Computer–Aided Language Learning

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INTRODUCTION

Gamper and Knapp (2002) define Computer-Aided Language Learning (CALL) as "a research field which explores the use of computational methods and techniques as well as new media for language learning and teaching" (p. 329). In more general terms, CALL can be thought of as the use of computers to help learn languages. As a sub-category of Computer-Aided Learning (CAL), CALL deals exclusively with learning languages. Specific examples of CALL tools and utilities include games, tests, exercises, and word processing, and their use in a CALL session is determined by the syllabus, software, teacher, or learner.

The popularity of CALL is constantly increasing as multimedia developments and technology are advancing. In the last few years, CALL systems have become fully integrated with audio and video support, creating interesting and attractive presentations. With the Internet emerging, a new platform for CALL systems has evolved. Thus, there has been a move from CD-ROM-based CALL to online Web-based CALL, enabling more connectivity and interactivity with other students or teachers. Important examples of why CALL has moved to Web-based mediums include the ability to carry out audio and videoconferencing, use chat rooms and e-mail, and communicate with native speakers of the language.

CALL METHODOLOGY

As Hubbard (1996) points out, the question for many language teachers now seems to be not whether, but how computers can aid in the language learning process. The use of computers in language acquisition is becoming common practice, a challenge for research, and a business opportunity.

In 1987 Hubbard found that courseware reviews commonly focus on technical considerations, and that this was sometimes at the expense of language teaching and learning considerations. He proposed a CALL Methodological Framework (Hubbard, 1987) that synthesises the previously developed frameworks of Philips (1985) and Richards and Rodgers (1982). Key players in Hubbard's (1987) framework are the learner, the developer, the evaluator, and the teacher. Hubbard's methodology consists of three modules—development, evaluation, and implementation—in which "development necessarily precedes evaluation while both development and evaluation precede implementation." Furthermore in this framework, an integral approach to evaluation, development, and implementation is followed where "evaluation can inform development and implementation experiences can inform both development and evaluation" (Hubbard, 1996, p. 20).

Development Module

Hubbard's development module comprises three sections: approach, design, and procedure. In the approach section, *linguistic assumptions* and *learning assumptions* are the two principal determining elements. The two fundamental components of the design section are the *learner profiles* and the *syllabus*. Finally, the procedure section of the development model contains the elements to be considered in the actual layout of the program that presents the materials (Hubbard, 1996).

Evaluation Module

The evaluation module is made up of three sections: teacher fit (approach), learner fit, (design) and operational description (procedure). This module focuses on pedagogical issues like learning style,

teaching approach, and linguistic assumptions (Hubbard, 1996). Although not addressed by Hubbard, one can assume that the evaluation module can also contain elements of usability evaluation of the CALL system.

Implementation Module

The implementation module is constituted by the areas to be considered for the implementation such as accessibility, the flow of a CALL lesson, learner use of courseware, and teacher control. Hubbard (1996) states: "The two aspects of particular note are the central role of teacher control in learner use and the importance of supporting preparatory and follow-up activities" (p. 31).

FUTURE OF CALL

In this section we discuss several elements related to the present and the immediate future of CALL. There are examples of CALL systems today that we could not even think of years ago. In the same way, and due to the largely increased interest in CALL research and applications, in the future there will probably be CALL systems available with functionality that at the present either seem unattainable or unrealistic.

Intelligent CALL

Intelligent Computer-Assisted Language Learning (ICALL) has already started to be implemented. ICALL explores the use of Artificial Intelligence methods and techniques for language learning (Gamper & Knapp, 2002). The following is a brief description of a few AI techniques that are starting to be used in CALL systems:

- Speech recognition technologies have reached the stage where CALL learners can talk into the microphone, and their pronunciation and fluency are tested, giving them results on their progress. One such CALL software that takes advantage of speech recognition technologies is the "Tell me more education®" packages (see http://www.auralog.com). In the future,

speech recognition will reach the stage where a conversational mode can exist between the learner and the computer, just like the learner would have a conversation with a "living" person.

- Expert systems work by storing large amounts of knowledge about language learning. This knowledge includes questions and answers, typical mistakes, and learning strategies. It is then used to analyse the learners' interaction with the computer and produce detailed feedback.

Other AI techniques for CALL include Machine Translation (e.g., "Babel Fish Translation®"; see http://babelfish.altavista.com) and Intelligent Tutoring Systems (e.g., personalised learning environments).

Computer-Assisted Language Testing

Computer-Assisted Language Testing (CALT) can be defined as "an integrated procedure in which language performance is elicited and assessed with the help of a computer" (Niojons, 1994). Like CALL, CALT is not a relatively new field, but interest in this area has increased significantly in the past few years. A very common example of the use of CALT is for multiple choice questions. If the testing system is designed and implemented correctly, then the results of the computer testing will be immediate and without errors, whereas if multiple choice questions are corrected by people, there is always the possibility of human error, and also the process is a lot lengthier and time consuming. CALT systems can be used for reading tests, listening tests, and writing tests. Games can also be used as CALT systems. For example, hangman is a great word game, and is fun and engaging. It is important, however, for CALT programs to provide the learners with clear and accurate feedback results.

One of the most successful CALT systems is the one used for the TOEFL exams. The Test of English as a Foreign Language (TOEFL) is taken worldwide by nearly a million people each year. It is an important test since the results determine whether students are to be accepted into many U.S. universities. TOEFL used to be a 'pen-and-pencil' exam, but

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