

Reflections on the connection between computer-assisted language learning and second language acquisition

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RESUMEN

La tecnología ha tenido un gran impacto en la educación en los últimos veinte años. Con el desarrollo de nuevas tecnologías, se puede decir que la Adquisición de una Segunda Lengua (A2L) ha adoptado la Enseñanza Asistida por Ordenador (EAO) como una nueva y útil herramienta. Las diferentes aplicaciones y efectos de las computadoras en el aprendizaje y la enseñanza de un idioma pueden ser relacionadas con la adquisición de una segunda lengua, especialmente con el número de las aplicaciones de las computadoras en un ambiente de aprendizaje de un idioma. El propósito principal de este ensayo es explorar las conexiones existentes entre la Adquisición de una Segunda Lengua y la Enseñanza Asistida por Ordenador. Primero se muestran los antecedentes históricos de la EAO. Después las implicaciones y aplicaciones de la EAO sobre la A2L son discutidas. Asimismo la evaluación de la EAO en relación con la A2L y el futuro de la EAO son también analizados. Una de las principales conclusiones es que hay conexiones significativas y pertinentes entre la Adquisición de una Segunda Lengua y la Enseñanza Asistida por Ordenador.

PALABRAS CLAVE

EAO, A2L, computadoras, internet, conexión, tecnología, enseñanza, aprendizaje, enfoque.

SUMMARY

Technology has had a tremendous impact on education in the last twenty years. With the development of new technologies, one can say that Second Language Acquisition (SLA) has embraced Computer-Assisted Language Learning (CALL) as a new and useful tool. The different applications and effects of computers in language teaching and learning can be related to the acquisition of a second language, especially with the number of computer applications in a language learning environment. The primary purpose of this essay is to explore the existing connections between Computer-Assisted Language Learning and Second Language Acquisition and its implications. First, a historical background of CALL is offered. Next, the implications and applications of CALL on SLA are discussed. Likewise, the evaluation of CALL in relation to SLA and the future of CALL are also analyzed. One of the main conclusions is that there are significant and relevant connections between Second Language Acquisition and Computer-Assisted Language Learning.

KEY WORDS

CALL, SLA, computers, internet, connection, technology, teaching, learning, approach.

INTRODUCTION

Professionals can certainly say that there is something about technology that lures people. Computer skills are a must in the teaching profession, not only to look for materials in the web, but how to use, adapt and combine these web materials for language teaching. The web includes a huge amount of legitimate and significant material for both teachers and learners. This is where computer skills help teachers and learners to narrow down searches to be more effective in specific purposes. Communication tools also enhance learners' communicative competence, for instance the use of chat rooms, bulletin boards, blogs, social networks, and e-mails. Next, the technology that language laboratories offer allows learners and teachers to record specific pieces of information and make modifications in order to promote feedback and assessment when needed. It is true that foreign language teachers have embraced new technologies as useful instructional tools (LeLoup & Ponterio, 2003).

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Technology has had a tremendous impact on education in the last twenty years. LeLoup and Ponterio (2003) point out that "The number of computer applications, communications technologies, and sheer volume of offerings on the Internet has grown at an amazing rate..." (LeLoup & Ponterio, 2003, p. 1). With the development of new technologies, one can say that Second Language Acquisition (SLA) has embraced Computer-Assisted Language Learning (CALL) as a new and useful tool. The different applications and effects of computers on language teaching and learning can be related to the acquisition of a second language, particularly with the number of computer applications in a language learning environment. The language teacher of the 21st century, as a developer of different tasks, needs to have a strong basis of applied linguistics, especially those regarding language-learning tasks and language learners. In order to create and understand these language-learning tasks, the teacher of the 21st century needs to have

a view of communicative competence, which includes a real comprehension of cultural aspects. The world wide web is, with no doubt, a huge scenario where new language connections are taking place. One can say that particular speech communities are accessing and creating new language codes, specific behaviors, and linguistics choices. Language teachers need to pay attention, not only to what is learned, but how it is acquired by students. It is true that nowadays language teachers need to be computer literate.

The primary purpose of this essay is to explore the existing connections between CALL and SLA and its implications. Although the term CALL has several synonyms, the following working definition will be used for the purpose of this essay: any process in which a learner uses a computer and, as a result, improves his or her language (Beatty, 2003).

■ Historical Background of CALL

This section offers some ideas and relevant information of the historical background of CALL. CALL is constantly evolving basically because of the rapid changes taking place in the technology of computers. Almost every day there is a new discovery and advance with regard to computers, for example faster personal computers and laptops with higher and better capacities (software and hardware). It is obvious that this approach started somewhere and somehow.

