



P-ISSN 2355-2794  
E-ISSN 2461-0275

## Examining Changes in Foreign Language Educators' Attitudes towards the Use of Computer-Assisted Learning

Tamara Oshchepkova<sup>\*1</sup>  
Olesya M. Tolstykh<sup>2</sup>  
Ekaterina V. Panasenko<sup>3</sup>  
Natalia A. Nazarova<sup>3</sup>  
Natalia V. Petrova<sup>4</sup>

<sup>1</sup>Liberal Arts Department, American University of the Middle East, Kuwait 54206, KUWAIT

<sup>2</sup>Department of Modern Languages and Communication, The National University of Science and Technology MISIS, Moscow 119049, RUSSIA

<sup>3</sup>Department of Foreign Languages, Omsk State Pedagogical University, Omsk 644099, RUSSIA

<sup>4</sup>Department of Technology and Technological Education, Omsk State Pedagogical University, Omsk 644099, RUSSIA

### Abstract

*As digital technologies continue to permeate all aspects of contemporary society, the educational domain, particularly foreign language teaching, has also significantly transformed. During the 1990s, the introduction of information and communication technologies (ICT) into language teaching was initially met with enthusiasm among educators. However, what originally started as integrating multimedia resources into the learning environment soon escalated into a comprehensive transformation, which included innovations such as online platforms and adaptive learning systems that became part of language teaching curricula. This evolution led to fundamental changes in pedagogical approaches, teacher-student communication, and the overall educational setting within classrooms. As digital technologies evolved and diversified, so did the attitudes of language teachers, whose initial enthusiastic welcome transformed into growing doubt. This research aimed to*

---

\* Corresponding author, email: [tamara.oshchepkova@aum.edu.kw](mailto:tamara.oshchepkova@aum.edu.kw)

**Citation in APA style:** Oshchepkova, T., Tolstykh, O. M., Panasenko, E. V., Nazarova, N. A., & Petrova, N. V. (2024). Examining changes in foreign language educators' attitudes towards the use of computer-assisted learning. *Studies in English Language and Education*, 11(2), 630-649.

Received December 26, 2023; Revised February 25, 2024; Accepted April 15, 2024; Published Online May 31, 2024

<https://doi.org/10.24815/siele.v11i2.36441>

*investigate how digital technologies within the domain of language instruction are utilized and to explore the prevailing attitudes regarding their implementation. The study spanned two decades: the periods from 1990 to 2000 and from 2013 to 2023. Semantic literature analysis of 300 scientific publications was used to determine the educators' reactions toward the application of ICT, which were categorized into positive, negative, mixed, and research-oriented attitudes. Additionally, a survey of 88 foreign language teachers was conducted to collect empirical data. A clear trend is observed in how language educators perceive and apply technologies in their classrooms. The authors concluded that these tools remain popular among educators despite increasing skepticism and caution regarding ICT efficacy.*

**Keywords:** Attitude to technology, ICT, CALL, foreign language (FL) teaching.

## 1. INTRODUCTION

The application of various types of technologies in education was introduced and widely accepted decades ago, but the debate over their use has continued ever since. Computer-assisted language learning, as a branch of the application of information and communication technologies (ICT) in education, has a long history that started with drills developed for mainframe computers back in the 1960s and gradually transformed into interaction with the present-day machines that imitate human communication. The opinions of researchers and practitioners on using such tools in education vary from total approval or gradual acceptance to growing opposition.

Various aspects of technology use in education have been researched over decades. The matter has been analyzed in relation to multiple disciplines, including teaching mathematics, biology, medicine, history, and other subjects. Although we refer to some publications related to the use of technology in education in general, our focus is on foreign language (FL) teaching and English language teaching (ELT) in particular. This is justified by professional interest as well as by the specificity of the subject. In ELT, technologies have been used as a tool for organizing the learning process and as a source of content. It is well known that the largest segment of online content is provided in English; therefore, English language teachers have always used this as a source of authentic material, an illustration of language use, and a model of speech patterns. In other words, technology in a language classroom appears to assume different roles, including those of a resource, a tool, and an environment (Stevenson, 2008). Furthermore, FL teachers have always been open to experimenting with the use of computers in their classrooms. This specific status was reflected in educational terminology because alongside the general terms computer-enriched instruction (CEO), computer-assisted instruction (CAI), or computer-based education (CBE), FL teachers were working in the paradigms of computer-assisted language learning (CALL), computer-assisted language testing (CALT), and mobile-assisted language learning (MALL).

There have been multiple attempts to evaluate the use of ICT in the language classroom from the point of view of their effect on students' performance, underlying

pedagogical approaches, target audience, and variety of used tools (Davies, 2001; Kadiyala & Crynes, 1998; Liu et al., 2002; Qureshi et al., 2021). Research has also been conducted to identify how ready teachers are to accept and adapt to emerging tools (Djiwandono, 2019; Liu et al., 2016). Considerable knowledge and experience have been accumulated in the area, which produced a set of high-quality review papers on different aspects of CALL. For instance, Jabbari and Eslami (2019) reviewed research on the use of online games in language teaching. Burston (2015), Shadiev et al. (2020), and Shortt et al. (2023) evaluated the ideas of MALL. Yu and Trainin (2022) presented a meta-analysis examining technology-assisted second language (L2) vocabulary learning. Saylan et al. (2023) rated empirical studies on CALL published between 2000 and 2020. Weng and Chiu (2023) presented a systematic review of intelligent CALL. Chen (2023) analyzed e-learning of English as a foreign language (EFL). However, no attempt has been made to analyze the rich experience of CALL through the prism of attitudinal change across the years. Such research is important for understanding the trends in the overall attitudes of educators towards the application of technologies in language teaching and for initiating necessary changes that would yield better results in CALL. The present study attempts to fill the existing gap by identifying the existing perspectives on ICT in the language classroom, which might empower educators to make informed decisions about the use of emerging technologies.

In this paper, we use the term “technology” to refer to various practices that apply educational technologies, most commonly computers, to complement classroom instruction. This could include any tool, from basic software like Microsoft Word documents or PowerPoint slides to electronic whiteboards, mobile phones, virtual learning environments, massive open online courses (MOOCs), social media, and Artificial Intelligence (AI). Our goal is not to evaluate or compare the effectiveness of any of these tools but rather to trace how the overall attitude of the educator community toward them has changed over time.

Thus, the purpose of the present study is to discern how the attitudes of FL educators have transformed following the advancement of technologies. Therefore, two research questions motivate this study:

1. Do research publications reflect any change in attitudes towards the use of technology in an FL classroom over the last decades?
2. Do practicing teachers report any change in their attitudes towards the use of technology in an FL classroom?

