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| RESEARCH ARTICLE

Bridging Technology and Language Learning: A Comprehensive Analysis of CALL Integration within Second Language Acquisition

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| ABSTRACT
The imperative need for understanding the role of CALL in SLA, as well as its effectiveness, is at the heart of discussions and conferences worldwide about CALL and SLA. The link between CALL and SLA has become closely correlated and more powerful. Therefore, it has become much easier for educators and specialists in the field of education and second language acquisition to notice the huge diversity of links between CALL and SLA. Thus, any discussion about the development of SLA approaches and methods without considering the effect and the integration of CALL would be incomplete. The purpose of this paper is to open such a discussion. The real driving objectives of this article are to delve into and analyze the role of CALL in SLA as well as its effectiveness and challenges, shed light on the historical background of CALL, and the common and recent theories dealing with the integration of CALL in SLA. This article also discusses the implications of integrating CALL in SLA and provides some recommendations.

| KEYWORDS
Computer Assisted Language Learning, Second Language Acquisition, Computer Assisted Language Instruction, Technological Pedagogical Content Knowledge, Content Knowledge, Information and Communication Technologies, Artificial Intelligence.

| ARTICLE INFORMATION

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1. Introduction

Today, the integration of technology in education is endless. For instance, it can be incorporated into the classroom and form a vital part of the lesson. It may also be used as a way of changing the traditional view of face-to-face teaching to include distance and blended learning. Furthermore, the fact that both learners and teachers experience a world dominated by extensive exposure to technological tools has a great impact on the way they interpret and integrate the reality of their daily experiences outside the classroom. Additionally, researchers and SLA educators claim they face certain challenges when it comes to identifying the effectiveness of CALL in SLA. These challenges extend to altering teachers' beliefs and attitudes towards the integration of CALL in SLA. Similarly, the recognition that technology offers numerous benefits at the levels of pedagogy and management for both learning and teaching has prompted an increase in its use in SLA worldwide. In this article, although the term 'technology' is used broadly to encompass both hardware and software, a distinction is frequently made between viewing technology as a tool and as a medium for learning. An example of technology as a tool includes the use of word processing software for teaching writing. Conversely, technology as a medium is intended to teach some aspect of the language, such as a website with grammar quizzes or a CD-ROM with audio clips and listening-comprehension questions. Technology as a medium underscores the social dimension of technology and its capacity to connect learners, whether through authentic language input (e.g., the internet) or with native speakers and other learners. Regarding the development of CALL as a theory, as mentioned by Hubbard (2008), it is evident from

Hubbard's stand that the potential foundational elements for developing CALL as a theory lie in the evident convergence between SLA theories and CALL.

2. Defining CALL

Before scrutinizing the definition of CALL, one can say first that different scholars have tried to deal with it from various sides. According to Levy (1997), the notion of computer-assisted language learning is defined as the study of the various uses and applications of computers in the field of language teaching and learning. In the same context, Beatty, in 2003, stated that CALL has to do with the different processes in which learners use computers in a way that seeks to improve their language learning. This idea encompasses a broad space of current practices in teaching and learning. Based on the previously mentioned ideas, one can say that Computer Assisted Language Learning embraces a wide range of knowledge and communication technology uses, applications, and approaches to teaching and learning foreign languages.

In trying to make a clear distinction between the terms CALI (computer-assisted language instruction) and CALL, the first was in use before the notion of CALL appeared. In the early 1980s, computer assisted language learning (CALL) began to replace CALI (computer-assisted language instruction), and it is now incorporated into the names of the growing number of associations and companies at the global level. With the emergence and the beginning of the 1990s, an alternative term, technology-enhanced language learning (TELL), appeared, and it is also widely used in the field of language learning and teaching.