CALL can be traced back to the 1960s. It has its origins with the development of the mainframe computer and programs which were located at several universities throughout the world (Butler-Pascoe, 2011). In addition, Beatty (2003) points out that the most traditional and still most common form of CALL programs are behaviorist computer-based gap fill drills, in which students fill in the blanks and answer specific questions in cloze exercises. We can find a great deal of programs and presentations

with a behaviorist basis, in which students are rewarded when making the correct choice or filling in the blanks correctly with positive feedback in order to promote proper behavior and habit formation. On the other hand, when doing the exercises or drills incorrectly, students are corrected with negative feedback to discourage the incorrect behavior. Skinner's behaviorism is a psychological theory that claims language learning is the product of imitation, practice, feedback on success, and habit formation (Lightbown & Spada, 1999). Behaviorists believe in language learning through repetition and imitation, basically when a particular response is reinforced, it becomes a habit. Beatty (2003) says that Skinner's theory found application in programmed learning (programmed instruction). In other words, students can learn the language if it is presented in small steps with correct answers and proper feedback. Back in 1912, Thorndike had the idea of a mechanical book (built in 1926) that had multiple choice questions and keys for selecting answers. The machine collected all the answers and provided candy when answers were correct (Merrill as cited in Beatty, 2003). This robot was indeed one of the first CALL projects and the foundation of computers. Skinner (as cited in Beatty, 2003) believed that such a machine was ahead of time, but gave support to the idea of machine instruction (programmed instruction) as a way to promote learner autonomy and avoid a problem, the pace of instruction in the class. CALL provided students with the possibility to work at their own rate with programmed instruction.

Literature also shows that constructivism had a relevant impact in the history of CALL. Psychologist Bartlett proposed the schema theory back in 1932. Nunan (as cited in Beatty, 2003) defines the schema theory as "A theory of language processing which suggests that discourse is interfaced with reference to background knowledge of the reader or listener" (Nunan, 1993, p. 124). If we take into account that the schema theory is the basis of constructivism, software with a constructivist approach is intended to

explore different ways or paths for a problem or challenge. In addition, students collaborate with the teacher, other students, and specific elements of the program to achieve a specific goal. Typical examples of constructivist programs include web quests and problem-solving tasks. Chapelle (2001) points out that the first applications of computers were developed for purposes other than language instruction. The first examples of CALL projects were documented in the 1960s, basically they consisted of computer equipment connected to a mainframe computer and software acquired for other purposes. These computer-based learning activities called courseware were developed using programming languages. In addition, early projects such as CLEF (Canada), PLATO, and TICCIT (USA) impacted the evolution of CALL. With the appearance of the first microcomputers in the 1980s and the fact that these computers need not to be attached to a mainframe computer, teachers and students began to explore the possibilities of computers in the language classroom, and as a result of that in SLA. Chapelle (2001) points out that computer-assisted language learning was the expression agreed at the 1983 TESOL convention in Toronto in a meeting with interested participants in the topic. According to Chapelle (2001), early 1980s were a time of intense production for CALL. A set of books, courses, and organizations were created.

Up to this moment, CALL had been related to learning and not to acquisition. Chapelle (2001) states that early 1980s overlapped with Krashen's view of SLA that basically claims that there are two separate and unrelated processes: unconscious acquisition being the first one and conscious learning the second one. Chapelle (2001) claimed that CALL may promote acquisition rather than learning. Although Krashen's theory provided significant concepts to the discussion of SLA, relevant criticism was made to the theory. Perhaps the most important one is that the acquisition-learning hypothesis cannot be tested in empirical investigations. Since learning and acquisition are completely

separated, learning will not become acquisition. Some authors have challenged this position. Basically, they state that once learning becomes automatized, it may become acquisition (McLaughlin et al. as cited in Lightbown & Spada, 1999).

It is true that in the early 1990s affordable computers with more memory, audio, graphics, and video promoted more complex changes and possibilities to CALL. For instance, the development of software with learning purposes was possible because of sophisticated microcomputers and, as a consequence, more CALL projects were developed. These are significant considerations of the historical background of CALL.

RESULTS

■ Implications and Applications of CALL on SLA

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First, it is relevant to mention that this section is not intended to compare CALL with other learning approaches. Likewise, this section explores ideas on how students acquire language, significant implications and applications of computers, evidence for SLA, and some principles for teaching CALL.