## 2. METHODS

As previously mentioned, the history of CALL is rich; therefore, hundreds of research papers have been published to reflect the achievements and study the possible applications of technology in an FL classroom. We had to limit the number of reviewed papers to be able to conduct high-quality analyses. We acknowledge that the random selection method has limitations and is often associated with bias; however, it is justified in our context as we did not intend to review every single CALL publication but rather attempted to identify the dominant trends.

The procedure that was followed for selecting publications for our research is described below.

1. Publications were selected using reliable databases: Scopus, Elsevier, IEEE/IET Electronic Library (IEL), JSTOR, and SpringerLink, amongst others.
2. Two main search terms were selected: “computer-assisted foreign language learning” and “technology in foreign language teaching”.
3. Two publication periods were selected: 1) from 1990 to 2000 and 2) from 2013 to 2023. The selection allowed us to compare the attitudes of educators to the use of technology at an earlier stage of CALL and the current one. We ensured that an equal number of publications from each year were selected to cover the full range. Since our aim was not to conduct a meta-analysis but to focus more on qualitative evaluation to decode the viewpoint of each author, reviewing every publication of the period was not feasible. On the contrary, a deeper qualitative analysis of the text allowed us to see the prevailing trends.
4. Only research articles from peer-reviewed journals were considered. Books or doctoral dissertations were excluded because we wanted to keep the quantity of material for analysis manageable. We ensured that the major journals of educational technology and technology-enhanced language learning were among the selected sources.
5. Titles and abstracts were screened to ensure that articles fit within the scope of the review. We shortlisted only those articles that we could access as full text because reading abstracts was not sufficient to get a clear understanding of the authors' stance. For this purpose, we limited the search to the articles available in open access and those provided by our university library. We selected articles that were mainly focused on the practical application of different tools in the classroom. Publications related to historical reviews, teachers' professional development, the application of technology for linguistic studies, the effects of technology on education in general, or software design issues were considered irrelevant for our purposes.

The inclusion and exclusion criteria are summarized in Table 1.

**Table 1.** Inclusion and exclusion criteria for paper selection.

<b>Criterion</b>	<b>Inclusion criteria</b>	<b>Exclusion criteria</b>
Study type	Empirical studies	Theoretical studies, literature reviews, and articles on the issues of professional development or software design.
Document type	Journal articles	Dissertations, books, book chapters, conference papers.
Research context	Computer-assisted language learning	Use of technology for teaching subjects other than foreign language or research about the use of technology in education in general.
Publication date	1990-2000 and 2013-2023	Other dates
Written language	English	Other languages

After the inclusion and exclusion process, we obtained a final pool of 300 publications (150 publications for each stated period). Linguistic, content, and quantitative analyses of these articles were conducted. The next step of the research involved surveying practicing teachers, which helped us collect empirical data about their attitudes to the use of technologies in the classrooms. Eighty-eight teachers from different parts of the world were asked to complete an online questionnaire by

answering 12 closed- and 3 open-ended questions. The participants were informed that their participation was voluntary and confidential. No personal details about the participants were gathered. The results and conclusions of both parts of the research are presented in the following sections of this paper.

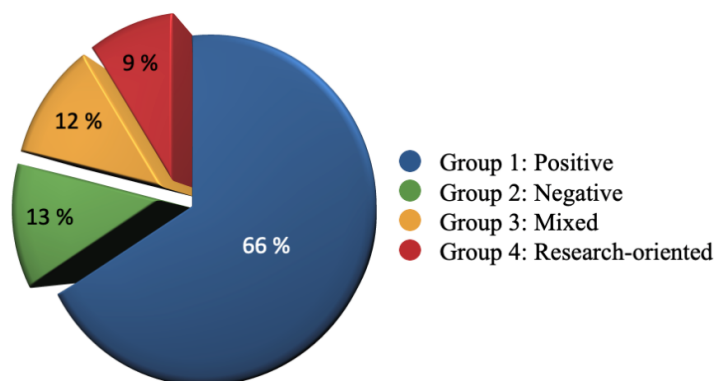
### 3. RESULTS

#### 3.1 Publications of 1990–2000

In total, we reviewed 150 articles published between 1990 and 2000. The reviewed articles covered a range of topics, including inter alia, a description of one or more pieces of software or learning platforms, an account of how this software was integrated into the learning environment, an empirical analysis of the effects of the software on students' skills and competencies, a report on technology-based assessment, and a comparison of instructional settings. Since these publications present conclusions based on empirical research, the authors' attitude is often explicitly expressed.

Having reviewed these articles, we analyzed the authors' overall attitudes toward the use of technology in language learning classrooms. The conclusions were mainly based on linguistic analysis of the texts. We identified lexical units with positive or negative connotations that the researchers used. According to our observations, all the articles were classified into several groups, which are illustrated in Figure 1:

- Group 1. Positive. The researchers in these articles express their overall positive attitude toward the use of technologies in the language classroom.
- Group 2. Negative. The authors share a negative vision of the use of ICT in language classrooms or are writing about the problems that learners or teachers encounter.
- Group 3. Mixed. The writers address the positive and negative aspects of technology-assisted language learning equally.
- Group 4. Research-oriented. The main message of the article is that the issues of CALL require further scrupulous research.



**Figure 1.** The ratio of publications from 1990 to 2000 according to the attitude adopted by the authors.

Analyzing the linguistic features of publications from Groups 1 and 3, we spotted expressions with positive connotations that authors used while referring to the use of

technologies in class. Some of the examples are listed in Table 2. The frequency of each of the selected words is stated.

**Table 2.** Examples of lexical units with positive connotations.

<b>Nouns</b>	<b>Adjectives</b>	<b>Verbs</b>
Advantage (n=58)	Appropriate (n=5)	Accelerate (n=3)
Ally (n=2)	Beneficial (n=11)	Assist (n=17)
Benefit (n=47)	Best (n=5)	Boost (n=1)
Complement (n=2)	Cost-effective (n=7)	Enhance (n=44)
Flexibility (n=10)	Effective (n=44)	Facilitate (n=39)
Improvement (n=5)	Efficient (n=14)	Improve (n=38)
Motivation (n=16)	Flexible (n=9)	Increase (n=37)
Opportunity (n=47)	Ideal (n=13)	Promote (n=33)
Potential (n=54)	Interesting (n=14)	Stimulate (n=11)
	Motivating/Motivational (n=21)	
	Optimal (n=3)	
	Realistic (n=13)	
	Student-oriented (n=12)	
	Successful (n=18)	
	Useful (n=31)	
	Valid (n=3)	
	Valuable (n=25)	
	Wonderful (n=1)	

The trend to emphasize the bright side of computer-assisted teaching can be justified by the process of how CALL ideas were introduced and developed in this period. As [Mike \(1996\)](#) noticed, in those days, “the machines became more powerful, and the limitations of drill-and-practice became more apparent” (p. 6). As a result, the role played by computers in education broadened, and teachers saw a range of new perspectives and opportunities which they embraced with enthusiasm and creativity. These opportunities were described as a novelty factor and characterized as intriguing ([Derwing et al., 2000](#)). Educators used every chance to experiment with the new tools to test their effectiveness, demonstrate possible applications, and share anecdotal and empirical data.

