Lecture- 15

Research in CALL

Module -37

RESEARCH IN CALL

Topic No: 55

A New Field: Reporting CALL Research; **Current Research Interests; Approaches to Research in CALL; The Computer as a Research Tool; The Role of Commercial Publishers**

Current Research Interests

This lesson begins with an examination of some current research interests in CALL. As is common in other fields, research interests in CALL have tended to follow trends; for example, the foci of many early studies were on quantitative and qualitative justifications of CALL. In these studies, the computer was usually pitted against the classroom teacher and measured, usually unflatteringly, for effectiveness in teaching a discrete set of knowledge; for example, a researcher might measure student learning of grammar at a computer with a teacher-led class serving as a control group. Such studies are still undertaken, with a focus on particular hardware or software, but they are not as frequent, or perhaps not even as necessary since CALL is now perceived as something that is inherently different and /or complementary to classroom teaching.

To assist in an examination of the current research interests, this section reviews and categorizes 102 publications in the field to try to define current areas of interest. Brief summaries of several of the articles are given to illustrate the current concerns and a range of issues is highlighted.

15.1 A new field: Reporting CALL Research

The discipline of CALL is relatively new and differs from other fields of study within applied linguistics for the basic reason that the rate of change of the technological aspects deeply influences theory, practice and research (See Figure 1). For this reason, 30-year-old research providing findings critical of text-only modes of representation is largely irrelevant

and obsolete, other than from a historical perspective. And one may assume that this trend of perpetual obsolescence will continue as computers and their interfaces become more powerful, more transparent

Figure : Progression in computer presentation technology

and easier for learner interactions and teacher programming. At the same time, CALL has been steadily migrating to other platforms as they themselves have become more powerful, so that computer games, mobile telephones and even music players have become plausible learning plat-forms for CALL.

Many of the original CALL programs are not even able to run on current computer platforms, let alone appeal to learners with their austere presentation and limited range of functions. This is especially true as, a few decades ago, the personal computer did not exist, yet is now becoming as common as other household appliances and completely familiar to the current generation of learners in those schools where computers are used. Such students commonly view computers not as scientific and educational tools, but primarily as tools for

communication and sources of entertainment; the need to meet such expectations has given rise to a field of courseware known as edutainment.

15.2 Approaches to Research in CALL

The pace of change in computer technology, and the usual delay in conducting, reporting, publishing and disseminating research, also serves to differentiate CALL from other areas in applied linguistics. This delay means that, even in the case of reporting research through a non-paper medium such as on the WWW or by email, a great deal of research may be out of date before it reaches its intended audience. The nature of this delay has led not just to an extensive duplication of effort, but also to a lack of recognition of leadership in CALL research as the usual incremental debates and advances are labelled irrelevant if the software on which they are based has been superseded by newer versions which address some or all of the earlier shortcomings.

Duplication of effort is also common because of the distributed nature of personal computers. The early years of research in computing required access to mainframe facilities at key universities but, with the advent of small, inexpensive and powerful computers, research need not take place in universities and trickle down to the language classroom. Instead, it has become increasingly common for trained teachers to conduct and report research based on data gathered in their own classrooms and from student experiences on computer platforms away from the classroom.

15.3 The Computer as a Research Tool

The computer is not only a subject of research; it is now a universally important tool in conducting research. On the simplest level, computers are used to save time previously spent compiling and presenting statistical data. On more advanced levels, the computer is used to collect data. For example, computers can collect information about the users' actions at the keyboard, such as by recording each single keystroke in real time. These actions can be played back by the researcher to see, for example, successive drafts in the writing process and use (and abuse) of tools such as spelling and grammar checkers and templates. Computers also provide fuller feedback on the details of language issues. Heift and Rimrott (2008) used corpus linguistics to compile and evaluate the frequency of 1,268 spelling errors and then went on to examine the role that error correction tools had in helping address them in student writing. In another study, Knutsson et al. (2007) looked at how and when students decided to accept proffered grammar corrections.

