



Canadian Association of
Second Language Teachers

Association canadienne des
professeurs de langues secondes

Executive Summary

Facilitating Language Learning Through Technology

A Literature Review on Computer-Assisted Language Learning



Introduction

CALL, which stands for computer-assisted language learning, has become a catch-all term to encompass any use of technology for language teaching and learning. The results of nearly 40 years of CALL research indicate that computers, tablets, and smartphones can be effective tools that enable learners to work autonomously, to receive individualized feedback, and to be exposed to real-world language in a range of varieties and voices. Technology can be used as an add-on to enhance classroom language teaching, and it can be used as the sole medium for language teaching and learning. Seemingly endless numbers of software packages, websites, and apps at a range of price points promise effective teaching of a range of languages. Recent developments in mobile-assisted language learning (MALL) mean that learners have access to language learning technologies regardless of where they are.

Deciding on which technology to use and then learning how to use it represent

onerous tasks for teachers. Training on the practical details of making a given technology work properly in the classroom setting is far different than using it as an individual. More importantly, teachers need to know that the technology they have chosen offers an effective means of achieving learning goals and is thus appropriate for their group of learners.

CASLT has heard the concerns expressed by language teachers about the effective use of technology. As such, they commissioned researchers from the Language Research Centre (LRC) at the University of Calgary to review and summarize selected research on the effective implementation of CALL inside and outside of language classrooms. The purpose was to focus on the following aspects: basic principles underlying effective CALL resources; research-informed means of targeting listening, speaking, reading, writing, grammar, vocabulary, and pronunciation skills with CALL; effective techniques for engaging learners with target cultures through

technology; and an appraisal of systems for assessing learning and providing feedback in CALL.

This theory-neutral literature review, which provides readers with an overview of research into each of these broad areas, is organized into the following sections:

- Effective integration of CALL resources
- Targeting multiliteracies with CALL
- Production and CALL
- Receptive skills and CALL
- Grammar, vocabulary, and CALL
- Culture and CALL
- Assessing learning and providing feedback in CALL

While it would be impossible to provide a comprehensive review of the research in each of these areas, the review that follows provides summaries of seminal and recent literature published in leading scientific journals in each of these areas. It also highlights the implications of this research for Canadian language classrooms.¹

1 Throughout this review we use “second language” or L2 as a catch-all term to mean any language learned after the age of three. As such, it also applies to third and fourth languages. It does not apply to home languages, including those acquired simultaneously in childhood. First language (L1) refers to one’s mother tongue.

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Effective Integration of CALL Resources

- In order to determine the effectiveness of a given technology to achieve a learning goal, it is important to determine a causal relationship between the use of the technology and learning outcomes.
- The potential benefits of CALL are many, including providing learners with authentic and enhanced linguistic input, pushed linguistic output, and individualized instruction, as well as enabling learners to work autonomously/at their own pace and engage in collaboration. Moreover, the multimodal nature of CALL appeals to students with a range of learning styles.
- When deciding on which CALL resources to use in their classrooms, teachers should consider the types of tasks and tools required, the objective of a given task, the location in which the objectives are to be achieved, students' levels of digital literacy, and how assessment will be carried out.
- In addition, teachers should consider the following: whether a given technology, app, website, or software is pedagogically sound; whether the target linguistic characteristics are salient; whether the materials are authentic; whether learners have opportunities for production; and whether learners receive feedback on their errors.
- Technologies chosen should provide cultural media (including written and spoken texts, images, and videos) that depict the target language and culture as unique, diverse, and dynamic.
- The development of CALL resources should be a collaboration between classroom teachers, researchers, and technology specialists.
- Teachers require a number of skills to integrate technology effectively into their classroom practice. These include, but are not limited

to, basic ICT competence, specific technical competence for the software, knowledge to deal with the constraints and affordances of a particular software, skills to create a sense of community within the class via the technology, and techniques for facilitating communicative competence.

Targeting Multiliteracies with CALL

- The proliferation of digital media has changed our notions of literacy and communication. These now include, for example, texts read primarily on digital devices, interactive hypermedia, computer-mediated communication (CMC), collaborative and multimodal writing, and online affinity spaces in which people from different cultural and linguistic backgrounds who share interests come together.
- Exploiting the range of opportunities for connecting learners with authentic resources and social spaces online may promote a dynamic learning environment and critical thinking, offer authentic L2 learning opportunities, and encourage deeper connections with the target culture(s).
- Language learners require new literacies including computer literacy, information literacy, and L2 media literacies.
- Encouraging learners to interact within online communities requires planning in terms of preparing tasks for learners and mediating potential misunderstandings.

Production and CALL

- CALL can be effective in targeting a range of production skills: speaking (including pronunciation), writing, and interactional competence.

- Providing learners with authentic language models plays an important role in the development of production skills.
- Using CALL for speaking tasks may lead to improved fluency, confidence, and willingness to communicate in face-to-face speaking tasks in the target language.
- Comprehensible pronunciation is an attainable goal for language learners. Tasks including high variability phonetic training, audiovisual training that combines listening instruction with an image of a speaker's face and lips, text-to-speech systems, and shadowing may be especially beneficial for the development of comprehensible pronunciation.
- The nature of writing has changed because of new technologies and collaborative writing platforms like wikis, blogs, and Google Docs, and social networking sites like Twitter.
- Interactional competence, which involves pragmatically correct and comprehensible interaction with one's interlocutor (written or spoken), can be successfully targeted via computer-mediated communication and dialogue-based CALL systems.