During the stated period, educators initiated the use of the internet, which was a turning point for many subjects but had special significance for language learning. Access to the internet in an FL classroom gave students access to the real world and to other speakers and learners because now they could connect synchronously or asynchronously via emails, pen pal platforms, and chats, getting the first taste of online communication. Therefore, learning an FL stopped being just a classroom activity. It gained meaning as students were given an opportunity to interact with a real audience elsewhere in the world.

In other words, technologies were welcomed by English language teachers, which resulted in this overall positive attitude that can be traced in the publications of that time. The most frequently listed advantages of the computer-assisted language classroom include inter alia, freedom of choice for the learners, access to authentic language models, combination of input methods, potential to motivate the learners, integration of language learning and cultural exposure, and decrease in communication apprehension.

However, this genuine enthusiasm was counterbalanced by some words of caution from other researchers. For instance, a set of reviewed publications (Groups 2

and 3) highlighted negative aspects of computer-assisted classes, such as lack of technical skills, which prevents students from successfully participating in the process (Gillespie & McKee, 1999; Hyland, 1993; Liaw, 1998); teachers' unpreparedness or resistance to the idea of applying technologies (Becker, 1998; Moore et al., 1998; Rogers, 2000); and lack of a social dimension in online communication (Bump, 1990; Goodfellow et al., 1996; Wrigley, 1993). Several authors identified flaws in the technologies which might hinder the teaching process. For instance, Coniam (1998) and Derwing et al. (2000) wrote about imperfections in speech recognition technologies. Nevertheless, we discovered explicitly negative comments or words with negative connotations – like *barriers*, *limitations*, or *challenges* – quite rarely. Sadler-Smith et al. (2000) justified the overwhelmingly positive vision of CAI by the pressure from the professional community, which obliges teachers to embrace modern methods and demonstrate their effectiveness. In total, only 12% of the publications that we reviewed explicitly stated potential threats.

Some of the disadvantages mentioned in the articles of the 1990s might sound naïve to readers in the 2020s. For instance, they discuss the necessity of queueing in the computer lab due to the small number of available machines or slow connection speed. The “bring your own device” approach and 5G technologies were not yet introduced. However, these worries were quite legitimate at that stage because neither teachers nor students were used to working with computers; software and hardware were not yet affordable on a large scale.

Doubters also claim that some teachers were overly enthusiastic about technology, which is “essentially impotent without creative and imaginative application” (Liu et al., 2002). These researchers (Nelson & Oliver, 2000; Stoks, 1993) reminded us of the importance of applying pedagogical principles. As Rüschoff (1992) wrote, “It is so very easy to be fascinated by the power and potential of the technologies on the one hand and to forget about what we have been able to find out about how to learn better and acquire foreign language skills on the other” (p. 5). Designing pedagogically effective CALL activities became a concern; therefore, researchers tried to send a cautious note that educators should think and plan carefully any use of technology in the classroom so that it corresponded to the stated teaching aims and objectives instead of being an unnecessary fashionable toy. This statement is supported by the choice of words presented in Table 2. Among the most frequently used words to describe technologies in this period are *potential* ( $n = 54$ ) and *opportunity* ( $n = 47$ ), which implies that technologies only create a pool of opportunities which may or may not be effectively used by those involved.

Another major concern shared in the publications (Group 4) is the lack of scrutinized research. Several authors (Borrás & Lafayette, 1994; Garrett, 1991; Nutta, 1999; Wrigley, 1993) claimed that evidence of the effectiveness of CAI over traditional methods of teaching is not sufficient. Selwyn (2000) urged an end to this anachronistic “hobbyist era” and argued for the provision of sound, objective data that would help teachers make an informed decision about the application of technologies in their classrooms.

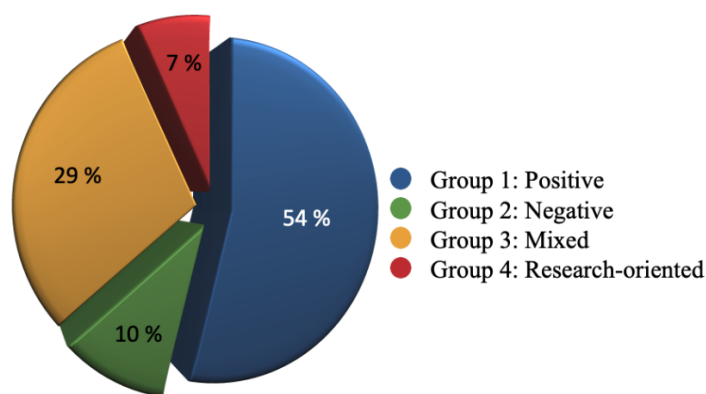
Based on these observations, we can conclude that the initial period of applying technologies in language learning was characterized by high expectations and low expertise in the area, which resulted in overly enthusiastic publications. These findings are in line with the literature review on the use of technology in education conducted by Kadiyala and Crynes (1998), who discovered “surprisingly few studies reporting

negative results” (p. 36). Nevertheless, apart from the reported enthusiasm for using computers, there was a strong realization that the new tools should be used in line with pedagogical principles. In addition, the necessity for more thorough research in the area was emphasized.

### 3.2 Publications of 2013–2023

Our rationale for omitting the period 2001–2012 is rooted in a belief that a focus on this period might not have provided relevant insights to our research, as the shift in FL educators' attitudes towards technology during this period might have been less pronounced. This period might be perceived as a transitional phase in the integration of digital technologies into language teaching, from sporadic use to the establishment of the digital learning environment. The initial period beginning in 1990 represents the time when educators were at the stage of exploring new technologies and instructional methods. Conversely, the timespan 2013–2023 is characterized by the accumulation of experience driven by rapid technological progress and a prolonged period of mandatory digital education due to pandemic lockdowns. Thus, the timespan 2001–2012 has already lost its initial novelty of the integration of technology into teaching while still lacking the experimental basis observed during the period from 2013 to 2023.

We reviewed 150 articles published between 2013 and 2023. The articles were divided into four groups according to the authors' overall attitude toward the use of technology in the classroom. We applied the same linguistic analysis strategy to the articles published between 1990 and 2000. The distribution is shown in Figure 2.