Data mined from online text and chat, as well as that stored on a user's hard drive can provide a rich source of data for corpora, especially from letters, memos, emails, student assignments and other documents. The computer also makes it far easier to manipulate, examine and present such corpora. Another computer revolution has been the creation of templates that allow surveys to be easily created, conducted, distributed and tabulated. Programs such as Survey Monkey (www.surveymonkey.com) are designed to allow novices to construct professional-looking surveys and distribute notice of them by email at a minimal cost. Websites can be set up to include surveys that can collect data worldwide.

15.4 The Role of Commercial Publishers

A further difference between CALL and other areas of applied linguistics is that the commercial software industry, not university academics, is the major instigator/creator of the most commonly used learning materials. Although it can be argued that the same is true for traditional publishing, the relationship between educators and print publishers is more of a symbiotic nature, particularly as governments, schools and universities tend to have syllabi to which publishers' materials must conform. The same is less true for CALL materials for the simple reason that there are not enough CALL materials to choose from and the market is not yet as competitive or adaptable to local needs, especially considering the high costs of producing an innovative and high-quality CD-ROM or DVD, a process more akin to producing a film than publishing a textbook.

On the other hand, publishers are increasingly offering interactive CD-ROMs or simply companion websites to textbooks – a trend taking over from including CD-ROMs in the back of a student's book – although these are seldom more sophisticated than collections of audio files, listen-ing transcripts and simple multiple choice tests. Still, there are interesting possibilities, such as the use of MP4 podcast files which can be downloaded onto a personal audio player. As the learner listens to the podcast, the corresponding text scrolls in sync along with what the learner is hearing (see http://www.sounds-good-online.com/go-online). This is an example of how, overall, changes in CALL tend to be governed more by the above-mentioned advances in technology than by pedagogical insights.

Module -38

REVIEWING CURRENT STUDIES IN CALL

Topic No: 56

Reviewing current studies: a survey; Blackboard Vista

15.5 Reviewing current studies: a survey

As mentioned earlier, the areas of research emphasized in CALL are in a constant state of change. More than in most other fields, such changes are influenced by key questions being answered by empirical research or by concerns being made redundant by the introduction of new technology. For example, a principal concern in CALL during the mid-1980s to early 1990s was disorientation as a learner navigates hypertext and hypermedia links within an information space (see Conklin, 1987; Liu, 1992; Marchionini, 1988). However, concerns about hypertext and hyper-media were subsequently largely replaced by concerns about multimedia. Although navigation and disorientation are still concerns, a combination of better and standardized interface designs (e.g. see Howlett, 1996), as well as increased computer literacy among both teachers and learners, have made many related issues irrelevant. Emphasis today is largely shifting to blended learning, online applications, social networking sites and other tools that facilitate communication and, as a peripheral benefit, are used or can be used to improve and document language acquisition.

In this section, an attempt is made to give a rough overview of current research interests in CALL. Defining the parameters of such an overview presents several challenges, although it is easy to imagine what the perfect solution might be: one would survey everyone doing every kind of research in CALL in all languages in every country worldwide. However, even identifying all the members of such a group would be an impossible task as would be the job of soliciting and assessing their contributions.

Levy (1997) created one methodology when he narrowed the task and contacted what he labels key practitioners in 24 countries. This was done through a process of first identifying prominent contributors to CALL literature and asking each key practitioner to recommend one or two others.

In this way, 213 individuals were identified and sent detailed questionnaires with 104 individuals from 18 countries eventually returning usable questionnaires.

Problems with this approach include those inherent in questionnaire design, such as possible author bias on, and wording of, the questions asked and areas of research that might be covered. This method is also time-consuming and reliant upon the goodwill of the participants although, in the case of Levy's study, the response rate – almost 49 per cent (all percentages have been rounded off) – was excellent. But a further problem is that those who are established in the field of CALL may have established their reputations and research focus on technologies that are no longer on the cutting edge. For example, for a question on what CALL encompasses, traditional text gap-filling tasks rank second highest in importance among Levy's respondents, yet in the review undertaken in the first edition of this book in 2001, it was reported in only 1 of 145 studies (Coniam, 1997) and, even then, only as a drawback of traditional CALL software; in the review done for the years 2006 through 2008, there are none. One reason for this shift might be the very reason for writing the first edition of this book; the topics emphasized in CALL research have changed since Levy's survey which, while not published until 1997, was actually completed in March 1991. Still, as a methodology, it is a useful tool that should be used more often as it has an additional benefit of informally networking those working in the field.