Now, how do students acquire a second language? Several theoretical approaches have arisen in the last century.

Behaviorism is one of the first ones. Basically, behaviorists account for 'learning' in terms of repetition, imitation, positive feedback, and habit formation. Nevertheless, some criticism has been given since it does not fully explain language learning. Innatism is another SLA theory. Innatism is based on the hypothesis that knowledge is innate and that there is a set of principles to all languages (Universal Grammar and Language Acquisition Device) that permits students to acquire the target language (Cook,

1988). Likewise, there is a discrepancy on to what extent is UG available to learners in order to acquire a language, since some authors claim that there is a 'critical period' for language acquisition. Another relevant theory is called the interactionist position (Cook, 1988). The interactionist position claims that the environment in interaction with the child's innate capacities is responsible for language acquisition (conversational interaction). Finally, a theory that had a great impact on second language teaching practice was monitor model which consisted of five hypotheses: the acquisition-learning hypothesis, the monitor hypothesis, the natural order hypothesis, the input hypothesis, and the affective filter hypothesis (Lightbown & Spada, 1999). Nowadays, most researchers, language teachers, and language specialists generally accept the basic notion of an innate predisposition to language, though this cannot account for all aspects of language development, which results from an interaction between innate and environmental factors (Mitchell & Myles, 1998).

Specific cognitive conditions are required to achieve SLA. Skehan (1998) points out that a CALL environment can also provide these conditions. Skehan (1998) offers four guidelines to implement these conditions in the classroom: target structures, tasks with utility condition, sequence tasks, and cycles of accountability. Likewise, conditions that affect social and affective aspects of learning shall also be promoted in the language classroom. Chapelle (2001) believes that other factors need to be taken into consideration. These are the available resources.

Once some ideas on SLA have been discussed, significant implications and applications of computers and evidence for SLA will be addressed.

One of the most important implications of CALL on SLA is with no doubt artificial intelligence, which encompasses principles for the design of computer programs. Sleeman and Brown (1982) described the purpose of intelligent tutoring systems as follows "These systems attempt to provide the problem-solving experience and

motivation of discovery learning with the effective guidance of tutorial interactions" (Sleeman & Brown, 1982, p. 2). Important projects were developed: computers and the humanities, CALICO, and theory shaping technology. An example of how artificial intelligence (AI) is related to SLA is the one described by Chanier (as cited in Chapelle, 2001) which was designed for learners of French. Basically, the program demonstrated how students acquire the target language by providing feedback to the learner (either positive or negative). At this point, it is relevant to say that most research is focused on developing computer programs rather than on SLA.

Classroom discussion is another relevant application of computers in the language classroom. Kelm (as cited in Chapelle, 2001) provides an example in which students were given a short story to serve as the topic for a computer-assisted classroom discussion to acquire Portuguese. Students received questions through the computer in order to test their reading comprehension, open and maintain classroom discussion using the target language. Students also provided their own ideas and feelings of the story via computers to their classmates and teachers. This gave them the opportunity to work at their own pace. This classroom discussion provides students with authentic tasks that enhance the proper conditions of SLA. Likewise, the fact that the task of the activity was intended to provide students with the opportunity of using target language without the teacher-frontedness is seen as positive for language acquisition.

Now, what evidence suggests that learners have acquired the target language through CALL activities? Doughty (as cited in Chapelle, 2001) compared the effects and results of input. A group of students received input via CALL activities. Attention was drawn to relative clauses and grammatical structures through highlighting on the computer screen. The other group received input through other means. The group working with CALL instruction performed better on grammatical tests than the other group.

One can conclude that "these results provide evidence for the argument that CALL materials with carefully selected and highlighted target forms can offer superior language learning potential than those in which learner's attention is not directed to form" (Chapelle, 2001, p. 69).

Modified interaction is another piece of evidence. Basically modified interaction is an interruption of meaning due to a breakdown in production or comprehension. Schrupp (as cited in Chapelle, 2001) compared different levels of interactivity in a specific CALL program (one including video). Schrupp got to the conclusion that the interactive video material was the one students remembered the most, as well as the content of the German material. This does not mean that the content of the German video was acquired; however, Krashen's input hypothesis states that the acquisition takes place as a result of the learner having understood input that is a step beyond the current level of her competence $i+1$ (Lightbown & Spada, 1999). This input will eventually become acquisition. Chapelle (2001) believes that the fact of comprehending the target language material (German input) is a candidate for acquisition. L2 vocabulary acquired through interaction is another piece of relevant evidence. Chapelle (2001) points out that vocabulary is more likely to be acquired when presented in conditions that allow for interaction. It is important to notice that interaction refers to learners interrupting their reading process to get help with vocabulary (or other grammatical issues they do not understand) from a dictionary or an explanatory slide at the computer. Lyman-Hager's findings (as cited in Chapelle, 2001) support the idea that learners benefit from this interaction with the computer in the sense that they improve their reading comprehension and expand their vocabulary. Although, these modified interactions benefit L2 learners and have a great potential for SLA, authors and researchers believe that additional research is required for a better understanding of how to promote SLA and to exploit its use in lan-

