

Innovating Language Instruction for Teachers: The Integration of Computer-Assisted Learning and Online Platforms

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ABSTRACT

This research study aimed to find out the efficacy of Computer-Assisted Learning (CAL) and internet websites have making it possible for teachers and students to enhance their language capabilities effectively. This study looks into the demographic details of the teachers under consideration, observing specifically that most of the respondents are between 40 and 49 years old, have a 1–5-year teaching duration, and have a fair degree of exposure and competence. Though quite a few advanced users in the study possessed advanced skills, they reported gaps in their professional development and training, which stifled their potential to improve as technology-enhanced teachers. It is mainly Google Classroom and Zoom that teachers utilize when conducting language lessons, as these apps are effective and convenient. Nevertheless, issues like low digital literacy and a lack of children's technology limit the potential of these tools. Many teachers note the mechanisms of CAL and the use of different online platforms as attention grabbers for students, enabling them to learn languages more efficiently and develop them with the help of graphics, playing games, and doing it at their own pace. However, language teaching with the help of computers is a complex process, and therefore, schools should make sure that all facilities are available, and hence all staff and learners know how to operate the internet and the computers, plus further training is available when needed. The mentioned and numerous other changes suggest that CAL can be utilized for the enhancement of language learning and connectivity.

Keywords: Computer-Assisted Learning, Online Platforms, Language Instruction, Digital Infrastructure, Technology Integration.

INTRODUCTION

There has been increased incorporation of technology into language instruction over the years, driven by the proliferation of digital tools and platforms. This move towards digital and hybrid education has increased the sense of technology as primary and not supplementary, and as an innovative tool that supports intelligent pedagogy. It is unwilling to consider the learners' or, in this instance, the users' requirements, as so much is integrated into a global classroom nowadays. The perspective emphasizes the role of technology in language education as something that not only responds to changes in the global educational landscape but also addresses issues such as engagement, access, and differentiated instruction. (Meniado, 2023)

Conversely, the notion of Computer-Assisted Language Learning (CALL) experienced the growth of usage and extremely dynamic development. In recent times, CALL systems have been enhanced and, in retaliation, are providing intelligent tutor learning e-learning systems

based on AI and multimedia components, assisting to satisfy the needs and varying degrees of skills of learners.

These systems, therefore, automatically optimize learning by performing exercises that involve interactive aspects with new features, which offer real-time feedback in context. These activities are an addition to the conventional approaches to teaching. Computer-assisted language learning (CALL) applications enable self-guided learning to be easier so that those language elements can be practiced in a controlled environment with timely feedback, and student self-exploration of new languages would be more effective (Son et al., 2023). Besides, studies have also richly established that CALL instruments have many benefits in terms of entrenching pronunciation, vocabulary, and grammar, which are fundamental elements of language.

Another significant impact that online self-study platforms have had on contemporary language education is their growth and expansion. It has brought about an unparalleled demand for language classes using programs such as Rosetta Stone, Mondly, LMS, and other learning technologies. Gamification, real-time communication, and the capacity to collaborate with others are only a few of the possibilities that these platforms have, which make the interactive learning more robust. Indicatively, virtual introductions allow the learners to communicate with native speakers, participate in forums, and develop projects using numerous original language resources that can be found over the internet. This positive experience with the language helps to acquire the necessary communicative and shortcut skills, which are needed to work in both formal conditions (Barrot, 2021). Besides that, the growing trust of users in these sites and their comfort level enable them to apply them at any level of user location or economic and cultural determinants (Vassilakopoulou, Hustad, 2023).

The uses of language instruction technology have advantages and disadvantages. The success or failure of technological integration depends on numerous factors, including the teaching staff's technological skills and readiness, the level of organizational support, and other factors. Technology has the power to boost and, according to Fallon (2020), keep students concentrated in the learning process and not distracted. This means that there will be cases of teachers who need to be trained on how to use such tools appropriately. The current digital divide is a concern, especially in the marginalized regions where the communities are restricted by the price of a stable internet connection or more sophisticated and lower-priced gadgets. However, such imbalances should be considered so that all learners can be involved in language education without being limited by societal constraints on the opportunities offered. (Buttler et al., 2024). Nonetheless, the teaching of complex skills, including discourse analysis (a skill that involves more than grammar and linguistic properties, including translation at the native-language level), might be enhanced by pragmatics or intercultural communicative technology. However, this influences, to a certain degree, the counselling that can be provided by a human educator, who can clarify not only the intangible factors but also the cultural context. (Meniado, 2024).

This research paper shall focus on recent technological developments and issues in the CAL field and on the impact of the internet, as these tools are deemed essential to integrating technology into language learning. The proposed research aims to determine the effects of such technologies on language skills development and student engagement and to assess their

applicability to the educational process, to develop fundamental principles of healthy technology-based learning. It will summarize the weaknesses and adverse features of the phenomenon of digital overload and prescribe measures to provide a multifaceted and sustainable approach to the process of acquiring language. Given the unpredictability of the technology landscape and the growing interdependence between technology and language learning, teachers should recognize the importance of knowing how to use these tools effectively and implement them as interventions for students.

Statement of the Problem

This study aims to explore the integration of computer-assisted learning (CAL) and online platforms in language instruction for teachers. Specifically, it seeks to address the following questions:

1. What are the demographic profiles of the teacher participants in terms of:
 - 1.1. Age
 - 1.2. Gender
 - 1.3. Years of teaching experience
 - 1.4. Level of education
 - 1.5. Level of familiarity with digital tools
2. How do teachers currently integrate computer-assisted learning and online platforms in their language instruction?
3. What are the perceived challenges and benefits of integrating computer-assisted learning and online platforms in language instruction for teachers?
4. How does the integration of computer-assisted learning and online platforms impact the language proficiency and engagement of students?
5. What best practices can be derived from the integration of computer-assisted learning and online platforms for language instruction, based on teachers' experiences and feedback?