A slightly less daunting task would be to survey for a short period all publications likely to contain articles related to CALL, including journals, conference proceedings, dissertation abstracts (at both the M.A. and Ph.D. levels) and recent books. And although this methodology would be marginally more workable, it would also present problems. For example, issues tangential to CALL research often appear in a broad range of journals (e.g. software engineering) that may have little or no other focus on computers and language learning; simply identifying the journals to examine would be problematical, let alone the task of obtaining, examining and assessing them.

As for the thousands of conferences held each year, a single import-ant presentation on CALL might be lost among other topics. Reviewing current dissertation abstracts is also problematical as such abstracts may represent research begun as long as 10 years earlier and, in keeping with the nature of higher-level academic research, are more likely to focus on sometimes esoteric topics. A similar problem faces attempts to review all pertinent books; although published research in the quickly changing field of CALL is likely to yield useful principles, some information may be quickly dated. Books also tend to focus on a broader range of concerns and are less easily classifiable.

Based on these concerns, an expedient method of obtaining an over-view is to review a large database of recent journal articles. Journal articles generally present a broader and more representative range of issues than books or dissertations and have the advantage of a relatively shorter lag-time between research and publication. Also, authors of books and dissertations often put their principal concerns into journal articles, so the ideas important in their main publications are still likely to be represented.

In reviewing journals, the most convenient method was to conduct a search of a journal abstract database. Several databases were searched for the keywords Computer-Assisted language learning. These keywords may seem a bit narrow in focus, excluding as they do a range of related acronyms such as CAI, CAL and CMC, but, even in studies on CAI, CAL and CMC that do not mention CALL, keyword summaries and digital document tagging often include the phrase Computer-Assisted language learning.

Of the various databases reviewed in 2009 for the keywords Computer-Assisted language learning for the years 2006 to 2008, Educational Research International Clearinghouse (ERIC) www.eric.ed.gov/ ERICWebPortal / Home.portal provided the most responses: 102. These are examined below.

15.5.1 Languages

To a certain extent, the languages found in the survey reflect the English language and American biases of ERIC, an American government service. Despite the fact that ERIC invites submissions worldwide, none of the articles was written in another language. This probably reflects that fact that local databases from different countries are increasingly able to serve publications in different languages emphasizing, for example, Japanese in Japan. However, 7 other languages are mentioned, sometimes in combination, in many of the 102 articles. This is considerably fewer than the 51 articles mentioned in the 2001 study, but may reflect the growth of opportunities for local publishing on first-language issues.

Articles with non-English foci include three for German, two each for Chinese, Japanese and Spanish and Portuguese, and one each for Latin and Italian. In addition, one article (Tozcu, 2008), discusses the teaching of the non-Latin orthographies of Hindi, Pashto, Dari, Persian (Farsi) and Hebrew using an interactive whiteboard.

15.5.2 Skills

The emphasis of the four key skills in language learning reflects to some extent the relative ease (and difficulty) that computers have with dealing with learner input and output: reading: 6 articles out of 102; writing: 12 articles; speaking: 4 articles; and listening: 5 articles. Writing is usually the most popular focus of CALL studies as it is the easiest way for a learner to input ideas and information on a computer. It is currently far easier than speaking which requires the use of special software (e.g. Dragon Systems Naturally Speaking) and extensive 'training' of the computer for each user of the system. This training, however, is restricted to mature adult voices; many speech recognition software programs are not able to deal with young voices.

In many CALL software programs a subroutine asks learners to repeat keywords and sentences and digitally measures the sound waves against model pronunciation in a graphic way visible to the learner. However, these models can be both inaccurate, depending on the quality of the microphone and background noise, and difficult for students to understand to the point where they can meaningfully modify their own speech.

Although it is easy to input writing to a computer and it is also becoming easier to input speech, it is extremely difficult for a computer to evaluate meaning in writing and speech. In terms of reading and listening, it is easy for computers to present stimulating input for the learner and to provide layers of help and testing that measure comprehension.