**Figure 2.** The ratio of publications from 2013 to 2023 according to the attitudes adopted by the authors.

Contrary to our expectations, we discovered that the author(s) of every other article (Group 1) shared a very optimistic view on the use of technology for FL teaching and praised ICT for boosting students' motivation, providing access to authentic resources, creating opportunities for real-life communication, creating student-centeredness, developing autonomy and self-organization, providing flexibility, and in general boosting students' performance in different aspects of the language. Some positive comments are related to the opportunities that technologies open up for people with restricted access to education, such as people living in remote areas or people with disabilities. In this respect, we did not observe any major changes from the articles written in the 1990s. The only difference is the list of applications



and software that the authors refer to. In the 1990s, they were analyzing electronic mail, multimedia applications, synchronous and asynchronous chats, early attempts at networking, speech recognition software, and CALT. In the current situation, students and educators no longer depend on the use of canonical devices, such as desktops and laptops. Instead, a diverse variety of portable and wearable devices has emerged, marking the start of the era of bring your own device (BYOD). In addition, the diverse range of technically advanced devices and platforms enabled the utilization of their potential educational benefits. For example, several authors (Basal, 2015; Henderson et al., 2017; Pham, 2022) valued the flexibility of time and place that language learners gain due to the ease of access to modern technologies which extend learning opportunities beyond bricks-and-mortar classrooms. Therefore, some of the shifts in FL educators' attitudes to CALL can be attributed to hardware advancements.

In addition, researchers highlighted that the learners' profile and the teaching context have changed since the end of the 20<sup>th</sup> century. Technology is no longer an add-on, a tool that helps teachers to make the process more engaging and varied. Avoiding digitalization is no longer an option; therefore, computer literacy has become one of the main requirements of modern society. Consequently, educators use technology not only to teach their subject but also to prepare students to live in a technologically interconnected, globalized world (Chun et al., 2016; Izadpanah & Alavi, 2016).

However, we observed significant differences between the publications of this period and the articles of the 1990s. The first discernible trend is a more explicitly expressed critical approach to the use of technologies in the language classroom. In the first set of articles (1990–2000), we encountered cautious negative comments and relatively rare words undermining the value of ICT. In the second set of articles (2013–2023), we read words and phrases with strong negative connotations. Some examples are listed in Table 3.

**Table 3.** Examples of lexical units with negative connotations (2013–2023).

<b>Nouns</b>	<b>Adjectives</b>	<b>Verbs</b>
addiction (n=2)	alarming (n=1)	cheat (n=8)
challenge (n=37)	destructive (n=1)	decline (n=4)
danger (n=5)	detrimental (n=2)	decrease (n=8)
dehumanization (n=2)	disruptive (n=1)	distort (n=2)
deterioration (n=3)	harmful (n=7)	distract (n=11)
disadvantage (n=18)	irrelevant (n=4)	impede (n=2)
disruption (n=2)	poor (n=16)	isolate (n=3)
distraction (n=15)		lack (n=12)
lack (n=34)		reduce (n=5)
limitation (n=19)		weaken (n=3)
pitfall (n=5)		
plagiarism (n=8)		
risk (n=10)		
threat (n=7)		
villain (n=1)		
weakness (n=9)		

Evidently, researchers have tempered their enthusiasm for what might be achieved through technology-enabled learning and focused more on its potential challenges. In previous years, educators highlighted some of these concerns that relate to the lack of necessary financial resources, teachers' resistance, lack of professional

development in the area of CALL, and technical problems. In the 2020s, the number of studies which expressed criticism had escalated remarkably. New issues that were not addressed previously were identified. For instance, some researchers (Chun et al., 2016; Rong et al., 2022) claimed that the availability of multiple resources might decrease students' creativity and lead to a deterioration of thinking skills. Several authors (Borthwick et al., 2015; Schmidt & Strasser, 2022) expressed their concerns about privacy issues and the unethical use of technologies. Contrary to the opinion that technologies create opportunities for communication, we hear voices claiming that interaction with the machine leads to isolation and dehumanization of the learning process (Izadpanah & Alavi, 2016; Presti, 2020; Wu et al., 2023). Applying new tools may increase motivation; however, this is a short-term effect, and after the novelty effect fades, learners' interest might even be reduced (Bodnar et al., 2016; Loewen et al., 2019). Some authors (Kuure et al., 2016; Şad & Göktaş, 2014; Sullivan & Bhattacharya, 2017) also mentioned the challenges that new technologies pose for teachers, increasing the range of content and skills about which they must be knowledgeable, which in turn requires more work on their part to be effective teachers.

Some might claim that this shift in attitude is justified by the fact that more evidence and experience have been gained over the years, resulting in more profound research results. As Kirkwood and Price (2013) infer, findings about the effectiveness of technology were historically often unequivocally positive, unreliable, or over-generalized. The three-decade-long active practice of technology application in different contexts allowed researchers to make more sound and justified conclusions.

Another possible reason for this shift of attitude change could be the changing quality and quantity of digital technologies used for language learning. For instance, significant advancements in AI development might threaten the integrity of the teaching and learning process. These publications sound more alarmist compared to the cautious recommendations that were given 20 years ago. In publications related to subjects other than language teaching, such anxious comments sound even louder. For instance, Spitzer (2014), Fombona et al. (2020), and Lacka and Wong (2021) wrote about increasing IT addiction, fear of being disconnected from online interactions, negative impact on skills development, and disruptions in normal classroom functioning. Chu (2014) justified the fact that excessive use of mobile learning might overload the working memory of students. Teachers deal with more plagiarism issues now, which might be attributed to the introduction of technology in the classroom (King, 2023). Although these comments come from publications related to education in general, FL teachers should probably also start addressing such problems as they were previously unknown.

Another noticeable contrast between the publications of the two periods is the attention to pedagogical and research principles in CALL. From the early stages, as computer technologies were introduced, educators were concerned that their application should serve a purpose and contribute to achieving the stated aims. In the 1990s, authors often mentioned the fact that any use of technology should be justified from the point of view of teaching principles and rationale (Liu et al., 2016; Rogerson-Revell, 2021; Shortt et al., 2023; Steel & Levy, 2013). At least 10% of the publications we reviewed made an explicit statement about this requirement. Twenty years later, this call has become more urgent. It was highlighted by Radianti et al. (2020) that the majority of studies they examined made no mention of applied learning theory used as a foundation and mainly focused on evaluating usability or user experience. Such a

faulty practice should be reconsidered. ICT cannot yield any planned outcome unless it is used as a pedagogically relevant tool.

Thus, we observed a distinct shift in attitudes towards CALL over the last decades. This change is gradual in terms of progression and partial in terms of coverage. In other words, the vision of computer technologies has not changed from perceiving them as best friends to seeing them as an explicit threat; however, many researchers shared quite cautious comments about the value of technology in the language classroom. Open criticism is encountered more frequently, and a call for in-depth research was articulated distinctly, which should ensure pedagogically appropriate interventions.