guage classrooms (modified output-research methods). In addition, it is relevant to mention authors who disagree with this position. Cubillos et al. (as cited in LeLoup & Ponterio, 2003) question whether the use of new technologies (computers included) in language instruction promotes SLA. These researchers basically point out that there is a lack of sufficient empirical evidence to support the belief that CALL promotes SLA.

Finally, Beatty (2003) offers some principles for teaching CALL. These principles are, indeed, significant for language teachers intending to use CALL in their lessons and institutions and promote SLA. These are: (1) Evaluate the appropriateness of the software program or computer-based resource. One could say that this responsibility relies on instructors. Elements like cost, feedback, pedagogical approach, authenticity, objectives, and others are to be taken into consideration. The students can certainly participate and share this responsibility so teachers and administrators have a clear idea on learner's reaction and motivation towards specific technologies. (2) Create an environment in which CALL is supported. Beatty (2003) suggests arranging "the CALL classroom to maximize interactions" (Beatty, 2003, p. 253). CALL classroom shall be organized (semi circles, stations, or others) so students have the opportunity to freely interact, share computer screens, and create changes for "scaffolded learning" (Beatty, 2003, p. 253). (3) Monitor learner participation in CALL programs and encourage autonomy. Computers offer a great opportunity for monitoring and providing feedback to learners in electronic ways. In addition, there is usually not enough time for comprehensively learning a language so students can use CALL to work outside the classroom at their own pace. (4) Encourage the use of CALL programs for collaboration and learners interaction. Providing tasks in which learners have to interact simultaneously with computers and other students becomes significant. The internet is also a place where collaboration

can occur via electronic mail, chat, blogs and threaded discussions (synchronous and asynchronous modes of communication). These are relevant aspects of the implications and applications of CALL on SLA.

■ Evaluation of CALL in relation to SLA

Evaluation of CALL in relation to SLA is addressed in this part of the essay. It is a fact that teachers and students use computers for many different purposes and in many different ways. Therefore, language teachers and researchers need to have a clear idea of what kinds of CALL tasks promote and are beneficial for SLA. It is also true that software developers not always have a clear idea of what is needed in terms of successfully enhancing SLA. That is why an important degree of responsibility relies on teachers and their ability to determine some criteria for what can be considered effective CALL. According to Chapelle (2001), three aspects must be taken into consideration: findings and theory-based speculation about ideal conditions for SLA, a theory of articulation needs to be articulated, and criteria and theory need to apply to software and the task learners will carry out. More than a checklist to evaluate CALL, teachers and administrators need to establish solid criteria for CALL task appropriateness. Chapelle (2001) establishes some basic principles. These elements are language learning potential, learner fit, meaning focus, authenticity, positive impact, and practicality. These are important ideas on the evaluation of CALL in relation to SLA.

■ Future of CALL

This section is intended to provide an idea of where CALL is going to. Due to technological advances in computers, one would expect more complex and sophisticated software and

hardware related to language instruction and implications of computers in SLA. Authors agree that normalization is the future developmental stage of CALL. Bax (as cited in Ioannou, 2006) defines normalization as a time when computers will become:

... an integral part of every lesson, like a pen or a book. Teacher and students will use them without fear or inhibition... They will not be the center of any lesson but they will play a part in almost all. They will be completely integrated into all other aspects of classroom life, alongside course books, teachers and notepads. They will almost go unnoticed.

