while seeking materials for their students (Tafazoli *et al*., 2019, p. 157). Resources created for CALL typically include or websites on the Internet. Software for CALL has progressed over the years from simple tasks that require learners to fill in the blanks to full-blown multimedia presentations equipped with sound, animation, and interactive assignments. Websites, especially those that can be used for little to no cost, are of great value to beginner-level students who are balancing their language learning class(es) with work and family responsibilities because they can be accessed from home on computers or the go on smart devices (Zimmerman & McMeekin, 2019). Specific to reading resources, computer-based learning materials have been shown to provide resources (e.g., supplementary activities, dictionaries, video links, diagrams, etc.) to assist in closing learning gaps (Adedokun & Zulu, 2019; Altuna *et al*., 2013). Additionally, Adedokun and Zulu (2019) said that using CALL resources allows students to review and practice with materials on their own, leading to increased learner autonomy because the students can interact with the materials outside the confines of the classroom. Computer-assisted language learning (CALL) can cater to multimodal learning, for instance, adding auditory components to the reading texts (Wu & Marek, 2020).

While the research around this question is primarily limited to studies in which L1 students are the subjects, research has shown that functionalities like listening while reading and speaking does indeed support language learning development (Hubbard, & Levy, 2016). Rasinski (1990) found that listening while reading improved the overall reading fluency of students, and the effects could be compared to repeated readings of the same text. Another study supports Rasinski's (1990) claim about reading fluency, pointing out that teachers reading aloud early on in a program leads to higher student retention of larger semantic units (Brown, Waring, & Donkaewbua, 2008). In a study of university ESL students reading *Charlotte's Web* by White (1952), Woodall (2010) found that students who listened while reading outscored their reading-only counterparts on all eight comprehension quizzes. Some other benefits of listening while reading, according to Brown, Waring, and Donkaewbua (2008), include "increases in overall language proficiency. . . [and] the ability to acquire a greater sense of the rhythm of the language" (p. 138). Brown *et al*. (2008) study also shows that students are more likely to incidentally acquire new vocabulary during listening-while-reading mode(s) than when silently reading. To summarize, reading materials that are

accompanied by enhanced listening components that are present in CALL lead to increased levels of fluency, comprehension, and vocabulary acquisition than materials absent of such enhancements.

Language acquisition theories, like Output Hypothesis (Swain, 2005), Input Hypothesis (Krashen, 1992), and Interactional Hypothesis (Long, 1981), can be utilized in studying technology media to supplement the school world language learning experience in new ways (Chiu, 2018; Kessler, 2018; Zhou & Wei, 2018). These proved theories serve as the foundation for both world language studies in the United States and TESOL programs around the world. While there are different philosophies among educators, working knowledge and working application of these language acquisition theories must be present in some form in the world language classroom. As technology continues to become an ever-present resource in an increasingly global and digital society, teachers must give the generations of tomorrow the tools that they need to function successfully in the world that waits for them (Chiu, 2018; Kessler, 2018; Zhou & Wei, 2018). By incorporating more technology into the world language classroom, teachers are preparing students for long-term success in a digital age while simultaneously enhancing the language learning experience.

Language learners should be able to use the materials on their own outside the classroom; this means classroom materials should extend from the classroom and/or tutoring session to a student's home (Ozfidan, 2017; Ozfidan & Burlbaw, 2019). Students with personal electronic devices and those with access to public libraries can continue their education beyond the walls of the school (Kukulska-Hulme & Viberg, 2018). Materials containing pictorial and auditory support provide scaffolding for students when they are reading outside the classroom. Materials that are accessible to learners are more likely to positively impact the other principles than those that are inaccessible (Chiu, 2018).

Having a principled approach to selecting and developing reading materials helps guide reading teachers and tutors. Beyond following these principles, teachers and tutors should encourage students to read at home for the pleasure given that research has shown such practice greatly contributes to reading abilities (Lai, Shum, & Tian, 2016). Additionally, assisting learners with simple, age-appropriate graded readers that they can use at home helps foster autonomy, which has also been tied to effective language learning (Ugurlu, & Ozfidan, 2015).

Overall, teachers and tutors no doubt understand the importance of using relevant, high-interest materials for their beginner readers. However, many fail to incorporate technology to help them reach these goals. This is truly a lost opportunity because of high-quality, online-based resources for adult English learners accessible to adult English learners.