### 3.3 Questionnaire Analysis

Upon completing a thorough literature review spanning the periods of 1990–2000 and 2013–2023, we identified a slight but noticeable shift in the attitudes of authors towards the implementation of digital technologies in language teaching. However, it was evident that the outcomes of the literature study provided us mostly with scholarly insights. Consequently, we conducted a survey to gather viewpoints from practicing educators in the field to supplement our understanding. A total of 88 respondents from different countries, including Russia, Kuwait, Turkey, the UK, Germany, Czechia, Egypt, Indonesia, South Africa, Hungary, and Argentina, provided their answers, ratings, and comments in the survey. The participants were requested to respond to 12 closed- and three open-ended questions regarding their experience and attitudes to CALL.

The largest group of respondents, comprising 35.2%, have over 20 years of work experience, which signifies a well-informed perspective across both described periods. Additionally, 21.6% of participants, with 15–20 years of teaching experience each, either started their careers during the first period described in the article or were engaged as students; therefore, they could also provide informed insights. The rest of the participants, with teaching experience of less than 15 years, shared their vision of the digitalization of language teaching based on reading and current teaching practices.

Most respondents, accounting for almost 80%, reported that they incorporated one or more digital tools or services into every teaching session. This highlights an apparently increased trend of using technology to enhance instruction. The recipients mentioned specific sets of tools and services which they actively employed. Table 4 lists the most frequently mentioned services and tools.

**Table 4.** Tools and services used by the survey participants.

Digital tools and services	Number of respondents	Percentage of respondents
Video conferencing platforms (e.g., Zoom, Microsoft Teams)	68	77.3
Multimedia and content sharing (e.g., YouTube, TikTok)	63	71.6
Online assessment and testing tools (e.g., Quizzes, Kahoot)	60	68.2
Information resources (e.g., Wikipedia, online libraries, and databases)	47	53.4
Learning Management Systems (LMS) (e.g., Moodle, Canvas)	45	51.1
Collaboration Tools (e.g., Google Docs, Microsoft Office Online)	44	50

Table 4 continued...

Communication Tools (e.g., WhatsApp, Telegram, Snapchat)	42	47.7
Artificial Intelligence: AI-powered language translation services (e.g., Google Translate, DeepL)	28	31.8
Digital content creation tools (Video editing software, Graphic design tools, Audio recording and editing software)	25	28.4

Upon analysis of the questionnaire, we have not identified any distinct correlation between teaching experience and frequency of digital tool utilization in classes. However, we have discerned an obvious pattern: respondents affiliated with higher education institutions demonstrate a tendency to use learning management systems more frequently, such as Moodle or Canvas, than those who are engaged in secondary education institutions.

The survey findings reveal that the primary reason to incorporate digital technologies into language teaching is centered around the provided option-answer “enhancing student engagement”. 84.1% of respondents mentioned this as their motivation for applying CALL, which reflects educators’ belief that a digital environment captures students’ attention. Therefore, practicing educators find it important to adapt their teaching strategies to match students’ digital experiences and to speak what one of the survey participants called “their language”.

As for the overall attitude to the impact of technology on teaching languages, it appears to be favorable. We measured the levels of approval on a seven-point Likert-type scale ranging from extremely negative (1) to extremely positive (7). The majority of survey participants welcomed the use of computers, reporting that they perceived the impact as extremely positive (40.9%), somewhat positive (23.9%), or positive (21.6%). Table 5 lists the answers that were quoted as the most frequently recognized merits of technology-assisted language learning.

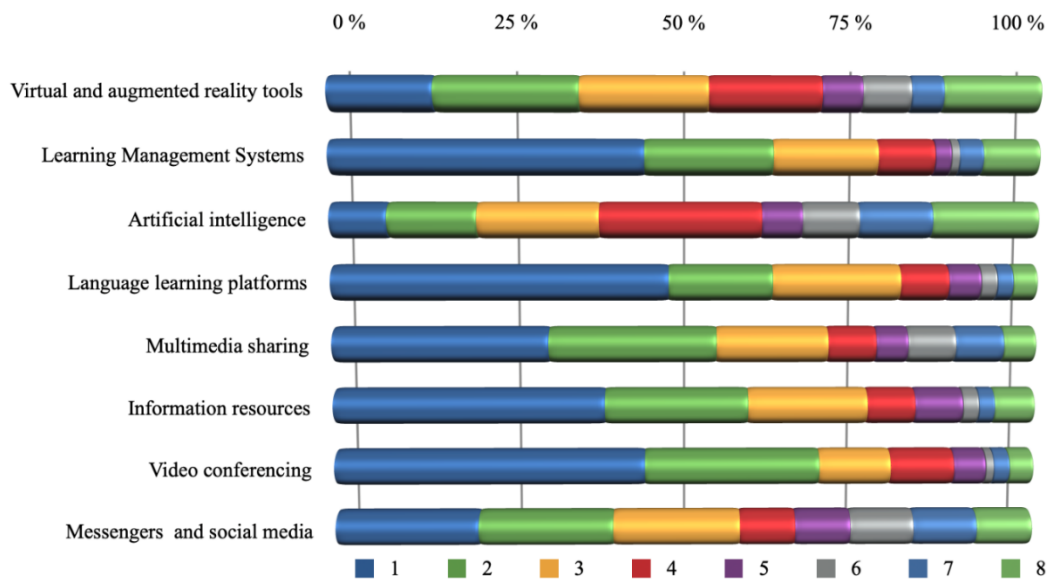
**Table 5.** Positive effects of applying ICT for language learning.

Technology in FLT	Number of respondents	Percentage of respondents
facilitates learning through different forms of multimedia (video, audio, text).	40	45.5
increases students’ motivation.	33	37.5
provides access to a vast array of resources.	29	33
offers flexibility in terms of learning anytime, anywhere, and on various devices.	23	26.1
enhances students’ real-life language skills.	19	21.6
enhances language learning through gamified experiences and interactive exercises.	17	19.3
empowers learners by promoting autonomy in the learning process.	14	15.9
saves teachers’ time in lesson preparation and administrative tasks.	14	15.9

The questionnaire included an inquiry concerning the possible negative effects that the use of technology in FL teaching might lead to. The respondents were offered a set of options to choose from. Notably, the choices that resonated most strongly with the participants were concerns regarding increased educator workload (43.1%), a surge in plagiarism (35.2%), potential health risks for students due to excessive screen time (30.7%), and deterioration of writing skills (25%). While these choices were in line

with our expectations, we drew an interesting conclusion: it became evident that, although some respondents may have chosen these options based on their personal and professional experience, others opted for those choices due to extensive discussions of these problems within educational circles. This highlights the fact that despite the broad discussions of these issues within educational spheres, not all practicing educators universally comprehend the implications.

When the respondents were asked to rank diverse groups of technologies on a scale of 1 to 8 in terms of their negative impact, the answers showcased a noticeable divergence, highlighting the absence of a singular viewpoint. The results are illustrated in Figure 3.