Scope and Delimitations

The research problem concerns the incorporation of Computer-Assisted Learning (CAL) and online tools in the context of language teaching, and a mixed-methods research design will be adopted. It consists of thirty (30) teacher-respondents chosen with the help of convenience sampling and will take part in an online survey and written interviews using Google Forms within a thirty-day interval. The scope includes evaluating the demographic profiles of the teachers, their existing approaches to integrating digital tools, and defining best practices, using statistical tools such as frequency distributions and weighted means to analyze qualitative data through thematic analysis.

The study, however, is limited to the perceptions and self-reports of these sampled educators and does not involve the actual evaluation of students' performance or even standardized test scores. Therefore, the effect of engagement and proficiency in students is obtained only by observation of teachers and not through objective data of students. Moreover, the research is limited to language teaching and does not extend to the broader population of teachers who lack internet access or are unavailable due to the unavailability of online data collection.

Review of Related Literature

The application of gamification in education, namely in mathematics courses, has emerged as a prominent field of study in recent years. Abramovich and Schunn (2019) investigated the impact of integrating gamification on student engagement and learning outcomes. They found that incorporating gamified aspects into classes led to significant improvements in student participation and comprehension. Brull and Finlayson (2020) did a qualitative investigation that demonstrated the positive impact of gamified learning environments on students' intrinsic motivation and their ability to comprehend mathematical ideas at a deeper level.

Computer-Assisted Language Learning

The recent literature on Computer-Assisted Language Learning (CALL) has underpinned the revolutionary role of the methodology in enhancing the teaching and learning of English and learners' proficiency. The article by Kafryawan (2023) investigated the suitability of smartphone-based CALL applications for improving English proficiency among Papuan EFL students. The results showed that language performance increased significantly (38.7 percent) following the incorporation of mobile CALL tools, with attention focusing on the flexibility and accessibility and rich multimedia aspects that facilitated auditory and visual learning. The study, however, found that the limitation of connection and the use of gadgets could not stop CALL from transforming learning in remote locations when used appropriately (Kafryawan, 2023).

In the same way, Lai, Do, and Le (2022) reviewed the role of CALL in teaching and learning writing extensively, summarizing the results of sixteen studies. According to their analysis, CALL vastly improved the writing accuracy, fluency, and self-confidence of students, especially via interactive feedback systems and web platforms for writing. CALL empowered learners and allowed them to be creative, which provided a more engaging atmosphere that encouraged students to sharpen their writing abilities in and out of the classroom. Nevertheless, the researchers also stated that there were still persistent challenges, such as the technological disparities and the necessity of appropriate teacher training that would allow managing CALL-based learning (Lai, Do, and Le, 2022).

Further elaborating on this, Luo (2024) highlighted the interactive and adaptive features of CALL systems, which are transforming conventional classrooms into digital, active learning environments. The paper has demonstrated that multimedia tools (video, simulation) and speech-recognition technologies were not only able to improve understanding but also to support individual learning, adjusted to the student's pace and style. These adaptation elements were observed to make a big difference in the motivation and cognitive involvement that resulted in the accelerated language learning. Nevertheless, Luo also mentioned that proper institutional support, data security policies, and continuous professional development of teachers are among the prerequisites of the full potential of CALL (Luo, 2024).

Lolita, Boeriswati, and Lustyantje (2020) also considered the role of CALL in the acquisition of vocabulary in junior high school students. Their results revealed that interactive characteristics of CALL, such as visual aids, animations, and sound feedback, had a significant influence on vocabulary retention and understanding of students. The research paper highlighted that this mixture of technology and interaction between the learners made the environment look more realistic and made the students interested in the information they learned. They continue to say that CALL allows finding the middle ground between exploration

and instruction, and it can be used as a valid supplement to traditional teaching methods (Lolita, Boeriswati, and Lustyantia, 2020).

To this literature base, Anjum, Ghafar, and Raad (2025) also examined the use of CALL in ESL classrooms in India, with the perception and engagement of the students in question. The findings indicated that CALL increased motivation and pleasure and improved language performance, especially in reading and listening skills. Nevertheless, the infrastructural challenges that included unstable internet connectivity, teachers' inadequate digital literacy, and low access to devices were observed to undermine its full implementation. The authors emphasized that, through sufficient institutional investment and capacity-building efforts, CALL would serve as an effective facilitator of inclusive language education (Anjum, Ghafar, and Raad, 2025).

Online Learning Platform Utilization

Online learning platforms have transformed the way language is learned and taught in learning institutions. Ramadania (2021) analyzed students' perceptions of Learning Management Systems (LMSs), including Google Classroom, Moodle, and Edmodo, during the COVID-19 pandemic. This research study resulted in the discovery that these platforms were considered by learners to be easy to utilize and very effective in learning the English language because of features such as discussion forums, quizzes, and interactive tasks. The availability of these systems was an excellent thing for the students, as it enabled them to deliver assignments, communicate with their tutors, and get feedback in time regardless of location. This availability created a good learning attitude, and online learning about a language was more organized and centered on the student (Ramadania, 2021).

The study by Prasetya and Syarif (2023) involved the comparison of Moodle and Google Classroom mobile applications to examine the attitude of learners and their issues in mobile learning of languages. They have discovered that Google Classroom was considered simpler to use and easier to use on smartphones, whereas Moodle possessed a greater array of interactive features, including forums and assessments. The two platforms improved communication, motivation, and collaboration, where students could acquire language proficiency beyond the classroom environment. Nevertheless, the authors also brought up the technical issues, such as a lack of storage and interface complexity, and highlighted the necessity of platform design aligned to user interests to facilitate interactions and performance (Prasetya & Syarif, 2023).

Luo et al. (2024) investigated the use of Moodle as an open-source educational system for language instruction. The researchers discovered that the integration of multimedia content, interactive learning through structured content delivery, and collaborative tools in Moodle improved student engagement and learning. Asynchronous discussions, multimedia resources, and customized learning paths were of particular use, as they were effective in serving the needs of diverse learners. Although technically challenging and slow at the start of learning, flexibility and inclusiveness in Moodle have made it an invaluable resource to facilitate equitable teaching and learning of languages online. The study has also stressed that Moodle training of teachers and sustaining support are the keys to its success in order to achieve the maximum in terms of the pedagogical potential (Luo et al., 2024).