Methodology

The study data measured EFL teachers' perspectives and attitudes towards computer-assisted language learning (CALL). The first phase of the study used exploratory factor analysis to reveal the underlying structure of a relatively large set of variables. The second phase used descriptive analysis to measure perspectives and attitudes towards CALL.

Participants

Table 1 provides the demographic information of the186 participants (114 female and 72 male) who all were K-12 teachers in the United States. The table indicates the computer experience of participants as follows: less than 1 year (16.67%), 1-2 years (25.81%), 3-5 years (23.66%), 6-8 years (16.13%), and more than 8 years (14.52%). *Table 1* highlights that computer availability in the classroom of the participants was 95.16%. The table also shows the frequency of using a computer in the classroom was as follows: daily (81.72%), once a week (7.53%), once a month (2.69%), rarely (8.06%), and never.

Table 1. Demographic Information

		N	%
Gender	Male	72	38.71
	Female	114	61.29
Computer experience	Less than 1 year	31	16.67
	1-2 years	48	25.81
	3-5 years	44	23.66
	6-8 years	30	16.13
	More than 8 years	27	14.52
Computer availability in the classroom	Available	177	95.16
	Not available	9	4.84
The frequency of using a computer in the classroom	Daily	152	81.72
	Once a week	14	7.53
	Once a month	5	2.69
	Rarely	15	8.06
	Never	0	0.00

Instrument

A survey instrument was prepared to measure the perspectives and attitudes towards computer-assisted language learning (CALL) of the participants. The survey instrument included 4 demographic questions and 22 questions using a 5-point Likert-type scale. The survey questionnaire was built in Qualitrics (web-based survey tool) to conduct data collection.

Data Collection and Analysis

After IRB (#FWA0044265) approval, all potential participants were contacted via email. The email addresses of each participant were legally received from the school district. The survey instrument was sent to 965 participants via email and responses were received from 186 participants. A consent form received from each participant before the research started and each of them had to accept to start the questionnaire. SPSS was used to analyze the data.

Reliability and Validity

Reliability and validity of a study are accomplished through "a confidential, extended, and trusting relationship between informants and the investigator, instead of through the establishment of the psychometric properties of the research instruments" (Morse, 1994: 116). Reliability is defined as "the 'truth,' value, or 'believability' of the findings that the researchers have been established" (Denzin, 1978: 43). First, experts in the field of computer-assisted language learning (CALL) assessed the survey questionnaire after which we revised items. Next, the main study, a pilot study was conducted with 25 participants to test and value the feasibility of the study. Cronbach's alpha was utilized to calculate the reliability score. There were 22 items and Cronbach's alpha score of the items was 0.92. Nunnally (1978) stated, "a minimum value of .70 for Cronbach's alpha is considered acceptable" (p. 54). Therefore, each item in the study was reliable. The validity results of the study were also statistically significant. The correlation ($rs = .467$, $p = .001$) was considered to be a medium/moderate correlation (.40 -.60) (see Tashakkori & Teddlie 2002).

Results

Exploratory Factor Analysis (EFA)

Kaiser-Meyer-Olkin (KMO) was used to show the suitability of the survey data for factor analysis. According to Dziuban and Shirkey (1974), KMO is "an assumption that must be met in determining the appropriateness of using factor analysis. Values can range between 0 and 1" (p.358). According to Kaiser (1974),

"the KMO test can be used to determine the overall sampling adequacy of the sample or to measure each individual variable" (p. 32). Williams, Onsman, and Brown (2010) affirmed that a "value of 0 shows the sum of partial correlations is large relative to the sum of correlations, which indicate diffusion in the correlations pattern; therefore, factor analysis is probably inappropriate" (p. 26). They also emphasized, "if the value is close to 1, patterns of correlations are quite compact, and factor analysis indicates different and reliable factors" (p. 26). Kaiser (1974) highlighted that a value higher than .5 is acceptable. He also asserted that "values between 0.5 and 0.7 should be considered mediocre, values between 0.7 and 0.8 should be considered good, values between 0.8 and 0.9 should be considered great, and values of more than 0.9 should be considered superb" (p.32). For this study, Table 2 shows that the Kaiser value was 0.91, which falls into the range of "superb." Hence, the data were appropriate for factor analysis.

Table 2. KMO and Bartlett's Test

KMO Measure of Sampling Adequacy	.905
df	6802.412
Sig.	.000

For exploratory factor analysis (EFA), oblique rotation was used. *Table 3* shows that two factors were extracted. These factors were "Benefits of Computer-assisted language learning" and "Perspective of Computer-assisted language learning." Each factor characterizes a different perspective of Computer-assisted language learning.