**Figure 3.** Results of e-tool ranking.

The electronic tools perceived as least threatening encompass those that are crucial to the educational process: learning management systems, language learning platforms, video conferencing, and information resources. For instance, 71 of the survey participants (88.8%) ranked language learning platforms such as Duolingo, Babbel, Rosetta Stone, italki, and Preply as tools with no or very insignificant negative influence. These tools help launch the learning process and can be controlled by the teacher in terms of content and organization; therefore, they are identified as less threatening.

On the contrary, tools that teachers have less experience with or that are outside of teachers' supervision were ranked as potentially threatening. To illustrate, 29 survey participants (33%) marked 6, 7, or 8 on the ranking scale AI tools, including content creation tools (e.g., Tweek, Cohesive), chatbots and virtual assistants (e.g., Siri, Alexa, Google Assistant), and AI-powered language translation services (e.g., Google Translate, DeepL). Nevertheless, we do not observe a unified position regarding e-tools' potential negative influence on the teaching process. Different levels of awareness of the listed technologies might explain this divergence in viewpoints.

More detailed answers were provided for the open-ended questions, in which the survey participants shared their viewpoints and insights regarding the utilization of digital technologies. Several respondents noted that it should be balanced and cautious.

Teachers mentioned the obligation to be alert about using digital technologies in class, to set specific pedagogical aims for applying these e-tools and to ensure they are achieved, to suggest a set of policies regulating the field, and to balance the use of modern and trusted teaching techniques rationally. Among the comments that teachers shared, there were statements like “I can do [that] with a pen and a book”, which proves that teachers do not see technology as a compulsory element of their classes.

Therefore, the results of the survey echo the findings of the literature analysis. The survey revealed that educators acknowledged that teaching FL in the digital age demands the use of digital tools and services. They understood that digital technologies are crucial for effectively managing the educational process. Despite a generally positive reaction to CALL, a significant number of survey participants raised concerns. However, there was no complete and comprehensive understanding of all the potential threats. While the teachers acknowledged the need for action against those threats, they did not directly identify them. This shows that educators are currently in the process of identifying strategies and approaches to address and mitigate threats.

#### **4. DISCUSSION**

Members of the wider professional community agree that technologies have become an integral part of language education. Technology-enhanced teaching has certain advantages because it provides access to authentic materials that are available in different formats, which gives learners more opportunities to practice and plan their learning trajectories in accordance with their personal preferences and circumstances.

However, there is an observable change from an extremely positive view of technology in the classroom to a more cautious one. We see several reasons behind this shift in attitude. First, extensive research has been conducted that allowed educators to shatter the imposed vision of technology as an ultimately effective tool. Second, the “meteoric expansion of computer technology” (Barson et al., 1993) revealed new challenges that educators were previously unaware of. Despite all the affordances, teachers have become more alert to the downsides, which are multiplied as the technologies become more sophisticated. The dramatically increased number of available resources and applications has made learning and teaching more challenging. In the 1990s, educators welcomed technologies as they assisted learners in doing additional practice outside the classroom. In contrast, modern researchers and practitioners are worried that students are overwhelmed by all the available options and might soon be buried under an avalanche of tools and resources if not properly advised and instructed.

A growing understanding of the potentials unlocked by technologies has also encouraged a shift in emphasis from computer technology itself to its applications. Educators view technology not as a superior methodological approach to language teaching but rather as a set of tools that should function in the service of a particular language curriculum. Teachers' roles are being transformed from one who is obliged to use ICT in the classroom to one who is aware of various available tools, who carefully selects the ones that are feasible for certain teaching situations, and who can assist students in the effective use of these applications or platforms. The whole paradigm of teaching seems to be being reshaped to help students master the knowledge and competencies needed for learning in the digital age.

## 5. CONCLUSION

This study aims to distinguish the prevailing attitudes regarding ICT implementation in a foreign language classroom. Having reviewed the publications of the two periods (1990–2000 and 2013–2023) and having surveyed FL colleagues, we could make some important conclusions.

Over the last decades, educators have witnessed a considerable increase in the use of computer equipment, the internet, and other computer-related tools for language learning. The range of activities in CALL continued to expand. The value of technology in education, however, has always been questioned. Researchers have been trying to conclude as to whether technology brings harm or benefit. Despite all the positive comments about the use of technology in the classroom, researchers have always been concerned. Such criticism is more clearly articulated in more recent research papers.

At present, language instructors have no choice but to integrate new technologies into the curriculum; it has become a given. Therefore, they are learning how to deal with them by analyzing their pedagogical value and contributions to the expected result. In general, the educators' attitude towards technology in FL education seems to have changed from "This is a helpful tool that will enhance learning" to "This is a tricky tool, and we should find a way to make it play on our side." We can observe this shift in research papers as well as in classrooms. As educators become more experienced with the application of e-tools in the classroom, they also become more vigilant about the hidden hazards of technology. Not only does it meet a specific education-oriented purpose, but it should also consider the safety of the participants.

Understanding the prevailing sentiments among educators is significant as this allows teachers to maintain a more objective and less biased perspective of emerging technologies. Consequently, instructors can make more informed decisions about the place of ICT in their classrooms and also justify their choices. Since the world of technology is fast-moving, we believe that more research should be done to allow teachers and students not only to foresee and respond to challenges posed by individual tools or applications but also to work out a pedagogically relevant CALL system which will help smoothly integrate technology into the classroom without overloading the teachers and learners.

Undoubtedly, this research has some limitations. The conclusions might be overgeneralized, as we can see; the use of technology depends considerably on the specific local context (e.g., under-resourced rural areas), specific target audience (e.g., students with certain learning disabilities), or policies of the educational institution. We could not consider all the aspects of each situation described and focused more on more general trends. Despite the stated limitations, we believe that the findings of this study might have significant implications for EFL teachers, as well as for other educators.