Elmotri et al. (2025) conducted a comparative analysis of Duolingo and Oxford English Coach to assess effectiveness, user satisfaction, and learning outcomes. The results indicated

that both platforms enhanced users' language proficiency levels, albeit in different ways: Duolingo, a gamified learning platform, increased motivation and engagement, while Oxford English Coach provided a more systematic, curriculum-based learning process. Users favored Duolingo for its affordability and user-friendly interface, which made it a choice for studying at their own pace, whereas teachers liked Oxford English Coach for the material presented and the feedback provided. The researchers came to the conclusion that by incorporating both gameful and formal features, it is possible to achieve an appropriate and effective online learning process (Elmotri et al., 2025).

Further, Pikhart, Klimova, and Al-Obaydi (2024) examined university students' satisfaction with digital platforms such as Duolingo, ChatGPT, and Google Translate regarding the language-learning experience. They found out that these tools were valued in vocabulary acquisition, comprehension, and interaction by students. The article has highlighted that, in addition to enhancing linguistic competence, digital resources facilitated learner autonomy and confidence in communication. However, difficulties such as internet addiction and inconsistent content quality were also noted, which is why continuous improvement of online learning technologies is important to ensure their accessibility and pedagogical suitability (Pikhart, Klimova, and Al-Obaydi, 2024).

Teacher Training and Digital Competence

Teacher training and digital competence have dominated educational innovation, especially as technology continues to revolutionize the teaching and learning environment. Rubio-Gragera, Cabero-Almenara, and Palacios-Rodríguez (2023) evaluated teachers' digital skills in Andalusia, Spain, using the DigCompEdu model. The research found that, despite the large number of teachers with moderate ICT experience, their confidence and competence in using digital tools in pedagogy were low. Notably, the results highlighted that the experience of teaching was not a one-to-one correlation with high levels of digital proficiency, indicating that there was a need to have systematic professional development interventions to improve digital pedagogy. The authors offered recommendations on the methods to incorporate digital competence into teacher training and emphasized the necessity of training beyond the technical framework to the pedagogical use (Rubio-Gragera, Cabero-Almenara, and Palacios-Rodríguez, 2023).

Elsewhere, Hernandez-Selles and Massigoge-Galbis (2024) also analyzed the effects of massive teacher training in Ecuador under the ProFuturo program. The study, which was conducted in 2022, involved over 3,500 teachers to evaluate the effectiveness of digital training based on an open model of professional development. Findings showed that there were tremendous changes in the level of digital competence in teachers and a positive transfer of these competencies to the classroom practices. The participants said that they felt more confident when utilizing technology in lessons and assessments. The authors inferred that regular and scalable professional development programs sustained by government and other partnerships are essential to the development of sustainable teacher digital competence, particularly in emerging educational environments (Hernández-Sellés & Massigoge-Galbis, 2024).

Equally, Ivanov et al. (2025) examined the impact of the COVID-19 pandemic on teachers' digital competencies in Serbia. The longitudinal study, conducted between 2019 and 2023, showed that the pandemic significantly increased teachers' digital literacy. The teachers claimed that their interaction with hardware, software, and Internet-based teaching resources made a significant advancement and that their interaction with technological resources became

more educational rather than entertainment-oriented. The study stressed that digital adaptation grew faster due to the pandemic, but sustainable professional development and institutional assistance were key to long-term digital growth. The authors of the research recommended addressing digital capabilities in the curriculum of teacher education and the national education policy to be ready for any technological changes in the future (Ivanov et al., 2025).

Teaching Effectiveness

The studies have demonstrated that the incorporation of digital technologies into language teaching has a profoundly positive impact on overall teaching performance, as it can increase clarity in instruction and provide more timely and precise feedback. Digital learning tools assist teachers in developing learners' reading, writing, speaking, and listening skills and simplify the delivery of feedback, making the instructional process easier and more understandable. It implies that teaching in a CALL-based, technology-supported environment enables teachers to provide more direct explanations and structured lessons (Asad et al., 2022).

Another research article emphasizes that teacher-student interaction in the online learning setting is a crucial aspect for enhancing student engagement and perceived teaching effectiveness. Learners note increased motivation and engagement when teachers use interactive learning mechanisms such as discussion boards, real-time feedback tools, and a regular online presence. These results show that online platforms may reinforce the instructional provision process by facilitating engagement and more effective communication (Ong & Quek, 2023).

According to a systematic review carried out during the pandemic, online education proves to be as effective as face-to-face learning under the condition of the lesson being properly structured and with the use of interactive learning components. A strict content structure, teacher facilitation, and the digital feedback system help enhance learners' performance and engagement. It supports the idea that clarity and student interaction are essential for effective teaching in digital environments (Meng et al., 2023).

Student Language Proficiency

Recent meta-analytical findings have also shown that technology-mediated second language (L2) interaction in online learning enhances learners' reading, writing, speaking, and listening abilities compared to traditional learning. Analysis showed that 30 empirical studies had a positive impact on all four language competencies, with a significant increase in speaking and listening in particular. As observed by the researchers, when it comes to language development in online settings, interactive communication (i.e. live discussion, real-time chat) can have greater effects than asynchronous ones, so it can be inferred that interaction should be prioritised as a way of studying language in a digital setting (Eslit, 2023).

In another empirical study, the use of one of the most popular language-learning applications over 3 months was evaluated, and it was found that learners demonstrated statistically significant receptive (reading, listening) and productive skills, including vocabulary, grammar, and pronunciation. The authors concluded that overall language progress is significantly correlated with consistent app use, as measured by session completions and accuracy, supporting the notion that app-based CALL tools will be helpful for complete language development (Smith, Jiang, and Peters, 2024).