(Bax 2003:23-4)

Ioannou (2006) says that technological resources and infrastructure available to institutions are clearly not equal. They range from those at the cutting edge with the state-of-the-art technology to those where technology is not present at all. This is especially true to countries and institutions where the budget simply does not permit these innovations. For instance, in some rural areas of Central America, teachers and students have no access to computers, tape recorders, or updated books whatsoever. On the other hand, professors and students at public universities and private schools have a wide variety of technological options for their lessons, such as laboratories with internet, office resources, audio equipment, personal computers, projectors, electronic boards, and others. In order to reach this stage and reduce the technological gap, countries and institutions shall promote a training policy (Ioannou, 2006). This means that this trained staff will be implementing and establishing CALL laboratories in classrooms and, of course, promote the use of computers in the classroom. Ioannou (2006) says that elements other than technological ones play a relevant role in reaching the normalization stage. Enthusiasm and motivation seemed to have the capabilities for a longer impact on promoting CALL normalization. Factors which may lead towards the normalization of CALL include: appropriate hardware and software, easy access to technology, top-down policy, integration of technology

into syllabus, teaching training in technological literacy and CALL implementation, and finally familiarization of technical support with different teaching methodologies (Ioannou 2006). These factors shall definitely be taken into consideration, especially by administrators and language teachers, to promote CALL in classrooms and institutions. These are significant considerations of the future of CALL.

CONCLUSIONS AND RECOMMENDATIONS

Finally, some conclusions and recommendations are given and discussed in this section.

One important consideration is the one offered by Hanson-Smith and Rilling (2006) when she says that technology in education begins with teachers and ends with teachers. It is true that when language teachers are not that interested in computers or are not literate in the field, their pupils tend not to go to the laboratory or experience learning through technology. On the other hand, when language teachers use CALL (and other technologies) in their lessons to collaborate, learners "flourish in surprising ways" (Hanson-Smith & Rilling, 2006, p. 2).

Next, CALL is promoting a "quiet revolution" (Hanson-Smith & Rilling, 2006, p. 2) by making positive changes that are leading to new ways of learning and teaching. One can also say that these new ways of teaching and learning are enhancing collaborations among students and teachers and are creating independence and autonomy. This is leading pupils to take control and responsibility for their own learning.

In addition, the importance of technology in language classrooms is completely relevant. With regard to this aspect, Butler-Pascoe (2011) states: "The importance of technology in second language or foreign language teaching is now well established with teachers no longer questioning the need for computer-assisted language learning (CALL) but rather

seeking the most effective ways for integrating technology into their teaching" (Butler-Pascoe, 2011, p. 1).

Next, that fact that language learners report a positive attitude towards computer instruction in their lesson is a pedagogical hint for language teachers and administrators to promote and encourage learning activities via CALL (LeLoup & Ponterio, 2003). LeLoup and Ponterio (2003) reported that the use of electronic mail appears to reduce levels of anxiety and increase motivation and social interaction among students facilitating SLA.

Then the use of CALL, for example in developing writing skills, can help learners to become more aware of their mistakes (LeLoup & Ponterio, 2003). Later, with regard to the nature of language production "There is some evidence that the language produced while engaged in CALL is qualitatively better, more coherent, cohesive, and expressive than the language learners produce in face-to-face classroom communication" (LeLoup & Ponterio, 2003, p. 2). Next, CALL has also a positive impact on students' listening skills. It increases the acquisition of the target language input presented in a variety of ways (LeLoup & Ponterio, 2003).

In addition, more research specifically addressed to the connection between CALL and SLA is required due to the impact of technology in education and society nowadays. Because of the narrow scope of this essay, many questions have not been answered regarding the connection between CALL and SLA: Does CALL promote SLA at early stages? How are the universities preparing language students teachers to use CALL? What would have been the implications of a CALL national plan to promote language learning and SLA?

With regard to suggestions, one can strongly recommend language teachers not only to become literate in the field, but to use computers

in the class. The possibilities for communicative activities with computer applications are definitely growing, especially with the use of internet. The international connectivity that internet offers can become a productive tool for different kinds of input and social interaction. Cummins and Sagers (as cited in Chapelle, 2001) described potential benefits of internet collaborations for SLA:

Distance creates the possibility of collaboration with an unknown but knowable audience, principally through written communication. The inevitable cultural differences that exist between distant groups require clarity of written communication in disclosing local realities...asynchronicity allows second language learners the extra time they need to elaborate and polish written texts based on models of native speakers of the target language... (Cummins & Sagers, 1995: 32-33)

Furthermore, a significant recommendation is not to use CALL without a real purpose. In other words, more important than the use of technology per se is the quality of what is done with this tool. In order to achieve successful SLA, tasks must be meaningful and real, have a solid social and interactional component, and have a comprehensible purpose for the language learner.

Finally, this essay was a revealing one in terms of the author's own teaching style and how Computer-Assisted Language Learning can positively affect Second Language Acquisition, especially with the technological applications of computers and programs. There are relevant connections between Second Language Acquisition and Computer-Assisted Language Learning, indeed.

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