The Efficacy of Computer-Assisted Language Learning Software

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Abstract

The paper analyzes the benefits and drawbacks of computer-assisted language learning software programs. The author addresses how CALL covers the four strands of language learning—reading, writing, listening, and speaking. Key points of the programs that are examined include exercises included in programs, feedback provided to learners and/or teachers, the motivation provided by the programs, and the degree of individualization. The author then details her experiences with one computer-assisted language learning software program. The efficacy of this program is analyzed through a similar breakdown. The author offers the educator’s perspective on most efficient implementation of CALL software programs. In conclusion, the author determines that computer-assisted language learning software programs cannot be equated with authentic language learning done in communicative contexts. Instead, these programs should be used to scaffold second language learning instruction done in the classroom.
With an onslaught of research contending that language learning occurs best in environments of complete immersion, it is hard to consider the possibility that you can learn a language from simply sitting in front of a computer. After all, how well can computer-assisted language learning software cover the four strands of language learning? After describing the history of CALL and weighing the pros and cons of software forms of computer-assisted language learning, the author details personal experience with a software program for children and describes its strengths and weaknesses. The author takes these experiences and the implications embedded in recent CALL research to create suggestions for implementation of such assistive technology in language learning classrooms.

The computer-assisted language learning programs referred to in this paper are limited to software programs like Rosetta Stone, Natively English, Dynamic English, WhiteSmoke 2011, Transparent, BYKI, and Rocket. The author also addresses less familiar, lower-end programs that are more affordable for public schools to purchase and utilize. These are comprehensive foreign language programs that can be purchased and downloaded onto computers for use. Each program promises fast results in second language acquisition. The goals of these programs are not always attainable, however, because of the approaches used by the software designers. The author collectively examines the strengths and weaknesses of the computer-assisted language learning software without naming specific programs until she shares and analyzes her personal experiences with one program in a K-2 English as a Second Language classroom setting.
History

The history of computer-assisted language learning software programs is certainly not lengthy, but it is important to note that the field has evolved tremendously in such a short period of time. Computer-assisted language learning as a whole has been concisely defined as “the search for and study of applications of the computer in language teaching and learning” (Levy, 1997). The field of CALL therefore encompasses all forms of language instruction that incorporate any form of technology. According to Warschauer and Healey (1998), computers have been used in language instruction since the 1960s, and CALL has shifted through three stages: behavioristic CALL, communicative CALL, and integrative CALL. Instruction moved through these different stages as more technology developed and beliefs about what aids second language acquisition changed. These paradigms are broken down in research from Warschauer and Healey (1998):

- Behavioristic CALL: 1960s-1970s; emphasized repetition of language forms on personal computers; computer was looked at as a device that could allow personal, individualized pacing; computers were ideal for the repetition learners felt they needed to achieve their language learning goals

- Communicative CALL: late 1970s-early 1980s; encouraged learners to use language and learn language forms implicitly rather than explicitly through computer-based activities; students could work alone or with partners to rearrange words and discover language patterns and how meanings change with different patterns; simulations were a huge part of Communicate CALL because they encouraged discussion
Integrative CALL: late 1980s-early 1990s; teachers wanted to make technology more central; more social or socio-cognitive view—students should learn authentic, everyday language; sought to integrate all four strands of language learning—listening, speaking, reading, and writing—more fully; students were exposed to a variety of technology tools to learn language.

**Reading**

Most CALL programs have been designed to incorporate literature. Most use visuals to support the text, which is beneficial to second language learners of all ages. The exercises included in most programs normally consist of reading comprehension questions that assess learner understanding without getting much deeper than plot, character, and setting. An area of concern in many reading selections is finding the appropriate reading level for the user.

**Writing**

Many CALL programs fail to address writing. This is likely because it is hard for any software to grade and assess writing compositions. Those programs that do include writing cannot adequately assess grammar, but they can check spelling. The problem with spell checking devices in CALL is the student will often accept correction suggestions without ever actually learning but instead depending on the computer. If the CALL is the single tool for teaching the language, the student is likely to have poor writing skills because of the failure to satisfactorily assess and provide feedback to student-submitted compositions.