Receptive Skills and CALL

- Written and spoken texts chosen to target the receptive skills of reading and listening should do the following: a) be targeted at the appropriate proficiency level; b) contain a relevant topic; and c) have the appropriate types of activities for a given group of students.
- Receptive CALL tasks should focus on developing learners' bottom-up (sounds, vocabulary, grammatical structures) and top-down (background knowledge, context) processing of the language.
- The following should be considered when using and/or developing CALL



listening tasks: the goal of the task, the characteristics of the audio, the characteristics of the accompanying visuals, the topic, and the amount of instruction learners require to complete the task.

- Technology offers a number of potential benefits for targeting listening skills: providing learners with a range of voices, the opportunity to listen to a speech sample multiple times, options for slowing down speech, and providing images and videos to accompany the audio tracks.
- Reading a text online is different from reading a print text, and the accompanying tasks that learners carry out should also be different. Technology offers a number of potential benefits for targeting reading skills: highlighting vocabulary or target grammatical forms (e.g., through bolding, italicizing) and providing glosses and embedded multimedia links for vocabulary, grammar, or cultural information.

Grammar, Vocabulary, and CALL

- When choosing CALL resources to target grammar and vocabulary, instructors should consider the difficulty of the grammatical forms and vocabulary items, the extent to which students will be required to produce those forms and items, and the level of explicitness of the grammar explanations and vocabulary tasks.
- Tasks that encourage collaboration and the learning of grammar in context as well as those that integrate a range of multimedia sources may be among the most effective.
- CALL activities for vocabulary that have demonstrated effectiveness include flashcards, SMS, glosses,

gaming/virtual environments, and subtitling.

- Learners who spend time learning vocabulary items (i.e., parts of speech, L2 definitions, L1 translations, example sentences, and collocations) — for example by writing them down in a paper notebook, by storing them in their own dictionary, or by learning the words with the help of technology (e.g., by actively exploring their use in authentic contexts or online corpora) — may improve in their knowledge of those words.

Culture and CALL

- CALL offers opportunities to promote cultures as being diverse and complex by providing learners with access to authentic resources in a range of media types.
- Teachers are encouraged to make use of CALL to develop students' intercultural communicative competence. Examples include connecting learners to fellow speakers of the language (e.g., native speakers or second language learners living in the country where the language is spoken, heritage language speakers, fellow language learners) through email, social networking sites, and apps that enable multimodal communication.
- Tasks in which learners and their conversation partners create a product (e.g., a blog, video, or podcast) may enable learners to gain a deeper understanding of the target culture(s) and their own culture(s).
- The ultimate success of tasks that encourage students to engage with and reflect upon culture(s) depends a great deal on appropriate planning and sequencing.

Assessing Learning and Providing Feedback in CALL

- CALL allows for quick and efficient assessment and feedback. Computer-adaptive tests and automated evaluation show great promise for the assessment of L2 learning.
- Although online assessment ensures greater access for students, teachers, and test developers, completing an assessment digitally may present a unique set of challenges to learners (e.g., comfort level with the technology, connectivity issues, and quality of recordings) as well as practical and ethical issues (e.g., plagiarism).
- When creating digital assessments — both summative and formative — teachers should ensure that the assessment aligns with the task and ultimately with learning outcomes.
- Intelligent CALL (ICALL) systems allow for immediate diagnosis of errors and more personalized feedback on a range of adaptive and open-ended tasks.
- Elaborated feedback (i.e., providing learners with insights into their errors including an explanation, the correct answer, and suggestions for remedial actions) may be more effective than feedback that simply indicates “right” or “wrong.”
- Learners may benefit more from immediate — as opposed to delayed — feedback on lower-order tasks (e.g., spelling and capitalization). Both delayed and automatic feedback are beneficial for the development of higher-order learning (e.g., developing an argument).



Computer-assisted language learning (CALL) can be effective in enabling learners to work autonomously, to receive individualized feedback, and to be exposed to real-world language in a range of varieties and voices. Deciding on which technology to use and then learning how to use it, however, represent onerous tasks for teachers. To make this process easier, CASLT commissioned researchers from the Language Research Centre (LRC) at the University of Calgary to review and summarize selected research on implementing CALL effectively, both inside and outside of language classrooms.

Canadian Association of Second Language Teachers (CASLT)

1-877-727-0994 | admin@caslt.org | www.caslt.org

CASLT encourages excellence in second and additional language teaching and learning throughout Canada by creating opportunities for professional development, by encouraging research, and by facilitating the sharing of information and the exchange of ideas among second language educators.

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This literature review was conducted to provide information to guide decisions on the use of technology in second language teaching and learning. Although direction was given to the researchers to establish parameters for the task, the content of this document reflects the writers' perspectives on topics and

subjects reviewed and does not necessarily reflect the position of CASLT.

Prepared by

Language Research Centre (LRC)
at the University of Calgary

Principal Investigator

Dr. Mary G. O'Brien

Research Associates

Caitlin Ryan
Anne-Marie Sénécal

Harriet Haggerty

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