2.1 The Emergence and Development of CALL Throughout History in SLA

The innovation and appearance of the computer in the early 1980s signaled a particularly important development, as it presented and offered new ways of facilitating both teaching and learning using computers. Word processors and simple text-editing programs, in particular, initially made an impact as they allowed teachers to create and assign grammar exercises electronically, with automatic error correction and feedback. In this way, teachers could easily access many students' work, making the revision process much easier to accomplish. The use of audio and video was limited at this time. Despite the excitement and the emergence of CALL as a separate professional field, the pedagogy of the first generation of CALL programs mostly did not encompass the nature of the learner's experience beyond offering learners a new mode of dealing with grammar and composition. From the early 1990s, computers also became increasingly networked. Although this period saw a great deal of excitement and innovation, it took time for the field to find ways to make the most of these developments and improvements in CALL.

As teachers gradually became more familiar with technology, new developments also made it easier to design better learning experiences, and the potential of technology for many language teachers really showed with the appearance of the World Wide Web. Not only did it provide access to a new source of content with language-teaching potential, but as the internet developed and became increasingly interactive, language teaching also introduced interactivity. Real-time interaction and communication between learners in different locations, as well as between learners and teachers and among teachers themselves, all became options. With additional materials for learners and teachers, textbooks started to include CD-ROMS and companion websites.

As a way of looking at these developments over time differently to see how they impacted learning and teaching, Warschauer (1996) distinguishes three basic steps of CALL, which were classified according to their fundamental pedagogical and methodological approaches in the field of education in general and teaching and learning in particular. According to him, the first phase is called the behavioristic CALL (1960s to 1970s). This phase has followed the development of the approaches and methodologies in language teaching and learning. The fact that behaviorism, as an approach, is based on drill-and-practice materials had a great impact on how computers presented a stimulus and the learner provided a response. At first, both could be done only through text. At this phase, the computer was expected to analyze students' input and provide feedback. Some sophisticated programs were able to react to students' committed mistakes using specific tools. The rejection of the behavioristic approaches to language learning and teaching using computers though such programs and their underlying pedagogy still exist today is related to the fact that the adoption and use of CALL have led to other possibilities. The second phase is related to communication and is called the communicative CALL. As the communicative approach became prominent in the late 1970s and 1980s, the focus of CALL also followed this trend and began to shift from depending on behaviorism as an approach for determining its priorities in dealing with language teaching and learning to focus on the communicative. As a result, CALL in education has started to allow for originality and flexibility in student output of language, making computing much more widely available for developing new forms of software for language learning and teaching. At the beginning of the 1990s, a shift in the focus of CALL started to take place, paving the ground for the third phase of CALL to appear, known as the integrative CALL. By addressing the criticisms of the communicative approach and integrating the teaching of language skills into tasks or projects to provide direction and coherence, the third phase of CALL tried to overlap with the development of multimedia technology as well as Computer-mediated communication (CMC). Therefore, CALL in this period knew a definitive shift from depending on drilling and tutorial purposes to being a medium for extending and expanding education in general and learning in particular beyond the classroom.

3. Advantages of CALL for Learners, Teachers, and Schools

3.1 Advantages of CALL for Learners

There are many potential benefits of CALL to learners. The first one is that CALL provides a wider exposure to English: For learners whose exposure to English is limited, CALL, in general, and the internet, in particular, allow them to extend their exposure beyond the classroom, both to authentic and instructional materials. The second advantage is that CALL provides learners with compatibility with current theories of SLA: Erben et al. (2008: 154) suggest that research on second language acquisition identifies five features of effective language-learning environments, which underlie the design of many TLLT activities. The third one is that CALL increases opportunities for authentic interaction: CALL allows learners to connect with other learners worldwide and to participate in real communication. The fourth advantage is that it enhances flexible learning: Students can learn in their own time and at their own pace. They can learn from their own home or workplace rather than in the classroom. The last but not least advantage is that CALL supports different ways of learning: TLLT allows students to find learning resources that match their preferred way of learning, for example, visual or auditory.