**Listening**
The major strength of computer-assisted language learning programs is that it provides the user with many opportunities to hear the second language. This typically consists of songs, rhymes, and stories that are read aloud. The programs that have more than one speaker expose students to different accents and even rates of delivery. This gives the learner a more authentic learning experience. The flip side to having numerous speakers is that hearing one voice provides the listener with familiarity.

**Speaking**

The speaking component of these language learning software programs has its weaknesses. Speaking typically consists of listen and repeat exercises. This is especially challenging in a classroom full of students speaking at the same time with headphones on. Students cannot hear themselves speaking, and therefore they cannot do as much self-correction as they otherwise could. Also, the feedback for speaking activities is not likely to be immediate unless the computer program itself is grading the speech. In this case, the feedback is not reliable. No computer can assess speech better than a native speaker could. However, those programs that record the speech portions and submit them to the teacher for grading do not provide immediate feedback either. The teacher has to subjectively grade the repetitive speech recordings one at a time. It would be more efficient for the teacher to just speak with each student and evaluate progress that way.

**Software Drawbacks**

One major barrier of CALL is that most materials are created by teachers with limited technical skills or by technicians who have no experience in teaching. This normally results in the minimal, gap-filling language exercises. In a 1995 article authors
Segalowitz and Garbonton point out that most of what we hear and read requires much more than only understanding words in isolation because we have to be able to relate information in order to truly learn it. Segalowitz and Garbonton continue, stating that lexical skills are best developed in context, not through direct instruction on specific vocabulary. Research from Nagy and Herman (1987) support this claim, arguing that further knowledge of vocabulary is organized by schema. Vocabulary drill and fill-in-the-blank exercises do not support the need to learn in context and often do not build on schema. When programs do teach context through simulations, the exercises are not always free of cultural biases. As a result, the word-filling exercises provided by most CALL programs do not allow learners to gain full comprehension of the vocabulary they aim to teach.

Feedback

The most critical setback to computer-assisted language learning is the lack of feedback. According to Sales (1993), feedback is the information the instructor gives the learner to shape his or her perceptions after providing instructional input. Feedback is not limited to telling the student whether his or her answer is correct. Most would agree that the best feedback a learner can receive details much more than answer correctness. However, the majority of language-learning software programs provide nothing more than this in terms of feedback. In this way, feedback is viewed as any response the computer gives a learner after submitting an answer (Wager, 1985). Computers cannot replace teachers. Teachers can react and handle unexpected learning problems. The computer cannot respond to learners’ questions immediately or in depth, nor can it perform clarity checks after explaining a troublesome concept. All in
all, the computer has artificial intelligence that cannot provide the most appropriate feedback possible.

Expenses

The number one drawback with CALL is financing it. After researching the costs on each software package’s website, the author found that the average cost of the software programs mentioned above, Rosetta Stone, Natively English, Dynamic English, White Smoke 2011, Transparent Language, BYKI, and Rocket varies from $110-$209. This is for one single license. Schools with many language learners would need at least 10-15 licenses. They also need the computers to put the software on.

Research (Beatty, 2001) has found that the setback with developing more sophisticated CALL programs is that there is no money to support it. This explains why developers are typically educators or software designers. It also explains why the programs typically include the minimal fill-in-the-blank exercises. There is little funding to provide more elaborate programs. Second language program administrators see little need for software when they have staff to teach. However, some language learning programs aim to replace teachers. Herschbach (1994) affirms that the new technologies will not likely replace teachers but supplement instruction. If Herschbach is correct then program administrators and school systems would be paying for both educators and program software.

The expenses of CALL programs are not limited to paying only for the software. Educators have to own the computers to put the software on, and those computers must have the hardware necessary to support the program. Maintenance on the computers and systems has to be done regularly, and the software typically requires
frequent upgrades. In most language learning programs, there is a computer technician who helps troubleshoot with software when problems arise. This person may also be responsible for training the staff on how to properly use the programs.