Recent research on the effects of extensive, frequent listening practice through technology-based listening programs reported significant improvements in listening skills in the foreign language. The study also noted that listening gains led to indirect gains in greater language competence, driven by enhanced self-regulated learning and critical thinking abilities. These results indicate that technology-enhanced listening training is a powerful means of enhancing not only listening comprehension but also overall language proficiency (Yi, Li, Zhang, and Shadiey, 2024).

Theoretical Framework

Technological Pedagogical Content Knowledge (TPACK) is a conceptual framework that can be employed to examine how the teacher participants combine the computer-assisted learning and computer-mediated platforms in their language teaching. This model argues that successful integration of technology must follow the convergence of three knowledge domains, which include technology, pedagogy, and content. This study used TPACK to assess teachers' knowledge of digital tools (RQ 1.5) and their current integration of these platforms (RQ 2). It is used as a prism to determine whether educators are only exploiting technology because they are required to or they are successfully integrating their understanding of language teaching (content) and digital tools to improve teaching (RQ 5).

The Technology Acceptance Model (TAM) is a theory that can be applied to examine the perceived difficulties and advantages (RQ 3) of CAL and online platform integration by the teachers. TAM, created by Fred Davis, proposes two key variables at work in the persuasion of an individual to utilize technology: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). This framework will be used in the context of your study to understand qualitative information about whether teachers consider online platforms as useful in teaching languages (Usefulness) or whether technical challenges and complicated interfaces are the barriers to their use (Ease of Use).

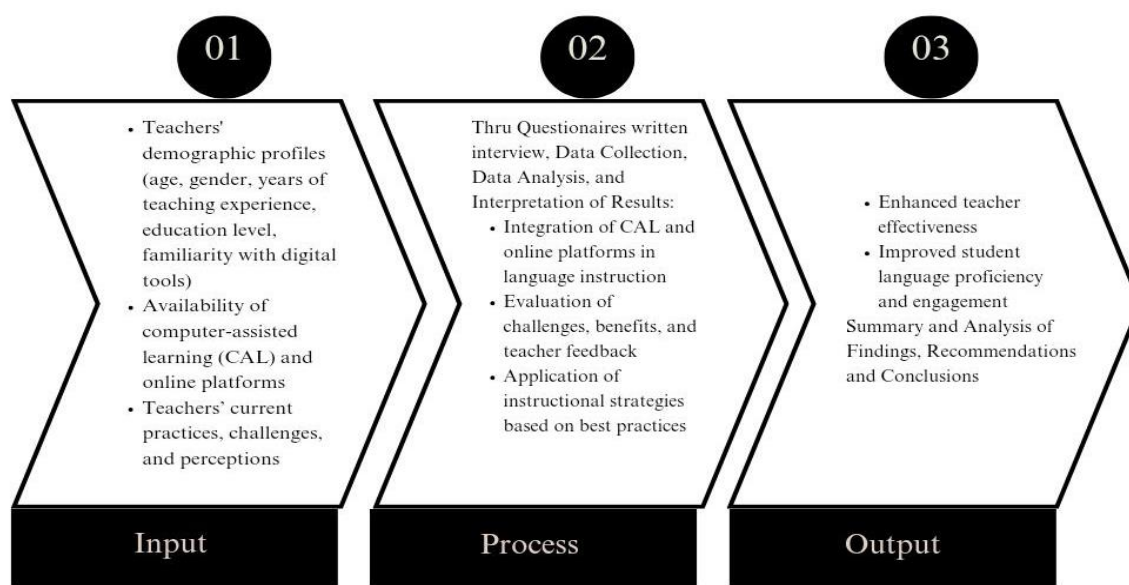
Social Constructivism Theory is a theoretical approach that can be applied to reveal how computer-assisted learning affects students' engagement and language proficiency (RQ 4). This theory is based on the work by Lev Vygotsky, which states that learning a language is essentially a social activity and therefore enhanced through interaction and scaffolding. This model plays a fundamental role in discussing the impact online platforms have on collaborative learning, peer-to-peer, and online communication, thus establishing whether these digital tools are effective in facilitating the social aspect of learning a language in comparison to conventional education.

Conceptual Framework

The conceptual framework of this study attempts to look at the relationship between age, gender, years of experience, and the level of teachers' digital literacy through the use and inclusion of computer-assisted learning (CAL) and online tools in the language teaching methodology. The effectiveness of teachers in accepting and adopting these technologies is an important part of the overall understanding of the wider aspects of language instruction. Xie et al. (2020) add, however, that teachers who are familiar with digital tools and possess favorable attitudes towards technology are more likely to adopt the CAL technique in their active learning

practices, which increases the involvement of students. As there are different pieces of research evaluating the perception of teachers towards challenges and benefits posed by technology integration, this one intends to find some strategies for effective integration of technology into the classroom

Figure 1: Integration of Computer-Assisted Learning (CAL) and Online Platforms in Language Instruction



Among the anticipated benefits of this framework are the increased effectiveness of teachers, better language skills, and the involvement of students in the lessons. Recent studies have documented a significant positive effect of CAL in blended mode with the web on the achievement of language goals. For instance, Alotaibi (2021) argues that students who worked with CAL tools for language learning were more involved and performed better than those who were taught through conventional methods. This brings out the promise of CAL in improving language teaching by incorporating more interactivity in the lessons. Finding and disseminating the best approaches based on teacher practice will also serve to refine these more effective language teaching tools.

METHODOLOGY

This method study is to explore the integration of computer-assisted learning (CAL) and online platforms in language instruction for teachers.

Research Design

The research methodology used in this study is a mixed-methods approach, which combines qualitative and quantitative methods to develop an in-depth understanding of how teachers utilize computer-assisted learning (CAL) and other online tools in their language classes. The quantitative part will involve the collection of data regarding the demographic profile and practices of the subjects in terms of the number, whereas the qualitative part will involve the collection of data on the experience of the teachers in terms of the challenges and the opportunities as well as the best practices. Mixed

methods in a single research design are typical of educational research because they are beneficial, as they have the advantage of triangulation and, consequently, a more comprehensive view of the specific research issue (Creswell, 2019); in this instance, the use of CAL.