3.2 Advantages of CALL for Teachers

Technology facilitates teachers' practices in many different ways. The first one is that CALL enables more learner-centered teaching: It enables the teachers to help learners engage with content that interests them and more closely suits their needs, rather than the traditional "one size fits all" approach to teaching.

The second advantage is that Computer-Assisted Language Learning (CALL) facilitates teaching in classes with diverse levels of proficiency. Empowering students to have greater autonomy over their learning is especially beneficial in classes where students have varying levels of proficiency. This approach enables students to focus on improving the skills they individually require practice in, rather than everyone following the same curriculum. The third advantage is that Computer-Assisted Language Learning (CALL) extends the classroom into real-world contexts. By utilizing the internet, students can delve deeper into subjects covered in class and engage with authentic multimodal content sourced from real-life situations. The fourth benefit is that CALL enhances the curriculum: Educators gain access to an extensive array of content and resources, allowing for the creation of a more diverse and enriched curriculum.

Last but certainly not least, the benefit is that CALL fosters the development of broader expertise, and it seeks to equip teachers with a wider array of strategies for instructing students in language skills, especially in reading, writing, and speaking.

3.3 Advantages of CALL for Schools

There are various benefits for institutions in the use of technology. First, CALL enhances the reputation of the school: A commitment to technology sends a message to students, teachers, and parents that the school is eager to stay at the forefront of educational innovation. This allows students and teachers to 'fiddle' with the different functions and effects available in the software. Second, CALL supports a more individualized approach to teaching.

The third benefit of Computer-Assisted Language Learning (CALL) lies in its capacity to offer enhanced flexibility in the curriculum: By integrating both traditional face-to-face instruction and computer-mediated learning, such as blended learning, educational institutions can tailor the mix to align with the specific requirements of their students. Additionally, schools may have the opportunity to provide courses entirely online, which might not be feasible through traditional face-to-face instruction alone.

Lastly, but equally important, CALL streamlines administrative tasks and record-keeping: Utilizing a learning management system (LMS) alleviates much of the administrative burden associated with organizing and monitoring courses, managing attendance, and tracking student progress.

3.4 CALL as a "Theory"

Unlike the case of second language acquisition, there is an interesting gap in the area of theory for CALL in general. According to Hubbard (2009), CALL does not have a dedicated theory yet, and based on current trends in SLA research and CALL, it isn't clear whether it will ever have a comprehensive and standard theory. Therefore, Hubbard, in trying to define the CALL theory, asserted that it is a set of frameworks, objectives, models, and different perspectives that provide generalizations to account for phenomena related to the integration of the computer in particular and CALL in general. According to Egbert & Hanson Smith (2007), teachers and educators do not need a discrete theory of CALL to recognize and understand the role and implication of CALL in SLA. Instead, a clear theory of SLA and its implications for the learning environment serves this objective.

3.5 CALL Frameworks for Effective Integration

3.5.1 TPACK

In an effort to understand how teachers can effectively integrate technology into their classrooms, researchers have focused on identifying the types of knowledge necessary for teachers to use technology more effectively. Shulman (1986) proposed that effective teaching requires a unique form of knowledge, which he calls pedagogical content knowledge (PCK). This concept suggests that teaching a particular subject involves not only understanding the content itself but also acquiring appropriate instructional strategies and skills that cater to the needs of learners.

The Technological Pedagogical Content Knowledge (TPACK) framework encompasses three main knowledge components. Firstly, Content Knowledge (CK) refers to the subject-matter expertise that teachers are tasked with imparting. Secondly, Pedagogical Knowledge (PK) entails a deep understanding of various instructional practices, strategies, and methods to facilitate student learning. Thirdly, Technology Knowledge (TK) involves familiarity with both traditional and emerging technologies that can be integrated into the curriculum. The aforementioned framework emphasizes that teachers must possess a comprehensive understanding of each knowledge component to effectively integrate technology, pedagogy, and content into their teaching practices.