Another way in which computers promote interaction, through at least some of the four skills, is by providing a platform for collaboration and cooperation. Collaboration and cooperation have become such a norm that it is no longer a principal focus of many studies, except when there is something distinctive about the mode(s) of collaboration or cooperation. Hauck and Youngs (2008) use of multiple modes of communication among English and French speakers shows the extent to which collaboration has been enabled by improved technology. Students in the study not only shared text and chat capabilities, but also audio channels and shared graphical interfaces.

Beyond email and chat lines is text-based virtual reality. Ranalli (2008) bemoans the lack of second-language games and wonders whether existing virtual-reality games might be used for second-language instruction. He answers his own question with a study on the use of The SIMS, a game based on the lives and habits of on-screen people. Sykes et al. (2008) review other games

in much the same way, citing Second Life and there, as well as massively multiplayer online games (MMOGs) such as World of Warcraft. Peterson (2006) also talks about learner relationships in such environments and games, focusing on avatars, the online representations that players create. Although outside the 2006 – 08 frame of this survey, this last point is expanded upon by Ho and Ong (2009) in their study of critical thinking in Second Life as students use a variety of linguistic gambits to construct comfortable realities for themselves and others.

As with any new technology, there are concerns about the cognitive overhead required to learn about the technology balanced against the learning benefits. Specifically, one questions whether participating in a virtual community compares favourably with participating in a real com-munity with the accompanying richness of facial expressions and body language, as well as more sophisticated social interactions. There is also a concern about the safety of such environments, sometimes frequented by sexual predators.

Other basic skills besides reading, writing, speaking and listening, include translation, which comprises 3 of 102 entries, vocabulary with 11 entries and grammar with 3 entries.

Grammar is sometimes a focus of CALL programs because its rule-driven nature is easily mapped to computer programs, as noted by Lafford et al. (2007). Grammar is also often mentioned in CALL in connection with grammar checkers. Early studies focused on the workability of such programs. They generally concluded that such programs are either inadequate because of the nonsensical suggestions that they are likely to make (e.g. blanket rejection of the passive voice and long sentences) or that they simply need to be used like any other tool in the classroom, with thoughtful supervision, and through adjusting the parameters and lexical items which might be considered by the grammar program. Heift (2006) discuss the utility of grammar checkers as special features of help programs in relation to the teaching of German.

German is also the focus of an article about an innovative and witty online grammar program, Grimm (http://tltc.la.utexas.edu/gg), which uses 36 updated Grimm's fairytale characters to illustrate grammatical points (see Karlström et al. (2007). One can easily imagine an interactive virtual iteration, perhaps in a commercialized form.

Vocabulary is similarly dealt with in terms of evaluating and creating such programs, but there is also a focus on second-language acquisition, as measured through vocabulary. For example, Christensen et al. (2007) compare the impact of a computer-based diglot reader (i.e. side-by-side bilingual reader) with that of a computer-based drill and practice program on second-language acquisition.

Translation in CALL often features computer-based or so-called machine translation (MT) programs but only one of the articles (Nino, 2008) deals with the topic in a review of some MT program and post-editing issues.

The problem with current translation programs is that they are often inadequate to the task of dealing with natural languages and their translations, particularly when faced with eloquent or imperfect first-language input, are often poor.

15.5.3 Processes

The processes involved in many of the articles give an idea of the general interests of researchers and, considering the last edition of this book when a similar study was undertaken, highlight shifts in emphasis. Developing or creating learning materials was a major focus featuring in 63 of 145 articles, or 42 percent, but make up just 20 per cent of the 102 articles from 2006 to 2008. This is followed by evaluating (14). The term research is mentioned in many of the studies but a careful review suggests that most studies labelled research are simply literature reviews with little or no actual research being conducted. This is a concern as such reviews purporting to be research may refer to studies of older technologies and techniques rather than investigating newer technologies and techniques in the field. The term reviewing mentioned in several of the studies would be more accurate.

Missing from the list is the term predicting. There are no entries for predicting the future of CALL; many now shy away from committing themselves (see Concept 2.6) to the future of CALL as it has been so difficult to predict in the past.