The study's quantitative data will be collected via online questionnaires. Such questionnaires will aim to get information that will define the traits of the teachers concerning the use of CAL and online materials. The qualitative part will include the interviews, which are open-ended and written to allow the teachers to investigate the larger picture of the applicability and issues of the tools in language teaching. In this manner, both statistical trends and the words of the interviewees are significant characteristics of the research, which makes it possible to draw conclusions (Johnson & Onwuezbizie, 2020).

Research Steps

The study will mainly depend on primary data collected from 30 teachers who are actively involved in the delivery of language classes and, in the process, integrate CAL and also the use of online platforms in their teaching practices. For the purpose of reducing inconvenience and time wastage, an online survey through Google Forms will be administered in order to collect the data required. The survey includes simple closed questions designed to provide quantitative data, along with some open-ended questions to facilitate the collection of qualitative data. In accordance with the principles of convenience sampling, the respondents will be provided on the basis of their availability and willingness to participate in the study (Etikan et al., 2019). This sampling strategy is viable to reach busy educators, thereby ensuring a respectable rate of response within the study period.

Also, follow-up written interviews will be employed to supplement the survey data in detail. The study subjects will be required to answer the questions in written form to help them consolidate the experiences that they are supposed to narrate. Since the study uses both surveys and interviews, it is possible to gain an even fuller understanding of the essential issues in the study, which will help to increase the confidence and relevance of the associated outcomes of the studies.

Data Collection and Sample Selection

In this study, the data was collected in thirty days with the use of an online survey using Google Forms. This phase will see the participants taking their time to fill out their surveys at their convenience during the study period. The researchers chose an online survey, which affords the flexibility to respond to the survey whenever the teacher feels the need, as they may have more urgent business (Groves et al., 2020). On the twelfth day, a progress reminder will be sent to the respondents to ensure a satisfactory response rate.

The respondents to the survey were surveyed with both closed-ended and open-ended questions. The closed-ended questions will provide quantitative data about the demographics of teachers and their daily experiences with the implementation of CAL, as well as insights from other online sources; in contrast, the broad open-ended questions will allow practicing teachers to share their experiences, the obstacles they face, and the best practices they have developed. The use of multiple types of questions will ensure that statistical and descriptive data are collected, which is within the limits of the mixed methods of the study (Creswell, 2019).

Participants who were willing to take the survey and give detailed written answers will be interviewed. These interviews will be submitted within 30 days to allow participants to provide detailed arguments regarding the integration of CAL and net tools in their pedagogical methods. The study also ensures that all data obtained are safely stored and that no names are given.

Data Analysis Methods

The qualitative and quantitative data in this study will be interpreted with the help of statistical analyses and qualitative methods. A set of methods will be applied for the quantitative and qualitative analysis of results:

1. Percentage and Frequency Distribution: A percentage and frequency distribution will help assess teachers' demographic variables, such as age, gender, teaching years, the highest level of education attained, and the degree of exposure to and usage of modern technologies. This will give a favorable impression of the profile of the respondents and their ability and willingness to apply CAL and use the Internet for instruction purposes.

2. Weighted Mean: This measure will effectively present results on the second constructive question, which pertains to the use of CAL and the Internet as instructional resources. The weighted mean will determine the average level of CAL use across various populations, thereby revealing specific differences among them. For instance, the responses to CAL usage questions regarding the CAL and the frequency of its application and perceived effectiveness can be averaged to show general trends in the returns of the teacher respondents.

3. Thematic Analysis: The qualitative open-ended survey, as well as the written interviews, are under thematic analysis for this research. This method will assist in identifying the thematic areas that revolve around the perceived obstacles, advantages, and recommended approaches to the incorporation of CAL in language teaching. By contextualizing these themes, the research will provide a better understanding to the readers of how language teachers perceive the use of these digital tools in their professional practice (Braun & Clarke, 2019).

Research Hypotheses and Validation

As technology continues to shape educational practices, integrating computer-assisted learning (CAL) and online platforms offers innovative solutions for enhancing language instruction. Teachers' demographic profiles, including age, gender, years of experience, level of education, and familiarity with digital tools, may influence how effectively these technologies are adopted.

Ho: The integration of computer-assisted learning and online platforms in language instruction does not significantly impact teacher effectiveness or student language proficiency.

Understanding the current integration practices, along with perceived challenges and benefits, can provide insight into how these tools impact student outcomes. Moreover, the effects of CAL on student language proficiency and engagement require thorough exploration. Identifying best practices for implementation could help guide future instructional strategies.

Study Limitations and Ethical Considerations

The study followed ethical protocols by getting informed consent from all participants, guaranteeing anonymity and confidentiality, and granting participants the freedom to withdraw

from the research at any point. Furthermore, ethical issues encompassed the imperative to ensure the respectful portrayal of participants' views and viewpoints in the ultimate analysis and reporting.

RESULTS AND DISCUSSION

SOP 1. Demographic profiles of the teacher participants

Table 1.

Demographic Profiles of Teacher Participants

Age	<i>f</i>	%
20-29 years	21	70.0%
30-39 years	8	26.7%
40-49 years	1	3.3%
N	30	100.0%
Gender	<i>f</i>	%
Male	7	23.3%
Female	23	76.7%
N	30	100.0%
Years of teaching Experience	<i>f</i>	%
1-5 years	13	43.3%
6-10 years	12	40.0%
11-15 years	4	13.3%
16-20 years	1	3.3%
N	30	100.0%
Level of Education	<i>f</i>	%
Bachelors Degree	28	93.3%
Master's Degree	2	6.7%
N	30	100.0%
Familiarity with Digital Tools	<i>f</i>	%
Beginner	1	3.3%
Intermediate	28	93.4%
Advanced	1	3.3%
N	30	100.0%

The demographic particulars of the teacher participants reveal variation in terms of the age of participants, gender, how long they have taught, their academic qualifications, and how comfortable they are with digital devices. Most of the participants (70%) belong to the age bracket of 40-49 years, while a few belong to the ages of 30-39 years (26.7%) and 20-29 years (3.3%). Regarding gender, the majority are females (76.7%), while a minority are males (23.3%). About the duration of their teaching experience, 43.3% have 1-5 years, 40% have 6-10 years, while the least number of them have 11-15 years (13.3%) and 16-20 years (3.3%). Almost all the respondents (93.3%) have a bachelor's diploma, with 6.7% being master's holders. Study participants have a good know-how of digital tools, as the largest factor, 93.4%, falls in the intermediate range of usage level, while beginners and advanced users comprise 3.3% each.