Table 3. Pattern Matrix

Item	1	2
Develops students listening skills	.711	
Develops students writing skills	.732	
Develops students speaking skills	.686	
Develops students reading skills	.671	
Develops students vocabulary knowledge	.656	
Provides immediate feedback	.632	
Provides a new experience with different digital devices	.575	
Provides a variety of classroom activities	.621	
Provides a compatible learning style	.612	

Provides guided and repetitive practice	.561	
Provides a practical and easy assessment	.671	
Provides interactive learning	.617	
Motivates students' learning		.692
Allows students to learn a language easily		.634
Is more effective than traditional learning		.591
Is more structured than traditional learning		.643
Constitutes a more relaxed and stress-free atmosphere		.638
Is practical and easy to apply		.623
Gives flexibility to language learning		.651
Is exciting and more fun for students		.519
Is easy to control		.554
Fosters individualization		.571
Eigenvalues	8.83	6.87
% of variance	15.32	12.91

The EFA results showed that the first factor explained nearly 61.1% of the total variance. The results indicated that the first factor had the largest amount of variance. Some factors with eigenvalues that were larger than 1 were extracted and two factors resulted. These factors were extracted using Kaiser's criterion. Because the communalities average was greater than .6 and communalities were also greater than .7 after extraction, the criterion is accurate. The communalities average was .67 after they were all adding.

Descriptive Analysis

Table 4 highlights that the participants felt that computer-assisted language learning (CALL) develops students listening (M=4.02; SD=1.06), writing (M=3.91; SD=1.03), speaking (M=4.11; SD1.05), reading (M=4.09; SD=1.08) skills, and develops vocabulary knowledge (M=4.13; SD=1.07). This table also indicates that computer-assisted language learning provides immediate feedback (M=4.18; SD=1.10), a new experience with different digital devices (M=3.84; SD=1.02), variety classroom activities (M=4.10; SD=1.05), compatible learning style (M=4.21; SD=1.08), guided and repetitive practice (M=3.80; SD=1.02), practical and easy assessment (M=4.04; SD=1.01), and interactive learning (M=3.93; SD=1.06). Table 5 also displays Cronbach's alpha scores for each CALL item. For Cronbach's alpha, Bland and Altman (1997) said that "a minimum value of .70 is considered acceptable" (p.572). *Table 4* shows that each item had

a comparatively high Cronbach's alpha score (.86<items<.95), which indicated each item was reliable.

Table 4. Benefits of Computer-assisted Language Learning

Computer-assisted language learning	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean	SD	CA
Develops students listening skills	4.01	9.11	5.71	57.09	24.08	4.02	1.06	.88
Develops students writing skills	5.56	7.77	8.29	53.24	25.14	3.91	1.03	.91
Develops students speaking skills	3.37	6.91	9.60	36.11	44.01	4.11	1.05	.93
Develops students reading skills	5.10	5.60	9.15	38.71	40.43	4.09	1.08	.92
Develops vocabulary knowledge	4.09	5.20	6.31	41.15	43.25	4.13	1.07	.90
Provides immediate feedback	4.76	8.12	8.84	37.12	41.16	4.18	1.10	.89
Provides a new experience with different digital devices	5.37	7.32	8.58	40.60	38.14	3.84	1.02	.88
Provides variety classroom activities	5.09	6.20	8.31	38.15	42.25	4.10	1.05	.95
Provides a compatible learning style	6.33	7.05	7.90	40.45	38.28	4.21	1.08	.91
Provides guided and repetitive practice	5.10	10.11	10.01	52.70	21.09	3.80	1.02	.86

Provides a practical and easy assessment	5.50	8.24	9.31	50.78	26.19	4.04	1.01	.90
Provides interactive learning	6.20	9.05	10.75	37.10	36.90	3.93	1.06	.89

Note: "1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Neutral (N), 4 = Agree (A), and 5 = Strongly Agree (SA), and CA = Cronbach's alpha."

Table 5 shows that computer-assisted language learning (CALL) motivates students' learning (M=4.03; SD=1.10) and allows them to learn a language easily (M=4.11; SD=1.08). CALL is more effective and structured than traditional learning (M=4.21; 1.05) and constitutes a more relaxed and stress-free atmosphere (M=4.16; SD=1.08). Table 5 also emphasized that CALL is practical and easy to apply (M=4.11; SD=1.09) and gives flexibility to language learning (M=3.96; SD=1.03). CALL is exciting and more fun for students (M=4.06; SD=1.02) and is easy to control (M=4.22; SD=1.11), and fosters individualization (M=3.81; SD=1.07).