15.5.4 Technologies

New technical possibilities always offer opportunities for new ways of offering CALL and video, a technology which is becoming increasingly accessible as Internet connection speeds improve, is mentioned in 20 of the 102 studies. These papers usually deal with video in an interactive context; that is, the video in the software reacts to the learner's progress through the CALL program. In 1997, Wright (1997) predicted the obsolescence of CD-ROMs through their replacement with DVDs, but both CD-ROMs and DVDs are only mentioned once each in 102 articles; in this age of online files and powerful USB flash drives, storage media are no longer an issue of importance.

Although they are not primarily thought of as a storage medium, servers accessed through the Internet often serve as such. Through linked pages, storage is virtually limitless. The Internet features in nine of the studies, often in terms of access to authentic or other learning materials. For example, Abraham (2008) discusses the usefulness of computer-mediated glosses, Hauck and Youngs' (2008) talk about the richness of the resources available on the WWW. Distance education is no longer as important a consideration as it is being increasingly replaced with blended learning in which some combination of textbook, online learning and traditional classroom interaction are all used.

Autonomy and independent learning were the focus of two articles. Fischer (2007) talks about the need for training in order to make distance education a success. Stracke (2007) examines why three students dropped out of a blended-learning course, identifying the perceived lack of support, particularly in terms of the lack of face-to-face support, a lack of print learning materials and a general rejection of the computer as a medium of language learning.

Creating online courses is often a challenge, but there is little emphasis on authoring programs. Cushion (2006) offers one perspective, although on a custom-developed program. In his article, he notes that computer science is dominated by a business model, while CALL is more of a public service or what he calls a process model. The different approaches can lead to conflicts between what is pedagogically appropriate and economically advantageous.

Regardless, many teachers now find that there are authoring packages that take care of the presentation of content, leaving the teachers simply to supply the content. One example is Blackboard Vista, a particularly flexible tool with an easy-to-use interface offering many types of activities, such as email, bulletin boards, chat rooms and quizzes, as well as places for tutorial and lecture notes.

Blackboard Vista

Blackboard Vista is an integrated set of educational tools for developing and delivering courses or course components over the WWW and is now used at universities and colleges all over the world. There are many advantages, the greatest being standardization. Students who learn Blackboard Vista in one course can transfer that learning to another course. The teacher can track students' progress through and participation in the online material – including the number of minutes spent using the course materials. Online quizzes can be timed for release at a specific time for a specific duration then graded for quick student feedback.

The program also has several features for managing class activities, such as a calendar, email and bulletin boards. Learners can also use features to create their own web pages within Blackboard Vista. Unlike the use of the

WWW in general, Blackboard Vista provides password protection so that only the students enrolled on a course at the time of the course have access to the materials and each other's writing. Such an arrangement also means that once a learner is immersed in the Blackboard Vista environment, she / he is more likely to focus on communication with classmates and the teacher, as opposed to the world at large. A general – if wistful – disadvantage of Blackboard Vista is that it is inaccessible to those outside the course. Course content that was once fully and freely available to anyone with an internet connection is now hidden.

Example: Blackboard Vista

But most of the articles take authoring for granted and consider it simply as a mode of presentation (see Example 8.2). A signal of the widespread shift of focus on large authoring projects to user-friendlier online utilities found in specific programs to online learner interactions of new kinds is the proliferation of web logs, or blogs. Ducate and Lomicka (2008) discuss a year-long project in which students developed their reading and writing skills by creating and maintaining their own blogs. Hsu et al. (2008) dis-cuss the use of audio-blogs (recorded through the use of cell phones) to promote the use of speaking and listening skills.

Several varieties of CALL have already been outlined (see Concept 1.2). In this survey, Intelligent Computer-Assisted Language Learning (ICALL) features in three articles but none features a completed software project that is ready for evaluation.

Educational technology was a feature of 30 of the 102 articles (21 per cent) the last time the study was done, but it is the keyword focus of only 1 article; language labs also show a declining focus, in part because of the ability of the web and a standard laptop computer to allow for any-where anytime learning. Missing from these articles is a systematic way to evaluate software. This may be the case because it has been done before. For example, Gaer (1998) provides a useful type of article, a question and answer (Q&A) session, in which she asks and answers the following questions related to conducting software evaluations:

1. What types of software are available?
2. What kind of software is appropriate for adult ESL classrooms?
3. How do I select software for the classroom?
4. What kind of technical expertise do I need?
5. What do the students need to know about computers?
6. How do I coordinate the software with the curriculum?
7. How can I integrate the software into instruction?
8. How can I follow up the software with activities?
9. How do I prepare my students to use the specific software?