The results imply that most teacher participants are veteran educators with high knowledge and understanding of a wide range of digital tools, making them conducive to technology implementation in a classroom environment. Given that most of them possess a bachelor's degree in education and possess a moderate level of proficiency in utilizing digital tools, this

cohort has a wide range of teaching methods to choose from. Nevertheless, the knowledge and skills of a small percentage of advanced users of digital tools suggest a possible area for professional advancement.

SOP 2. Teachers currently integrate computer-assisted learning and online platforms in their language instruction

Table 2.

Computer-Assisted Learning Frequency in Language Instruction

Use of CAL or online platforms in language instruction	<i>f</i>	%
Daily	16	53.3%
Weekly	8	26.7%
Monthly	2	6.7%
Rarely	4	13.3%
N	30	100.0%
Digital tools or platforms utilized in language instruction	<i>f</i>	%
Google Classroom	17	28.4%
Microsoft Teams	15	25.0%
Zoom	17	28.4%
Skype	3	5.0%
ClassIn	2	3.6%
Gmeet	1	1.6%
Google Forms	1	1.6%
Classin, Voov, Webex, Flat, Skype	1	1.6%
Class in and voov meeting	1	1.6%
classin	1	1.6%
Voov Meeting		
N	60	100.0%

The results show that most teachers (53.3%), who tend to be attached to their desks, confirm that they use CAL or other online services to teach the language every day. Six point seven percent of teachers used such platforms once a month or less frequently, while 26.7% used them once a week. According to the weighted mean, most teachers who answered the question had a rate of 66.6 across the three categories, with the majority using technology every single day. This observation justifies the fact that integration of technology was highly preferred during the instruction.

The results indicate that CAL and online platforms have been successfully integrated into language teachers' lessons, with most using them daily and weekly. The trend shows that teachers have embraced the importance of technology and are leveraging it to enhance language learning. The increased availability of technological support within the academic setting can explain the over-average usage rates.

Based on the statistics collected, languages are taught using various computer-based learning and online tools. The number of answers provided was 60. Google Classroom and Zoom have the largest user bases, with 17 users (28.4 million) each. The sample size used Microsoft Teams, with only 15 (25) respondents. The preferences of other respondents, including Voov Meeting and Skype, were significantly less popular, with only 1.6% of users using Google Forms, Webex, and Flat. These statistics still indicate a general plan in language instruction phases.

The results show that educators are the key factors in the utilization of common online platforms like Google Classroom, Microsoft Teams, and Zoom in their language teaching. The two tools account for 81.8% of use on online language-teaching platforms, suggesting a tendency towards them. Other tools like ClassIn and, more recently, Voov Meeting have a low penetration rate of 1.6.

SOP 3. Perceived challenges and benefits of integrating computer-assisted learning and online platforms in language instruction for teachers

Table 3.

Integration of Computer-Assisted Learning (CAL) and Online Platforms in Language Instruction: Frequency and Percentage of Uses, Challenges, and Benefits

Integrate CAL and online platforms into language lessons	<i>f</i>	%
For content delivery (e.g., online lectures, recorded lessons)	26	32.5%
For assessments (e.g., quizzes, exams)	21	26.3%
For collaborative work (e.g., group projects, discussions)	17	21.2%
For individualized learning (e.g., self-paced modules)	16	20.0%
N	80	100.0%
Challenges when integrating CAL and online platforms	<i>f</i>	%
Lack of digital infrastructure (e.g., devices, internet connectivity)	15	28.8%
Limited technical skills or training	9	17.4%
Student access to technology	15	28.8%
Time constraints	8	15.4%
Resistance to change from traditional teaching methods	5	9.6%
N	52	100.0%
Benefits perceived from using CAL and online platforms	<i>f</i>	%
Increased student engagement	21	26.4%
More personalized learning experiences	18	22.5%
Efficient assessment and feedback processes	18	22.5%
Enhanced collaboration and communication with students	23	28.6%
N	80	100.0%

The data show that teachers use CAL (computer-assisted learning) and electronic media in their language lessons: 32.5% deliver their lessons using these tools, and 26.3% assess their students using them. Group work, such as group assignments and discussions, accounts for 21.2% of the integration, with 20% using such platforms to study. A total of eighty (80) responses were received under this category, which translates to ninety-five percent of the respondents.

As for the issues, the most common problems cited by 28.8 per cent of the respondents were the need for digital infrastructure and the possibility of students accessing the required technologies. The other coping strategies were few people with technical expertise or training (17.4%), limited time (15.4%), and unscientific inertia (9.6%). These barriers need to demonstrate their ability to incorporate CAL and web-based language-teaching and learning resources.

SOP 4. Integration of computer-assisted learning and online platforms impacts the language proficiency and engagement of students

Table 4.

Impact of Computer-Assisted Learning (CAL) and Online Platforms on Language

Proficiency and Student Engagement

		n	M	S.D.
1	Benefits perceived from using CAL and online platforms in language instruction	30	4.06	0.64
2	Impact of CAL and online platforms on students' engagement in language classes	30	4.10	0.87

Based on the data obtained to evaluate SOP 4, the teachers perceive the integration of CAL and online platforms in language instruction positively. The weighted mean score for the perceived advantages of CAL and online platforms in language instruction was 4.06, which indicates that most of the respondents answered in the affirmative. Similarly, the impact on student engagement received a mean score of 4.1, culminating in an overall weighted mean of 4.08, signifying a relative improvement in both overall language proficiency and student engagement.