## REFERENCES

Barson, J., Frommer, J., & Schwartz, M. (1993). Foreign language learning using email in a task-oriented perspective: Interuniversity experiments in

- communication and collaboration. *Journal of Science Education and Technology*, 2, 565-584. <https://doi.org/10.1007/BF00695325>
- Basal, A. (2015). The implementation of a flipped classroom in foreign language teaching. *Turkish Online Journal of Distance Education*, 16(4), 28-37. <https://doi.org/10.17718/tojde.72185>
- Becker, H. J. (1998). Running to catch a moving train: Schools and information technologies. *Theory into Practice*, 37(1), 20-30. <https://doi.org/10.1080/00405849809543782>
- Bodnar, S., Cucchiarini, C., Strik, H., & van Hout, R. (2016). Evaluating the motivational impact of CALL systems: Current practices and future directions. *Computer Assisted Language Learning*, 29(1), 186-212. <https://doi.org/10.1080/09588221.2014.927365>
- Borrás, I., & Lafayette, R. C. (1994). Effects of multimedia courseware subtitling on the speaking performance of college students of French. *The Modern Language Journal*, 78(1), 61-75. <https://doi.org/10.2307/329253>
- Borthwick, A. C., Anderson, C. L., Finsness, E. S., & Foulger, T. S. (2015). Personal wearable technologies in education: Value or villain? *Journal of Digital Learning in Teacher Education*, 31(3), 85-92. <https://doi.org/10.1080/21532974.2015.1021982>
- Bump, J. (1990). Radical changes in class discussion using networked computers. *Computers and the Humanities*, 24, 49-65. <https://doi.org/10.1007/BF00115028>
- Burston, J. (2015). Twenty years of MALL project implementation: A meta-analysis of learning outcomes. *ReCALL*, 27(1), 4-20. <https://doi.org/10.1017/S0958344014000159>
- Chen, F. (2023). A ten-year bibliometric analysis of e-learning in English as a foreign language (EFL) context. *International Journal of Information and Communication Technology Education*, 19(1), 1-20. <https://doi.org/10.4018/IJICTE.327359>
- Chu, H. C. (2014). Potential negative effects of mobile learning on students' learning achievement and cognitive load – A format assessment perspective. *Journal of Educational Technology & Society*, 17(1), 332-344. <https://www.jstor.org/stable/jeductechsoci.17.1.332>
- Chun, D., Kern, R., & Smith, B. (2016). Technology in language use, language teaching, and language learning. *The Modern Language Journal*, 100(S1), 64-80. <https://doi.org/10.1111/modl.12302>
- Coniam, D. (1998). The use of speech recognition software as an English language oral assessment instrument: An exploratory study. *CALICO Journal*, 15(4), 7-23. <https://www.jstor.org/stable/24147601>
- Davies, G. (2001). New technologies and language learning: A suitable subject for research? In A. Chambers & G. Davies (Eds.), *ICT and language learning: A European perspective* (pp. 13-24). Swets & Zeitlinger Publishers.
- Derwing, T. M., Munro, M. J., & Carbonaro, M. (2000). Does popular speech recognition software work with ESL speech? *TESOL Quarterly*, 34(3), 592-603. <https://doi.org/10.2307/3587748>
- Djiwandono, P. I. (2019). How language teachers perceive information and communication technology. *Indonesian Journal of Applied Linguistics*, 8(3), 607-615. <https://doi.org/10.17509/ijal.v8i3.15260>



- Fombona, J., Pascual, M. A., & Pérez Ferra, M. (2020). Analysis of the educational impact of M-learning and related scientific research. *Journal of New Approaches in Educational Research*, 9(2), 167-180. <https://doi.org/10.7821/naer.2020.7.470>
- Garrett, N. (1991). Technology in the service of language learning: Trends and issues. *The Modern Language Journal*, 75(1), 74-101. <https://doi.org/10.2307/329836>
- Gillespie, J., & McKee, J. (1999). Resistance to CALL: Degrees of student reluctance to use CALL and ICT. *ReCALL*, 11(1), 38-46. <https://doi.org/10.1017/S095834400000207X>
- Goodfellow, R., Jefferys, I., Milest, T., & Shirra, T. (1996). Face-to-face language learning at a distance? A study of a videoconference try-out. *ReCALL*, 8(2), 5-16. <https://doi.org/10.1017/S0958344000003530>
- Henderson, M., Selwyn, N., & Aston, R. (2017). What works and why? Student perceptions of ‘useful’ digital technology in university teaching and learning. *Studies in Higher Education*, 42(8), 1567-1579. <https://doi.org/10.1080/03075079.2015.1007946>
- Hyland, K. (1993). ESL computer writers: What can we do to help? *System*, 21(1), 21-30. [https://doi.org/10.1016/0346-251X\(93\)90004-Z](https://doi.org/10.1016/0346-251X(93)90004-Z)
- Izadpanah, S., & Alavi, M. (2016). The perception of EFL high school students in using of computer technology in the process of learning: Merits and demerits. *Advances in Language and Literary Studies*, 7(3), 146-156. <http://dx.doi.org/10.7575/aiac.all.s.v.7n.3p.146>
- Jabbari, N., & Eslami, Z. R. (2019). Second language learning in the context of massively multiplayer online games: A scoping review. *ReCALL*, 31(1), 92-113. <https://doi.org/10.1017/S0958344018000058>
- Kadiyala, M., & Crynes, B. L. (1998). Where’s the proof? A review of literature on effectiveness of information technology in education. In *FIE 28<sup>th</sup> Annual Frontiers in Education Conference. Moving from ‘Teacher-Centered’ to ‘Learner-Centered’ Education. Conference Proceedings* (pp. 33-37). IEEE Xplore. <https://doi.org/10.1109/FIE.1998.736797>
- King, M. R. (2023). A conversation on Artificial Intelligence, chatbots, and plagiarism in higher education. *Cellular and Molecular Bioengineering*, 16, 1-2. <https://doi.org/10.1007/s12195-022-00754-8>
- Kirkwood, A., & Price, L. (2013). Examining some assumptions and limitations of research on the effects of emerging technologies for teaching and learning in higher education. *British Journal of Educational Technology*, 44(4), 536-543. <https://doi.org/10.1111/bjet.12049>
- Kuure, L., Molin-Juustila, T., Keisanen, T., Riekk, M., Iivari, N., & Kinnula, M. (2016). Switching perspectives: From a language teacher to a designer of language learning with new technologies. *Computer Assisted Language Learning*, 29(1), 925-941. <https://doi.org/10.1080/09588221.2015.1068815>
- Lacka, E., & Wong, T. C. (2021). Examining the impact of digital technologies on students’ higher education outcomes: The case of the virtual learning environment and social media. *Studies in Higher Education*, 46(8), 1621-1634. <https://doi.org/10.1080/03075079.2019.1698533>
- Liaw, M. L. (1998). Using electronic mail for English as a foreign language instruction. *System*, 26(3), 335-351. [https://doi.org/10.1016/S0346-251X\(98\)00025-6](https://doi.org/10.1016/S0346-251X(98)00025-6)