Table 5. Perspective of Computer-assisted Language Learning

Computer-assisted language learning	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean	SD	CA
Motivates students' learning	3.61	7.05	9.75	42.11	36.48	4.03	1.10	.90
Allows students to learn a language easily	5.05	8.25	9.32	38.13	39.25	4.11	1.08	.91
Is more effective than traditional learning	6.82	9.04	7.86	36.13	40.15	4.21	1.03	.94
Is more structured than traditional learning	3.09	5.24	8.32	40.25	43.10	4.20	1.06	.91
Constitutes a more relaxed and stress-free atmosphere	4.80	7.12	8.10	38.84	41.14	4.16	1.08	.88
Is practical and easy to apply	6.26	5.34	8.27	40.90	39.23	4.11	1.09	.90
Gives flexibility to language learning	5.14	5.32	9.58	39.60	40.37	3.96	1.03	.86
Is exciting and more fun for students	5.30	7.13	9.03	38.41	40.13	4.06	1.02	.89

Is easy to control	6.04	7.32	7.91	40.45	39.29	4.22	1.11	.92
Fosters individualization	4.38	7.31	7.59	40.59	40.14	3.81	1.07	.87

Note: "1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Neutral (N), 4 = Agree (A), and 5 = Strongly Agree (SA), and CA = Cronbach's alpha."

For Cronbach's alpha, Bland and Altman (1997) highlighted that "a minimum value of .70 is considered acceptable" (p. 572). Table 5 demonstrated that each item had comparatively high Cronbach's alpha scores (.87<items<.94), which indicated that each item was reliable.

Discussion

This study supports previous studies (Al-Juhani, 1991; Askar, Yavuz & Köksal, 1992; Önsoy, 2004) that teachers who teach a second language have affirmative attitudes towards CALL. The limitations of the study included that the researcher had difficulties finding participants/teachers who teaches another language in their current school. The findings indicated that CALL provides immediate feedback, a new experience with different digital devices, a variety of classroom activities, a compatible learning style, guided and repetitive practice, practical and easy assessment, and interactive learning. This study indicated that teachers felt that CALL motivates students' learning and allows them to learn a language more easily. CALL is more effective and structured than traditional learning and constitutes a more relaxed and stress-free atmosphere. CALL is seen as exciting and more fun for students and is easy to control, and fosters individualization. This study also reflected that CALL is practical and easy to apply and gives flexibility to language learning.

Administrators in language programs supporting students' reading should recommend resources and engage their tutors and teachers in meaningful professional development. Although we are amid a technology revolution, few teachers or tutors indicated that they used technology to participate in professional development opportunities. Materials can be evaluated further to gauge user-friendliness regarding technologically savvy users and ease of navigation within each resource. Further research can also shed light on emergent adult readers' perceptions of learning to read using fully online materials.

Conclusion

A variety of online sources for teaching to students is available for use by teachers, tutors, and learners alike. The findings indicated that teaching professionals need opportunities to engage in professional development to learn how to select, develop, and use these resources effectively with students. Overall, teachers and tutors understand the importance of using relevant, high-interest materials for their students. However, according to Hubbard and Levy (2016), many fail to incorporate technology to help them achieve these goals. This is truly a lost opportunity because of high-quality, online-based resources for students.

In the first phase of the study, the EFA results showed that two factors were extracted. These factors were "Benefits of Computer-assisted language learning" and "Perspective of Computer-assisted language learning." Each factor characterizes a different perspective of Computer-assisted language learning. The second phase of the study highlighted that computer-assisted language learning (CALL) develops students listening, writing, speaking, reading skills, and develops vocabulary knowledge. The results indicated that computer-assisted language learning provides immediate feedback, a new experience with different digital devices, a variety of classroom activities, a compatible learning style, guided and repetitive practice, practical and easy assessment, and interactive learning. The results suggest that participants felt that computer-assisted language learning (CALL) motivates students' learning and allows them to learn a language more easily. CALL is more effective and structured than traditional learning and constitutes a more relaxed and stress-free atmosphere. The results of the study also emphasized that CALL is practical and easy to apply and gives flexibility to language learning. CALL is seen as exciting and more fun for students and is easy to control, and fosters individualization.