These findings, in contrast, show that CAL and online platforms extend student engagement and language proficiency and improve students' feelings toward language classes. The positive weighted means indicate that there is a connection between the use of these tools and engagement and the improvement of language learning outcomes, as stated in SOP 4.

Table 5.

Grades of students handled by teachers before and after the Integration of Computer-Assisted Learning (CAL) and Online Platforms for Language Instruction

Variable	M	N	MD	<i>t</i>	<i>p</i>
Pair				-3.071	0.005
Pretest	77.20	30	16.02		
Posttest	83.11	30	12.54		

Paired Samples t-test

In Table 5, it is possible to see that the combination of Computer-Assisted Learning (CAL) and online platforms had a significant effect on enhancing the language proficiency of the students, as the mean score increased with the introduction of CAL (77.20 in the pretest to 83.11 in the posttest). The *t*-value (-3.071) exceeds the *p*-value (0.005) at the 0.05 confidence level, and the null hypothesis is rejected, confirming the positive effect of CAL on student outcomes. The result is consistent with other studies showing that students who learned with the help of CAL demonstrated higher English grammar proficiency than their peers who studied with traditional means, underscoring the potential of CAL to improve academic performance (Ifeoma, 2020). The lower variability in posttest scores (12.54 standard deviation) suggests that CAL can be effective in meeting the needs of diverse learners. This explains the need to empower teachers through the provision of digital tools and training to ensure they can reap the maximum benefit from these platforms. As mentioned in the findings, CAL plays a vital role in promoting interactive, individualized learning experiences, which are associated with better academic achievement. The incorporation of technology into education offers a new way to address gaps in earlier teaching strategies, better aligning with current educational objectives.

SOP 5. Best practices can be derived from the integration of computer-assisted learning and online platforms for language instruction, based on teachers' experiences and feedback

Table 6.

Teachers' Best Practices in the Integration of Computer-Assisted Learning (CAL) and

Online Platforms for Language Instruction

Major Theme	Sub Theme	Code	Significant Statements
Effective Strategies in CAL Integration	Interactive Learning Tools	Interactive content, quizzes, multimedia, games	Respondent 1: <i>"Interactive content, feedback, cultural context."</i>
		Gamification	Gamification integration
		Personalized Learning	Personalized lessons, adaptive learning paths
		Collaborative Learning	Collaborative activities, peer teaching, and discussion tools
Improving CAL Integration	Platform Usability	Real-life Application	Real-life scenarios, student experience
		User-friendly platforms, cross-platform compatibility	Respondent 14: <i>"User-friendly and intuitive platforms."</i>
		Accessibility	Access to resources, affordability, and downloadable content
		Speed and Navigation	Faster internet connections, better platform navigation
Feedback and Engagement Mechanisms	Feedback Systems	Real-time feedback, feedback incorporation, and assessment	Respondent 5: <i>"Hard to monitor students' attention."</i>
		Engaging Content	Interactive multimedia, gamification
		Gamification and Engagement	Gamified tools, educational games
		Technology fluency, teacher training, and updating tech skills	Respondent 27: <i>"Teachers and students need to update their tech skills."</i>
Technological Considerations	Technology Integration	Tool Customization	Customizable content, interactive tools, flexible platforms
		Adaptive Learning	Adaptive learning, personalized learning paths
		Traditional methods combined with CAL	Respondent 29: <i>"Combining traditional methods and CAL."</i>
		Independent Learning	Student autonomy, self-paced learning
Pedagogical and Content Delivery Methods	Blended Learning	Interactive tools, multimedia, and feedback	Respondent 28: <i>"Interactive activities, multimedia resources."</i>
		Content Personalization	Customization, tailored

Communication Features

content for diverse
learners
Real-time
communication,
collaborative tools

The appropriate practices in CAL and online applications in language teaching were identified based on teacher feedback. Most respondents cited the positive impact of interactive resources and game elements. To demonstrate, Respondent 1 observed that individual pacing and the application of culture to interactivity make students more involved. On the same note, respondents 7 and 10 highlighted the benefits of integrating game elements and applications into language learning. These methods pique students' interest and motivate them, making the learning process more engaging and applicable.

General observations were also made regarding the individual nature of students and the significance of feedback in the learning process. Among others, respondent 2 encouraged group activities with personal responses to ensure that students remain motivated and active learners in the learning process. The necessity and usability of the platforms were also frequently mentioned, with numerous teachers (Respondents 6, 16, and 22) noting that affordable, easy-to-use platforms have a more positive effect on the learning process. As well, Respondent 25 emphasized the significance of real-time feedback and customized materials in boosting the language-learning process and switching to innovative online platforms. Conversely, obstacles such as limited internet access (Respondents 5 and 9) and the lack of training among learners and instructors (Respondent 27) were widespread. These issues suggest what needs to be done to maximize the use of CAL in language learning and teaching.

The incorporation of computer-aided learning and the Internet in language teaching makes a very measurable difference in the effectiveness of teachers and the linguistic proficiency of the students. According to the teachers' experiences, there appear to be effective strategies for using CAL and the internet in language teaching and learning. Different types and ways of sites, games, and MP3s, with special attention to simple choices, are consistently cited as helpful strategies to make students more active and motivated. It is also determined that user-friendly platforms or feedback systems for language problems are necessary. However, the issues concerning the internet connection and additional teacher education are also the principal issues to be considered.

SUMMARY

SOP 1: Demographics of Teacher Participants: The teacher participants come from a wide range of backgrounds. For example, 70% are between the ages of 40 and 49, and 76.7% are women. Regarding professional work, 43.3 percent have worked in the profession for 1-5 years, and nearly all respondents (93.3) had a bachelor's degree. The intermediate level of familiarity with digital tools has 93.4% of respondents, which is an indication of their preparedness to use technology in their instructions. Conversely, the high-end users, 3.3% of teachers, report a practice disparity regarding the use of technology in professional teaching training in the teachers' professional development training activities.