3.5.2 ICT-Related PCK

Another important framework for effectively integrating CALL in education is ICT-related PCK. It refers to an instructional systems design model based on Shulman's (1986). This framework also focuses on knowing how to identify topics by teachers and teach them using ICT**,** determining TPACK Framework depictions for changing and transforming content, identifying and determining teaching strategies and techniques that were difficult to deal with using traditional technology, and finally, selecting information and communication technological tools to support content and teaching strategies and infuse ICT activities in classrooms. In short, ICT-Related PCK differs from TPACK in that it conceptualizes and emphasizes the idea of the integration of technology into teaching as happening within the realm of PCK and requiring additional and useful forms of knowledge within PCK.

3.6 Knowledge of Educational Technology

In 2003, Margerum-Lays & Marx stated that knowledge of educational technology is a very important framework which focuses on how teachers view and understand educational technology through the way Shulman (1986) conceptualizes knowledge-content knowledge, pedagogical knowledge, and pedagogical content knowledge. The difference between Knowledge of Educational Technology and the TPACK framework is that the TPACK framework emphasizes the interactions between content, pedagogy, and technology, treating technology knowledge as distinct but interacting with all other types of teacher knowledge. On the other hand, Knowledge of Educational Technology tries to treat the integrated understanding of teaching with technology as understandable.

3.7 Technological Content Knowledge

Slough & Connell, in 2006, declared that this framework demonstrates how technology and content interact with each other in a way that makes the two elements complete each other to the extent that enables them to become one unit. Additionally, according to Slough and Connell, the lenses' function is to expand both teaching and learning through providing a more focused approach.

3.8 Electronic Pedagogical Content Knowledge

The framework of Electronic Pedagogical Content Knowledge (EPCK) encompasses knowledge that teachers must have and obtain for the successful integration of technology into their classrooms (Franklin, 2004). Although the Electronic Pedagogical Content Knowledge (EPCK) may not be considered as foundational as the previously mentioned frameworks, it represents a distinct category of teacher knowledge, coexisting with an understanding of content, pedagogy, and curriculum within the realm of language teaching and learning.

3.9 The Effectiveness of CALL in SLA

As far as this issue of CALL's effectiveness is concerned, one can say that the way CALL is integrated into SLA usually focuses on assessing and evaluating the extent to which technology, in general, and the computer, in particular, are regarded to be more effective in the process of teaching foreign languages compared to using traditional methods. In fact, this is more challenging as so many variables and criteria come into play. As for the effectiveness of CALL in promoting and encouraging the teaching of the four skills, Felix (2008) claims that there is "enough data in CALL to suggest positive effects on spelling, reading and writing". However, more and more research is still to be conducted for the sake of determining the effectiveness of CALL in other areas of study, especially speaking online. Felix also states that although students' perceptions seem to be positive about the use of CALL, she qualifies this claim by stating that the adaptation of technology needs to be stable and well supported, drawing attention to the idea that technical problems may interfere and intervene with the learning and teaching processes. She also points out that

students with limited access to the use of CALL may not feel comfortable with computers and that younger students may not possess the necessary and required meta-skills and techniques for coping with using technology in new, challenging environments.

3.10 Challenges for CALL Integration in SLA

Practitioners have identified different challenges for CALL integrations in SLA. These fall into three categories, prompted by the concerns of researchers, students and teachers. The first category is related to the beliefs and attitudes of SLA educators towards the integration of CALL in education. Some SLA educators and practitioners still struggle with the idea of accepting the integration of CALL in the classroom. They feel that CALL intervention threatens their pedagogical beliefs about both teaching and learning. The second category of challenges is related to the logistical field. Logistical problems often result from the absence of CALL support in a school. For instance, a connection that is too slow to download files, insufficient computers, and password problems. Computer networks are also expensive to maintain. As more resources move online and mobile learning becomes more widespread, some of the challenges for schools in providing a technical infrastructure may diminish. However, logistical solutions do not address the question of considering CALL as efficient or effective. Despite the growing interest in research on CALL, it is not enough to deeply understand the impact of CALL on second language acquisition, the demands it places on teachers, and the requirements for professional development, as well as the impact of CALL on changing ineffective teaching behaviors. Similarly, the design of CALL activities has not always reflected what is known about successful language learning – being driven by technology rather than by second language learning theory. The third category of challenges is related to the Pedagogical field. Pedagogies related to the different approaches and the processes of second language learning, including learning styles and teacher training, are needed in the implementation of CALL.