**Advances in CALL Programs**

Though most CALL programs have been limited to the aforementioned vocabulary drill exercises, the field of computer-assisted language learning is constantly developing. According to Kartal (2010), the language teaching field is the field in social sciences that needs the most scientific innovations and technologic inventions because sound production and pictures are so imperative in language learning. Kartal (2010) also states that the number of language instruction programs and sites have increased in both number and variety. CALL programs have become multimedia software that

**Motivation**

With the emergence of computer-assisted language learning (CALL), the nature of language learning is evolving to emphasize self-directed learning. This also increases motivation because students can set their own pace and feel more independent. Another motivator is that computers are seen as fashionable because they are associated with fun and games, so students may not realize they are playing an educational “game” (Lee, 2000).

**Individualization**

An article from the Turkish Online Journal of Educational Technology makes a valid point in stating that what is most important in contributing to language acquisition is accommodating the learner’s learning style (Kartal, 2005). Technology can significantly cater to shy and/or inhibited students because they can work independently
A major pro of CALL is that it is available at any time. Users who buy the software to learn outside of the classroom can work whenever they like and move at their own desired pace.

**Imagine Learning**

The Imagine Learning software program is different from most in that instead of being created by either an educator or a software designer, the development team is comprised of “educators, writers, artists, programmers, videographers, and musicians” (Imagine Learning). The program makes use of a subversive form of teaching; the students think they are playing games and are unaware of the learning objectives involved. According to author Ken Beatty, “the best educational games are those which embed the pedagogical objectives so that the learners' perceptions are of play, while the teachers' hidden objectives are still achieved” (2003). In the author's experience, Imagine Learning does this successfully.

The Imagine Learning program is designed to look like various arcade-style games. In analyzing the software, the author found that the main curriculum areas covered in these “games” are literacy skills, vocabulary development, listening, and speaking. Each student is given a pre-assessment in each of these categories to determine how much feedback and instruction the student should receive in English and in the student’s first language. First language support is provided as needed and fades as the student progresses. The software currently provides translation of key vocabulary words and customizes activities in eleven different languages (Imagine Learning). The individualization of first language support is what makes this program considerably different from other computer-assisted language learning tools.
One question that arises from the entertainment applications of this program is raised by Ken Beatty who asks, “To what degree do young learners transfer their computer skills and enthusiasm to learning other approaches?” (2000). In the author’s personal experience with Imagine Learning, there was a considerable amount of transfer from the computer to the classroom. This program was used to supplement English as a Second Language classes for kindergarten through second grade classes (ages 5-9, roughly). Students would use the program for 24 minutes each day, which was balanced with 30 minutes of direct instruction. For example, the transfer was apparent when students would sing songs they learned on the program to the teacher and their classmates. Oftentimes students would speak about characters from the program and incorporate motivational phrases used like “Go for the gold!” in their everyday speech.

The program also provides the much-needed feedback that other programs lack. Feedback varies from detailed reports (see Tables A and B) to simple interface between the computer and the student. The class summary informs the teacher of how much time each student is spending on the program (within a specified timeframe) as well as breaking down where students are in terms of phonemic awareness and word recognition. The program caters to both beginning and advanced learners by assessing where students are initially in each area and allowing them to skip those skills they have completely mastered. For the beginners, the literacy section provides decodable books—those with graphics and/or animations that support the text. Feedback is positive, corrective, and immediate.
QuickTime™ and a decompressor are needed to see this picture.
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Table B.
The information in Tables A and B shows the amounts of time students are spending on the program. This can be printed at any time the teacher desires, and the teacher may select a specific timeframe to look at. It also shows the percentage of lessons completed for each student. This is particularly useful in comparing students’ ability levels and determining progress. Because teachers can look at this information with selected dates entered, they can chart overall progress or progress from grading period to grading period. One thing that was noted from the table and not the author’s research is the emphasis on repetition. In examining Vocab 1 under Language Development, for instance, Student 2 has mastered 48 out of 62 vocabulary words. The program is designed to reach full mastery of the skills before it moves on. Student 1 has learned 26 out of 27 words in Vocab 1 but will not move on until he/she masters the entire vocabulary. This emphasis is especially useful to students who are not exposed to the target language outside of the classroom. They may forget words learned easier, so the program refreshes on all the words until they have successfully learned all the meanings.