Such articles are perhaps more typical of CALL than other fields in applied linguistics as the ever-changing nature of software and hardware means teachers need to learn new technologies quickly. Such articles also have the function of gently addressing computer phobias.

In early writings on computers from the 1950s through the 1970s, there was often emphasis on hardware, the computers that ran the software pro-grams. In the 1980s and 1990s in particular, there were debates over the superiority of Apple or Windows interfaces. Because these debates tended to devolve to levels of personal attack, online CALL forums often exclude such postings. However, with the rise of cross-platform software (software which works on both Macintosh and Windows-based computers) these arguments are no longer voiced. Windows is mentioned in only one article, with reference to a chat feature.

An example of research investigating the potential for speech recogni-tion is reference to a chat feature by Neri et al. (2008) who look at a CALL program with speech recognition that helps students' pronunciation develop-ment. Speech recognition deserves more attention if for no other reason that it is the one factor that is likely to lead to the end of the keyboard and, in doing so, will free computers to be as small as, or smaller than, pocket calculators a generation ago.

15.5.5 Concerns

The 102 papers in this survey voice a number of concerns to do with CALL; for example, promoting various aspects of CALL such as three papers that mention learning strategies. Studies of attitudes towards CALL are generally to do with learner and teacher impressions of working with CALL, such as a study by Figura and Jarvis (2007) of students enrolled on a summer course at a British higher education institution using a self-access centre. They found that, while students were both positive and used appropriate cognitive strategies, there was not a strong correlation in the development of social strategies.

In helping to shape the role of CALL, principles are a concern of three articles. Colpaert (2006), for example, describes how a focus on content and concepts can shift the focus from a particular technology delivering CALL. Similarly, models are part of nine of the articles. For example, Farmer and Gruba (2006) construct a model to explain end-user development (EUD). They

propose this as a way in which end users can have some control over the creation of the teaching and learning materials they use.

Among the most important paradigm shift (see Quote 9.1) in CALL is the move to individualized learning but an article by Kim (2008) suggests that trainee teachers who favour CALL in the classroom, in part through their involvement in a teacher education program and an Advanced Certificate of Educational Technology program, still see CALL as a supplemental activity and continue to embrace a teacher-centred paradigm. The study deserves widespread replication and explanation. For example, do school administrators oppose non-teacher centred paradigms? Regardless, the study cannot be extrapolated across the fragmented educational marketplace with countless new avenues for language learners to learn independently. Eventually, one would think that the classroom has the opportunity to become truly learner-centred as learners explores those resources in which they are most interested and of which they are in most in need.

A. Collins on shifts in computer-based learning:

Although written in 1991, Collins' points on the shift from traditional to computer-based learning still hole true:

- a shift from whole class to small-group instruction
- a shift from lecture and recitation to coaching
- a shift from working with better students to working with weaker ones
- a shift toward more engaged students
- a shift from assessment based on test performance to assessment based on products, progress, and effort
- a shift from a competitive to a co-operative work structure
- a shift from all students learning the same things to different students learning different things
- a shift from the primacy of verbal thinking to the integration of visual and verbal thinking

Collins (1991: 28)

Nine articles discuss different types of methods. In one, AbuSeileek (2007) examines four approaches to listening and speaking and finds a computer-mediated cooperative technique is the most successful. None of the articles features computer-adaptive testing (CAT), the process of presenting a learner with increasingly difficult questions based on his or her ability to answer each preceding question successfully. Nor is special needs a focus, despite the suitability of computers for catering to the teaching and learning needs of individuals and small groups.

15.5.6 Subjects

The subjects of the articles included in this survey tend to be at the secondary school or university level with only 4 of the 102 studies specifically mentioning children. There are perhaps several reasons for this disparity. More research is done at the university level and university students are more accustomed to being used as experimental subjects. University lecturers may also have a better understanding of and access to academic publishing and are more likely to share their results in published forums than are teachers of young children for the simple reason that university researchers are compelled to do research as part of their academic work.