4. Discussion and Recommendations

Research on CALL remains relevant due to the fact that both the fields of technology and SLA are always subject to change, to the extent that CALL will always have a role to play in SLA. However, there is a need to look at CALL from a collective and comprehensive view in order to clearly identify its relationship with SLA theories and approaches. The links between SLA and CALL are not as easy as we thought. In the same vein, discussing the integration of CALL and its effectiveness in SLA still needs some research, and many questions about this issue are still being asked. Additionally, the fact that the field of language learning and teaching and CALL are not fixed disciplines and that education must undergo continual change is what might make the process of conducting research about the effectiveness of CALL in SLA even more challenging. Therefore, the following recommendations should be considered:

- Research in SLA and CALL should focus on both teachers' and students' needs and interests.
- Any attempt to understand the effectiveness of CALL in SLA should be inclusive. Otherwise, it would be incomplete.
- Research about the effectiveness of CALL in SLA should focus on the educational uses rather than on technology itself.
- The teaching and learning pedagogies related to the educational uses of CALL should consider teachers' beliefs and attitudes.
- Providing both teachers and learners with the necessary training for using and dealing with the different technological tools is of paramount importance.

5. Conclusion

As has been stated earlier, the integration and adaptation of computer assisted language learning (CALL) into the field of SLA is not clear yet, to the extent that more research is needed to pave the ground for a deep understanding of the relationship between CALL and SLA as well as to uncover the areas in which CALL and SLA overlap and differ as well. However, this does not mean that CALL's utility in education in general and SLA in particular is limited. The use of CALL in education has undoubtedly opened the door for new approaches and disciplines in the field of language teaching and learning. Moreover, CALL has opened the door for discovering different forms and techniques of teaching and learning as well as reconsidering the existing theories and frameworks for the sake of finding answers to the existing problematic cases that traditional approaches to SLA could not solve. However, conducting more research is of great importance in this regard for the sake of clearly understanding the effectiveness of CALL in SLA, especially as the emergence of artificial intelligent models has started to open the door for more research and enquiry about the impact of these new and advanced technologies on SLA and the teaching and learning processes.

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References

[1] Beatty, K. (2003). Teaching and researching computer assisted language learning. London.
[2] Chapelle, C., & Douglas, D. (2006). Assessing language through computer technology. *Cambridge University Press*.
[3] Egbert, J., & Hanson-Smith, E. (Eds.). (2007). CALL environments: Research, practice, and critical issues (2nd ed.). TESOL.
[4] Felix, U. (2008). Analyzing recent CALL effectiveness research: Towards a common agenda. *CALL Journal, 18*(1-2).
[5] Franklin, C. (2004). Teacher preparation as a critical factor in elementary teachers: Use of computers. In R. Carlsen, N. Davis, J. Price, R. Weber, & D. Willis (Eds.), Society for Information Technology and Teacher Education Annual, 2004 (pp. 4994–4999). Association for the Advancement of Computing in Education.
[6] Fatmi, H. (2011). The impact of a GENIE training program on teachers.
[7] Hubbard, P. (2009). Developing CALL theory: A new frontier. Proceedings of the JALTCALL Conference, Nagoya, Japan, May 2008.
[8] Levy, M., & Hubbard, P. (2005). Why call CALL "CALL"? Computer Assisted *Language Learning, 18*(3), 143–149.
[9] Shulman, L. E. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher, 15*(2), 4–14.