Recommendations

Future research could delve into the benefits of using CALL technologies with beginning-level ELL learners, who arrive with minimal education experience let alone hands-on experience with the vast amounts of technology within reach. Additionally, ESL educators tend to reserve interactive, online approaches to learning for only their students. Future research should shed light on these essential questions to gain a better understanding of how technology can be used to facilitate learning better.

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References

Adedokun, T.A., & Zulu, D.E.O.S. (2019). Factors affecting language academics' attitudes towards Computer Assisted Language Learning (CALL). *Interdisciplinary Journal of Economics and Business Law*, *8*(2), 287-317, DOI: 11.23612/ijebl/243.

Al-Juhani, S.O. (1991). *The effectiveness of computer-assisted instruction in teaching English as foreign language in Saudi secondary school.* Unpublished doctoral dissertation, University of Denver, Denver, CO.

Altuna, J., Aydin, H., Ozfidan, B., & Amenabav, N. (2013). The digital user of social networks: A comparative, transcultural and intergenerational study. *International Online Journal of Educational Sciences, 5* (3), 598-610, DOI: 10.12312/iofes/132.

Aşkar, P., Köksal, M. & Yavuz, H. (1992). Students' perceptions of computer assisted instruction environment and their attitudes towards computer assisted learning. *Educational Research*, *34*(2), 133-139.

Bancheri, S. (2006). A language teacher's perspective on effective courseware. In Randall P. D., & Margaret A. H. (Eds.) *Changing Language Education through CALL* (pp. 31-47). New York: Routledge.

Beatty, K. (2003). *Teaching and researching computer-assisted language learning*. New York: Longman.

Beatty, K. (2013). *Teaching & researching: Computer-assisted language learning*. Abingdon-on-Thames: Routledge.

Bland, J. M., & Altman, D. G. (1997). Statistics notes: Cronbach's alpha. *The BMJ*, *314*(7080), 572; DOI: 10.1136/bmj.314.7080.572.

Brown, H. D. (1991). TESOL at twenty-five: What are the issues? *TESOL Quarterly, 25*, 245-260.

Brown, R., Waring, R., & Donkaewbua, S. (2008). Incidental vocabulary acquisition from reading, reading-while-listening, and listening to stories. *Reading in a Foreign Language, 20*(2), 136-163.

Chapelle, C. A. (2001*). Computer applications in second language acquisition*. New York: Cambridge.

Chiu, H. L. (2018). Materials design and pedagogy for technology-enhanced language learning. In *Online course management: Concepts, methodologies, tools, and applications* (pp. 1746-1760). Hershey, PA: IGI Global.

Chun, D., Kern, R., & Smith, B. (2016). Technology in language use, language teaching, and language learning. *The Modern Language Journal*, *100*(S1), 64-80.

Dziuban, C. D., & Shirkey, E. C. (1974). When is a correlation matrix appropriate for factor analysis? Some decision rules. *Psychological Bulletin*, *81*(6), 358-361.

Hubbard, P., & Levy, M. (2016). Theory in computer-assisted language learning research and practice. In *The Routledge handbook of language learning and technology* (pp. 50-64). Abingdon-on-Thames: Routledge.

Jeong, K.-O. (2006). Promoting communicative language teaching in EFL context: An English writing course mediated through the Web. *English Language Teaching, 18*(3), 47-68.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika, 39*, 31-36.

Kessler, G. (2018). Technology and the future of language teaching. *Foreign Language Annals*, *51*(1), 205-218.

Kocabas, S., Ozfidan, B., & Burlbaw, L. (2018). The development of a scale to measure teachers' self-efficacy and confidence in teaching compulsory K-12 theology courses. *Journal of Education and Training Studies. 7* (4),92-102, DOI: 10.5539/jel.v7n4p92.

Krashen, S. (1992). The input hypothesis: An update. *Linguistics and language pedagogy: The state of the art*, 409-431.

Kukulska-Hulme, A., & Viberg, O. (2018). Mobile collaborative language learning: State of the art. *British Journal of Educational Technology*, *49*(2), 207-218.

Lai, C., Shum, M., & Tian, Y. (2016). Enhancing learners' self-directed use of technology for language learning: the effectiveness of an online training platform. *Computer Assisted Language Learning*, *29*(1), 40-60.

Lam, Y., & Lawrence, G. (2002). Teacher-student role redefinition during a computer-based second language project: Are computers catalysts for empowering change? *Computer Assisted Language Learning, 15*(3), 295-315.