SOP 2: Incorporation of the Computer-Assisted Learning (CAL) and online platforms in the language teaching practice: Over 53.3 and 26.7 percent of the teachers reported that the implementation of CAL and the online platform into their language teaching practice was done

daily and weekly, respectively. The most popular and widely used platforms are Google Classroom (28.5%) and Zoom Video Communications, Inc. (28.4%). The consistent use of these tools highlights the significant influence of technology on language teaching. The COVID-19 pandemic has boosted the use of technology in education, consistent with this trend.

SOP 3: Attested Obstacles and Advantages of CAL and Online Platforms: CAL was primarily used by the respondents to deliver content (32.5%), conduct assessments (26.3%), and engage in collaborative activities (21.2%). The need for increased digital infrastructure and access to technology for students was the most prevalent (28.8% accounted for), followed by some respondents having inadequate technical skills (17.4% accounted for). However, other advantages as perceived by students included increased involvement of students (28.6%) and better collaboration (22.5%). These results show that, despite the widely desired benefits of teaching language with digital tools, there are still infrastructural and technical limitations.

SOP 4: Effects of CAL and Online Platforms on Language Proficiency and Student Interaction: CAL has generated positive perceptions regarding language proficiency and student interaction, as evidenced by a weighted average of 4.08. The practical use of language by students in the actual world stimulated the teachers to believe that the use of online platforms increased student engagement. The findings indicate that CAL and Web 2.0 platforms can be suitable for language teaching, as both technologies have enhanced language acquisition, knowledge, and skills.

SOP 5: Recommendations on the Experience of Teachers: Teachers have listed effective methods such as interactive content, gamification, and personalized learning paths in conversations that can motivate students. The respondents also highlighted the presence of feedback tools and practical, easy-to-use platforms. Nevertheless, it has faced a number of obstacles, including poor internet connectivity and additional training. The findings suggest that CAL is a potent tool for language learning; however, the gaps in more technical and infrastructural areas need to be addressed to fully explore its most advantageous uses.

CONCLUSIONS

- There is actually no significant impact of the merging of computer-aided learning and online programs on instructor effectiveness or student language proficiency in language teaching. The research is expected to represent and describe the diverse backgrounds of the teacher participants, which will help create future opportunities for language learning through technology. The teachers consist mostly of people 40-49 years of age with 1-5 years of teaching experience and high levels of exposure and familiarity with technology. A limited percentage of highly qualified teachers who rely on such tools may indicate a gap in professional training, and further efforts should focus on empowering these teachers to become more technologically proficient. This kind of demographic attribute would help in giving data about the willingness of teachers who may be ready to adopt the use of digital media and tools in the teaching profession.
- The research also reports that the applications of computer-assisted learning (CAL) tools and online material in language instruction are increasing, and the majority of the educators report that they engage in the use of these tools in their day-to-day

activities. Educators will resort to such popular and easy-to-use applications as Google Classroom and Zoom, as they are trendy and efficient. Nevertheless, there are still certain problems, such as the deficiency of digital infrastructure and the absence of challenges that students experience when accessing the resources of technology and using the latter to their maximum capacity. To have a successful and constant implementation of technology in the teaching of languages, it is worth considering these issues.

- The adoption of computer-aided learning and online language teaching does not make a significant difference in teacher efficiency or language proficiency among students. Research has established that CAL and online platforms can effectively promote both student involvement and language learning. The teachers claimed that the interactive content, gamification, and non-linear courses in the material enabled them to keep the students on track and inspired as they progressed in the learning process. Nevertheless, to achieve maximum benefits from these technology tools, the schools need to enhance their infrastructure, increase the availability of the internet, and equip the teachers and the learners with other training. These steps will guarantee that CAL will be a new technology that can make a difference in learning the language and enhance the process of acquiring a language.
- It is implied that they focus on the way they can involve teachers in a more intensive and advanced utilization of the already-existing digital tools because only a small portion of them utilize them effectively at the moment. Additionally, one will need to think over how the digital setting and access to the corresponding resources by students can be enhanced, which would determine the efficiency of computer-assisted language learning (CALL) methodologies. One should respond to the question about the outcomes of the adoption of specific training programs that can improve the professionalism of teachers and learners in using digital devices. The works will be valuable towards the realization of the promises that come with technology in the classroom in order to achieve improved student outcomes.

RECOMMENDATIONS

Based on the findings and conclusions of the study, the following recommendations are suggested:

For Students: Based on the findings, it is recommended that students take advantage of the technology-based tools and platforms identified in the research to improve their language proficiency. Students should explore online platforms that offer personalized learning experiences to strengthen their vocabulary, grammar, pronunciation, and communicative skills. Incorporating these tools into both traditional and self-paced learning routines will empower students to take greater control of their language education, fostering independence and motivation in their studies.

For Teachers: Teachers should actively incorporate best practices for integrating digital tools into language instruction, as outlined in the research. Professional development programs focusing on enhancing digital literacy and overcoming technology readiness challenges are essential. By embracing these strategies, teachers can confidently blend

traditional teaching methods with modern digital tools to create more engaging and effective language lessons, thus improving student outcomes.

For School Administrators and Policy Makers: To support the successful integration of technology in education, administrators and policymakers should prioritize the allocation of resources toward improving digital infrastructure and providing institutional support for teachers. Professional development opportunities should be made available to equip educators with the skills necessary to integrate technology effectively. By doing so, schools can create a more inclusive and supportive learning environment, ensuring that all students benefit from the advantages of technology-enhanced language instruction.

For Future Researcher: it is suggested that they concentrate on how they may engage teachers in a more intensive and advanced use of the already provided digital tools as only a fraction of them currently use them efficiently. Also, it will be necessary to consider how the digital environment and students' access to the relevant resources can be improved which would influence the effectiveness of computer-assisted language learning (CALL) methodologies. It is necessary to answer a question regarding the results of the implementation of particular training courses designed to boost teachers' and learners' expertise in wielding digital tools. These works will be important for further realization of the promises associated with technology in the classroom for better student results.

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