Module -39

CONDUCTING RESEARCH IN CALL FIELD

Topic No: 57

Conducting Research; Action Research; Research Journals Related to CALL

15.6 Conducting Research

Research is concerned with looking at problems, asking questions and finding answers or solutions. There are many ways of looking at the research process and Brown (1988), for example, divides it into primary, where the researcher relies on first-hand data, and secondary where the researcher examines second-hand data, such as by summarizing studies by other researchers. Primary research is further divided into case study approaches and statistical approaches. Case-study approaches, often ethno-graphic in nature, are dealt with separately below. Statistical approaches are divided into survey approaches and experimental approaches.

Quote 9.2 C. Crook challenges computer versus traditional teaching:

If we do wish to conduct evaluations of what is learned in computer-based contexts, we must go beyond the input–output designs that characterize much research in the area . . . Computers are unlikely to function as magic bullets – effortlessly releasing their therapeutic effects at points identified by teachers. The unfamiliarity and wizardry that surrounds them may cultivate such notions, but the real impact of learning through this technology may need to be measured with attention to how it is assimilated into the surrounding frame of educational activity.

Crook (1994: 9)

Traditionally, much research on CALL has focused on whether or not students learn better with a computer. But, as mentioned earlier, the question is no longer *whether* or not computers should be used in the classroom. Questions now include *how* computers should be used and *for what purpose*. One of the ways for classroom teachers and other researchers to approach these questions is through Action Research, an approach ideally suited to the increasing involvement of teachers as researchers.

15.7 Action Research

Action Research asks the question Is there a better way? and usually includes three stages: planning, acting and reflecting. In planning, the classroom researcher tries to imagine a teaching/learning problem and think of ways in which intervention might solve it. Consultation is encouraged, both with teaching colleagues and the learners or subjects of the action. Although planning a timeline is encouraged, Action Researchers should also be open to adapting their plans and actions, depending on the feed-back and results they receive along the way.

The acting stage involves putting some kind of change into place. During this stage, the researcher should look for measurements of change and the success of those changes. These measurements can take the form of questionnaire results, learner logs, notes from informal discussions with colleagues and so on. In this stage, they should be shared in discussions with colleagues, posting or publishing results and meeting with concerned parties.

The reflecting stage involves assessing not just how an intervention has solved the problem set out in the planning stage, but also how the researcher's own biases and priorities may have influenced the interpretation of the results. A certain openness to unexpected results is also encouraged in Action Research.

A key feature of Action Research is that it encourages the researcher constantly to revisit each stage in what is usually termed and/or diagrammed as a spiral fashion. Also, Benson (2010) contrasts Action Research to experimental research, suggesting that it: 'does not necessarily require the "subjects" of the research to be kept in the dark about the researchers' purposes' (p. 183).

An Action Learning model (after McLean, 1995) features the following: conceptualization, implementation and interpretation, which can be defined as is detailed below.

1. Conceptualization
2. Delineate teaching/ learning process
3. Identify inputs
4. Identify outcomes
5. Implementation
6. Measure outcomes

7. Identify comparison
8. Analyse comparison
9. Interpretation
10. Judge effectiveness
11. Judge cost benefit
12. Determine action

In a typical CALL Action Research project, a teacher/researcher might go through the above stages in this way:

1. Conceptualization

Delineate teaching/learning process: the teacher defines a specific problem concerning the effectiveness of CALL then presents it to a group of learners, for example, a class of 14-year-old students from several language groups learning English, using an online messaging system. After discussion with colleagues and the learners themselves the teacher concludes that a solution might be peer-teaching approach, pairing the more able and less able students and having them share a task.

Identify inputs: the teacher defines the inputs as the assignment of pairs based on individual work and the identification and matching of more-able and less-able students. Other factors that might also influence teaching and learning also need to be identified and accounted for.

Identify outcomes: The teacher expects to see a speedier move along the CALL learning curve and increased participation particularly among the less able students. As the students' common language is English, the teacher also hopes to see a much greater use of English.