Levy, M. (1997). *Computer-assisted language learning: Context and conceptualization*. Oxford: Oxford University Press.

Long, M. H. (1981). Input, interaction, and second-language acquisition. *Annals of the New York Academy of Sciences*, *379*(1), 259-278.

Morse, J. M. (1994). *Designing funded qualitative research*. Washington, DC: Sage Publications Press.

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.

Önsoy, S. (2004). *Students' and teachers' attitudes towards the use of computer- assisted language learning*. Unpublished master's thesis, Bilkent University, Ankara, Turkey.

Ozfidan, B. (2017). *The development of a bilingual education curriculum in Turkey: A mixed method study* (Unpublished doctoral dissertation). Texas A&M University, College Station. Retrieved from https://oaktrust.library.tamu.edu/bitstream/handle/1969.1/65857/OZFIDAN DISSERTATION-2017.pdf?sequence=1

Ozfidan, B., & Burlbaw, L. M. (2019). A literature-based approach on age factors in second language acquisition: Children, adolescents, and adults. *International Education Studies*, *12*(10), 27-36.

Ozfidan, B., & Mitchell, C. (2020). Detected difficulties in argumentative writing: The case of culturally and linguistically Saudi backgrounded students. *Journal of Ethnic and Cultural Studies, 7*(2), 15-25, DOI: 10.29333/ejecs/382.

Rasinski, T. (1990). Effects of repeated reading and listening-while reading on reading fluency. *Journal of Educational Research, 83*, 147-150.

Stockwell, G. (Ed.). (2012). *Computer-assisted language learning: Diversity in research and practice*. Cambridge: Cambridge University Press.

Swain, M. (2005). The output hypothesis: Theory and research. In *Handbook of research in second language teaching and learning* (pp. 495-508). Routledge.

Tafazoli, D., María, E. G., & Abril, C. A. H. (2019). Intelligent language tutoring system: Integrating intelligent computer-assisted language learning into language

education. *International Journal of Information and Communication Technology Education (IJICTE)*, *15*(3), 60-74.

Teo, T. (2006). Attitudes toward computers: A study of post-secondary students in Singapore. *Interactive Learning Environments, 14*(1), 17-24.

Ugurlu, O., & Ozfidan, B. (2015). A refugee group's mental health and social care. *Electronic International Journal of Education, Arts, and Science, 1*(1), 99-114, DOI: 11.49345/eijeas/321 .

Wang, H. Y., Lin, V., Hwang, G. J., & Liu, G. Z. (2019). Context-aware language-learning application in the green technology building: Which group can benefit the most? *Journal of Computer Assisted Learning*, *35*(3), 359-377.

Webb, M., & Doman, E. (2019). Impacts of flipped classrooms on learner attitudes towards technology-enhanced language learning. *Computer Assisted Language Learning*, 1-35, DOI: 10.1080/09588221.2018.1557692.

White, E. B. (1952). *Charlotte's web* (G. Williams, Ed.). New York, NY: Harper & Brothers.

Williams, B., Onsman, A., & Brown, T. (2010). Exploratory factor analysis: A five-step guide for novices. *Australasian Journal of Paramedicine, 8*(3), 23-29.

Woodall, B. (2010). Simultaneous listening and reading in ESL: Helping second language learners read (and enjoy reading) more efficiently. *TESOL Journal. 1*(2), 186-205, DOI: 10.5054/tj.2010.220151

Wu, P. H. N., & Marek, M. W. (2020). Designing interactive cross-cultural mobile-assisted language learning. In *Multicultural instructional design: Concepts, methodologies, tools, and applications* (pp. 452-475). Hershey, PA: IGI Global.

Zhou, Y., & Wei, M. (2018). Strategies in technology-enhanced language learning. *Studies in Second Language Learning and Teaching*, *8*(2), 471-495.

Zimmerman, E., & McMeekin, A. (Eds.). (2019). Technology-supported learning in and out of the Japanese language classroom. In *Advances in pedagogy, teaching and research*. Bristol, UK: Multilingual Matters.

Zou, B., & Thomas, M. (Eds.). (2019). *Recent developments in technology-enhanced and computer-assisted language learning*. Hershey, PA: IGI Global.

Zou, B., Yan, X., & Li, H. (2020). Students' perspectives on using online sources and apps for EFL learning in the mobile-assisted language learning context. In *Language Learning and Literacy: Breakthroughs in Research and Practice* (pp. 515-531). Hershey, PA: IGI Global.