It is important to note that the progress made while using this program was not without additional language support. These students are exposed to the target language five days each week for seven hours each day. The program gives the teacher information about how much first language support it provides each student. As time goes by and students are exposed to the target language regularly, their language support decreases steadily in most cases. However, the computer program is likely not responsible for the second language growth. It provides support and introduces vocabulary and reading skills to beginning readers. It cannot be concluded from this
data that the program is solely accountable for teaching the target language, but it does show the vast improvements students are making. The table above can be printed whenever the teacher likes, and he/she can use this information to chart growth in the second language.

**Implications for the Classroom**

Based on the author’s research and personal experience with CALL, she believes that it should function as an add-on to instruction but not as a replacement for a teacher. Warschauer (1998) lists the benefits of including CALL into a language learning classroom:

1. multimodal practice with feedback
2. individualization in a large class
3. pair and small group work on projects, either collaboratively or competitively
4. the fun factor
5. variety in the resources available and learning styles used
6. exploratory learning with large amounts of language data
7. real-life skill-building in computer use

The multimodal practice and individualization cater to different learning styles. A teacher can work with a small group of students or do one-on-one while others work on the computer lessons. This benefits all of the students, and it especially helpful to those who may need additional teacher assistance. The feedback the programs provide let teachers with large classes know more information about student progress than can be assessed during whole-group instruction. In another way, the feedback lets the students know how they are progressing in their learning.
The pair and small group work could involve working together on lessons or simply making a competition/game out of an exercise that two students are completing at the same time. This brings in the fun factor. Learners can enjoy their exposure to the second language through a variety of activities and games. The multimedia programs expose students to language by letting them explore with the click of a mouse. Though it is not the main objective of computer-assisted language learning, these programs teach students how to use a computer.

Author’s View

After reviewing the literature on the field of computer-assisted language learning software and collecting information from personal experience with one such program, the author has created methods for reaching the apex of efficacy using CALL software. The author’s personal experience with CALL has been limited to using it to supplement teaching. However, the author has carefully analyzed research on CALL software meant to replace the teacher. In using her experience and knowledge of research in CALL, the author has formed an opinion on how to most effectively utilize CALL. As Lai & Kritsonis (2006) state, "[...] we must recognize both advantages and disadvantages of using computers so we can get the maximum effectiveness of technology to enhance second language learning." The strengths of CALL exist in its reading and listening components. Teachers should use these strengths to allow them more time to focus the programs’ weaknesses—writing and speaking. Overall, the CALL software should not be used to replace a teacher, but it should be used as a device for scaffolding instruction. The software packages cannot replace authentic conversation, which can be done through technology, but not through these types of software programs.
Because there is no replacement for real communication, these programs fail to teach all the major skills language learners need to achieve in order to become fluent in the target language.

**Conclusion**

The above review of the benefits and drawbacks of computer-assisted language learning could not possibly address all the elements of technology-based instruction since it is constantly evolving. However revolutionary the field of CALL may be, it is still not clear that it can be equated with the benefits of second language learning in human interaction. As pointed out by Garrett (1991), “the use of the computer does not constitute a method,” instead, technology is a “medium in which a variety of methods, approaches, and pedagogical philosophies may be implemented.” The effectiveness of CALL is not in the medium itself but most importantly in how it is utilized. Leloup and Ponterio (2003) sum up the controversy surrounding second language acquisition and technology by saying, "A badly conceived interactive task or activity is poor whether it is done on a computer or face to face. Using technology is not enough." Any use of CALL software should be meaningful and authentic in order to truly teach the learner the second language.
References