2. Implementation

Measure outcomes: the teacher collects data by informally asking learners how they like the new arrangement and what problems they might be having. With appropriate permissions, unobtrusive video might be taken and data collected from the computer of tasks, records of emails and chatline

discussions and even keystroke records (see Fischer (2007) for an overview of computer tracking software, particularly his notes on the dangers of relying on students self-reporting what they do at the computer) on some assignments. Some adjustments are made, based on the data.

Identify comparison: as hoped, computer use and use of English both increase. As an unexpected outcome, learners now access the online mess-aging system outside of class hours. However, not all the pairings are successful and some learners want to pair with peers from their first-language group, which the teacher fears may simply lead to the students using their first language and ignoring English.

Analyse comparison: the teacher analyses the benefits and drawbacks of the changes. The experiment is changed to allow learners to choose their own partners, but the teacher introduces an English-only policy in online discussions. Other teachers are invited to review the collected data and comment. At the end of the semester, students write their reflections on the changes and preferred working styles. The teacher notices that the partners who were selected as the more able learners had a lower degree of satisfaction than the less able learners.

3. Interpretation

Judge effectiveness: at the end of the semester, the teacher finds that many students publicly state that they prefer to work on their own, but this seems contradicted by their eagerness in their pair-work participation. She/He has also noticed that overall participation beyond the time required to complete class assignments has improved.

Judge cost benefit: the teacher tries to assess the extra time involved in managing the change and finds that it is inconsequential compared to the improved language use and participation.

Determine action: for the next semester, the teacher decides to repeat the experiment, but allow learners a choice of selecting their own partners or working alone. She also decides to improve the 'marketing' of the ideas and advantages behind peer work, emphasizing that the more able learner is likely to improve as he /she is forced to think about how to explain new concepts. Before then, the teacher writes up his / her findings with one of his / her colleagues and presents them at a local conference.

C. Crook (1994) on the evaluation of outcomes:

It may not be enough to expose a pupil to some software and, some time later, do an outcome test of understanding. The reason this is inadequate is because any such computer experience is more

or less situated in some broader framework of teaching activity. In short, there is a risk of casting this educational technology in terms that suggest a medical model of how it works.

Crook (1994: 9)

The distinction between the classroom teacher and the researcher is disappearing. Also, learners are becoming more involved in the research process, contributing perspectives and commenting on findings. This chapter has presented several different kinds of research as well as a general methodology, Action Research, that the teacher can make use of in the classroom.

Research Journals Related to CALL

1. **Computer Assisted Language Learning**

Journal information

Print ISSN: 0958-8221 Online ISSN: 1744-3210
8 issues per year

Computer Assisted Language Learning is included in the following abstracting, citation and information retrieval systems: Arts & Humanities Citation Index®; British Education Index (BEI); Contents Pages in Education; Current Index to Journals in Education (CIJE); Educational Technology Abstracts; Education Resources Information Center (ERIC); ERIH (European Reference Index for the Humanities, Pedagogical and Educational Research); INSPEC; Language Teaching; Linguistics Abstracts Online; Linguistics and Language Behavior Abstracts; MLA International Bibliography; Psychological Abstracts; PsycINFO; PsychLIT; SCOPUS® and the Social Sciences Citation Index®.

2. **International Journal of Computer-Assisted Language Learning and Teaching (IJCALLT)**

Journal information

Indexed In: Web of Science Emerging Sources Citation Index (ESCI), SCOPUS, INSPEC and 14 more indices
Published: Quarterly |Established: 2011
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The International Journal of Computer-Assisted Language Learning and Teaching (IJCALLT) serves as a forum for researchers, teachers, practitioners, and education professionals to discuss and share their ideas, experience, and knowledge in combining computer technology with language teaching and learning. Due to the fast pace of technological change, innovative teaching approaches and strategies should be developed to successfully integrate new technologies into language teaching. This journal provides opportunities to evaluate, improve, and apply such strategies in the fields of CALL and foreign/second language learning.

Reference Source:

1. **'Teaching Online: A Practical Guide' by Susan Ko. & Steve Rossen**
   Third Edition, published by Routledge Tylor and Francis Group London- New York