- Liu, G. Z., Lu, H. C., & Lai, C. T. (2016). Towards the construction of a field: The developments and implications of mobile assisted language learning (MALL). *Digital Scholarship in the Humanities*, 31(1), 164-180. <https://doi.org/10.1093/llc/fqu070>
- 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. <https://doi.org/10.1080/15391523.2002.10782348>
- Loewen, S., Crowther, D., Isbell, D. R., Kim, K. M., Maloney, J., Miller, Z. F., & Rawal, H. (2019). Mobile-assisted language learning: A Duolingo case study. *ReCALL*, 31(3), 293-311. <https://doi.org/10.1017/S0958344019000065>
- Mike, D. G. (1996). Internet in the schools: A literacy perspective. *Journal of Adolescent & Adult Literacy*, 40(1), 4-13. <https://www.jstor.org/stable/40012106>
- Moore, Z., Morales, B., & Carel, S. (1998). Technology and teaching culture: Results of a state survey of foreign language teachers. *CALICO Journal*, 15(1/3), 109-128. <https://doi.org/10.1558/cj.v15i1-3.109-128>
- Nelson, T., & Oliver, W. (2000). Murder on the Internet. *CALICO Journal*, 17(1), 101-114. <https://doi.org/10.1558/cj.v17i1.101-114>
- Nutta, J. (1999). Is computer-based grammar instruction as effective as teacher-directed grammar instruction for teaching L2 structures? *CALICO Journal*, 16(1), 49-62. <https://doi.org/10.1558/cj.v16i1.49-62>
- Pham, H. T. P. (2022). Computer-mediated and face-to-face peer feedback: Student feedback and revision in EFL writing. *Computer Assisted Language Learning*, 35(9), 2112-2147. <https://doi.org/10.1080/09588221.2020.1868530>
- Presti, M. V. L. (2020). Second language distance learning: The issue of language certification in the time of COVID-19. *European Journal of Education*, 3(2), 1-16. <https://doi.org/10.26417/755hnh40a>
- Qureshi, M. I., Khan, N., Raza, H., Imran, A., & Ismail, F. (2021). Digital technologies in education 4.0. Does it enhance the effectiveness of learning? A systematic literature review. *International Journal of Interactive Mobile Technologies*, 15(4), 31-47. <https://doi.org/10.3991/ijim.v15i04.20291>
- Radianti, J., Majchrzak, T. A., Fromm, J., & Wohlgenannt, I. (2020). A systematic review of immersive virtual reality applications for higher education: Design elements, lessons learned, and research agenda. *Computers & Education*, 147, 103778. <https://doi.org/10.1016/j.compedu.2019.103778>
- Rogers, P. L. (2000). Barriers to adopting emerging technologies in education. *Journal of Educational Computing Research*, 22(4), 455-472. <http://dx.doi.org/10.2190/4UJE-B6VW-A30N-MCE5>
- Rogerson-Revell, P. M. (2021). Computer-assisted pronunciation training (CAPT): Current issues and future directions. *RELC Journal*, 52(1), 189-205. <https://doi.org/10.1177/0033688220977406>
- Rong, Q., Lian, Q., & Tang, T. (2022). Research on the influence of AI and VR technology for students' concentration and creativity. *Frontiers in Psychology*, 13, 767689. <https://doi.org/10.3389/fpsyg.2022.767689>
- Rüschhoff, B. (1992). Language learning and information technology: State of the art. *CALICO Journal*, 10(3), 5-17. <https://doi.org/10.1558/cj.v10i3.5-17>

- Şad, S. N., & Göktaş, Ö. (2014). Preservice teachers' perceptions about using mobile phones and laptops in education as mobile learning tools. *British Journal of Educational Technology*, 45(4), 606-618. <https://doi.org/10.1111/bjet.12064>
- Sadler-Smith, E., Down, S., & Lean, J. (2000). "Modern" learning methods: Rhetoric and reality. *Personnel Review*, 29(4), 474-490. <https://doi.org/10.1108/00483480010296285>
- Saylan, E., Kokoç, M., & Tatli, Z. (2023). A systematic review of empirical studies on computer-assisted language learning. *Waikato Journal of Education*, 28(1), 89-107. <https://doi.org/10.15663/wje.v28i1.1091>
- Schmidt, T., & Strasser, T. (2022). Artificial intelligence in foreign language learning and teaching: A CALL for intelligent practice. *Anglistik: International Journal of English Studies*, 33(1), 165-184. <https://doi.org/10.33675/ANGL/2022/1/14>
- Selwyn, N. (2000). Researching computers and education – glimpses of the wider picture. *Computers & Education*, 34(2), 93-101. [https://doi.org/10.1016/S0360-1315\(00\)00006-3](https://doi.org/10.1016/S0360-1315(00)00006-3)
- Shadiev, R., Liu, T., & Hwang, W. Y. (2020). Review of research on mobile-assisted language learning in familiar, authentic environments. *British Journal of Educational Technology*, 51(3), 709-720. <https://doi.org/10.1111/bjet.12839>
- Shortt, M., Tilak, S., Kuznetcova, I., Martens, B., & Akinkuolie, B. (2023). Gamification in mobile-assisted language learning: A systematic review of Duolingo literature from public release of 2012 to early 2020. *Computer Assisted Language Learning*, 36(3), 517-554. <https://doi.org/10.1080/09588221.2021.1933540>
- Spitzer, M. (2014). Information technology in education: Risks and side effects. *Trends in Neuroscience and Education*, 3(3-4), 81-85. <https://doi.org/10.1016/j.tine.2014.09.002>
- Steel, C. H., & Levy, M. (2013). Language students and their technologies: Charting the evolution 2006–2011. *ReCALL*, 25(3), 306-320. <https://doi.org/10.1017/S0958344013000128>
- Stevenson, I. (2008). Tool, tutor, environment, or resource: Exploring metaphors for digital technology and pedagogy using activity theory. *Computers & Education*, 51(2), 836-853. <https://doi.org/10.1016/j.compedu.2007.09.001>
- Stoks, G. (1993). Integrating new technologies into the modern languages curriculum. *CALICO Journal*, 11(1), 76-93. <https://doi.org/10.1558/cj.v11i1.76-93>
- Sullivan, N. B., & Bhattacharya, K. (2017). Twenty years of technology integration and foreign language teaching: A phenomenological reflective interview study. *The Qualitative Report*, 22(3), 757-778. <https://doi.org/10.46743/2160-3715/2017.2500>
- Weng, X., & Chiu, T. K. (2023). Instructional design and learning outcomes of intelligent computer assisted language learning: Systematic review in the field. *Computers and Education: Artificial Intelligence*, 4, 100117. <https://doi.org/10.1016/j.caeai.2022.100117>
- Wrigley, H. S. (1993). Technology and the language classroom. Ways of using technology in language and literacy teaching. *TESOL Quarterly*, 27(2), 318-322. <https://doi.org/10.2307/3587153>
- Wu, J. G., Zhang, D., & Lee, S. M. (2023). Into the brave new Metaverse: Envisaging future language teaching and learning. *IEEE Transactions on Learning Technologies*, 17, 44-53. <https://doi.org/10.1109/TLT.2023.3259470>

Yu, A., & Trainin, G. (2022). A meta-analysis examining technology-assisted L2 vocabulary learning. *ReCALL*, 34(2), 235-252.  
<https://doi.org/10.1017/S0958344021000239>