Chapter 3 Computer Assisted Language Learning

3.1 Introduction

Computer Assisted Language Learning (CALL) grew out of the field of Computer Assisted Instruction (CAI) and draws on other related fields such as Educational Psychology, Artificial Intelligence (AI), computational linguistics, instructional design, Human Computer Interaction (HCI) and SLA (Second Language Acquisition). More recently, it has been impacted by developments in the field of WBI (Web Based Instruction). Indeed, there is a lot of crossover between CALL programs and WELL (Web Enhanced Language Learning) programs.

This chapter outlines the CALL domain. Section 3.2 provides an introduction to CALL. It describes some of the more common CALL related acronyms. It presents the interdisciplinary nature of CALL and outlines the difference between CALL tutors and tools. Section 3.3 reviews the benefits of CALL while section 3.4 considers its limitations. Section 3.5 looks at CALL development including design, evaluation and success factors. Culture is very important in language teaching and section 3.6 discusses CALL and culture. Less Commonly Taught Languages (LCTLs) and CALL are discussed in section 3.7. Section 3.8 considers the benefits and challenges of CALL in the Endangered Language context. The impact on the project is outlined in section 3.9 and a summary of the chapter is provided in section 3.10.

3.2 Introduction to CALL

3.2.1 What is CALL?

The field of CALL involves the use of a computer in the language learning process. CALL programs aim to teach aspects of the language learning process through the medium of the computer. CALL programs can be (and have been) developed for the many parts of the language learning process. Some of the factors that determine the characteristics of any CALL program include:

- the language taught,
- the language of instruction,
- the language writing system (both roman and non-roman character based),
- the level of the language to be taught (from absolute beginners to advanced),
- what is to be taught (grammar, informal conversation and pronunciation) and
- how it is to be taught.

CALL straddles the fields of computing and language learning. One of the criticisms that language teachers generally have about CALL programs is that they are generally driven by the technology (or by those who have mastered the technology). They argue that in the rush to use the latest “great feature”, pedagogical considerations are often ignored. Just because a computer can endlessly drill a student about subjunctive verbs in Spanish does not mean that it is the correct way to teach them. Even if a computer can have several different flashing images on the screen at once to make a screen “more interesting”, it does not mean that it enhances the learning process.

3.2.2 CALL Related Acronyms

The field of CALL uses many acronyms. Figure 3.1 shows a list of the main acronyms.

CALL	Computer Assisted Language Learning
CAI	Computer Assisted Instruction
ICALL	Intelligent Computer Assisted Language Learning
CELL	Computer Enhanced Language Learning
TELL	Technology Enhanced Language Learning
WELL	Web Enhanced Language Learning

Figure 3.1 List of CALL related acronyms

The main difference between the acronyms is the focus given to the computer as part of the language learning process. CALL will be used as a general term throughout this chapter to cover all of the above, unless otherwise stated. CAI refers to the use of the computer for instruction, regardless of what is being taught. ICALL refers to the integration of techniques from the fields of Artificial Intelligence and Computational Linguistics to enhance CALL applications. CELL effectively means the same thing as CALL. TELL is an acronym that is mainly used in North America that covers the same domain as CALL. WELL refers specifically to the use of the web (or Internet) in the language learning process. It is more specific than CALL but as computer technology becomes more internet-focused, it will cover a greater part of the CALL domain.

3.2.3 CALL - an Interdisciplinary Domain

CALL is interdisciplinary in nature. It draws on psychology, Second Language Acquisition (SLA), Artificial Intelligence (AI), Computational Linguistics, Instructional Technology and Design and Human Computer Interaction (HCI). This makes CALL an interesting and challenging field – interesting because of the different perspectives available and challenging because of the vast quantity of knowledge available. CALL practitioners need to be aware of these other views to use the insights gleaned from them to enhance CALL and to avoid painful mistakes and reinvention of wheels. Not everything from other fields can be applied unmodified to CALL but a lot of the main themes and ideas can be helpful. This section reviews the interdisciplinary nature of CALL, taking a brief look at each of the main contributory areas and the effect of this on CALL as a whole.

Conclusions from research findings should not be overgeneralised, i.e. just because something was proven to hold for a particular study, does not mean that it will hold for other studies. Cognisance needs to be taken of conditions such as factors and environment of the original study. Even when similar conditions hold, sometimes contradictory findings result. This does not mean, however, that the findings should be discounted. They all contribute to our understanding of the bigger picture.

Psychology

In Chapter 2, we reviewed the field of Education Psychology. From Skinner's Behaviourist learning theory (Skinner, 1968) to Humanism (Briner, 1999), the various theories aim to explain what happens when learning occurs. While behaviourist theory has fallen out of favour (Curtis et al., 1999), it is still applicable at the lower end of the learning scale. Although frowned upon by some, drill and practice still have a place in learning. A humanistic approach can help us understand some of the more complex elements of (language) learning. CALL practitioners should understand the part played by the different

possible elements within the CALL domain so that a suitable one can be chosen to aid the learning process.

Second Language Acquisition (SLA)

Second Language Acquisition (SLA) is the study of how a second language is acquired. It is a fascinating field that covers non-first language and foreign language learning. A distinction is made between learning (a conscious process) and acquisition (a subconscious process).

SLA has much to offer CALL. It has developed research methodologies (both qualitative and quantitative) that can be applied (with modifications) to CALL (Larsen-Freeman and Long, 1991). It studies interlanguage (IL), which is "the systematic knowledge of an L2 that is independent of both the target language and the learner's L1" (Selinker, 1972)) and the effects of L1 on L2 learning. ILs have been shown to exhibit common acquisition orders and developmental sequences. While "further research is needed" is often repeated in the SLA literature, such findings ought to be considered by CALL practitioners. The learner's linguistic environment has also been studied. It is not just of theoretical interest, but is also of practical importance, as it is something that can be manipulated. Factors to be considered when developing curricula and SL materials include (Larsen-Freeman and Long, op. cit.):

- the effect of deviant (ill-formed) input,
- the role of conversation in developing syntax,
- the input frequency (i.e. the exposure to the language) which affects the accuracy order (levels of correctness),
- input modification and SL comprehension,
- the role of comprehensible input (language that is understandable to the learner).

Another area of mutual interest is that of differential success among SL learners. Factors such as age, aptitude, social-psychological factors (motivation and attitude), personality, cognitive style, hemisphere specialisation, and learning strategies have been studied. Often research findings are ambiguous. Some of the factors cannot be changed (e.g. age), while others can (e.g. high quality instruction may nullify aptitude differences (Carroll, 1965)). Matching aptitude and methodological approaches (audio-visual, analytical and functional) was shown to enhance achievement (Wesche, 1981). Instrumental motivation (in which the learner is motivated to learn an L2 for utilitarian purposes, (such as, furthering a career or improving social status) can be just as powerful as integrative motivation, i.e. when the learner wishes to identify with another ethnolinguistic group.

One of the problems of this area of SLA (and CALL) is the difficulty of measuring individual learner variables. It is agreed that language learning is a complex process. Larsen-Freeman and Long (1991) point out that more complex research designs should be adopted. Multivariate statistical techniques (as opposed to univariate analysis) can provide a means for examining the relationship among learners' characteristics. Learner variables inevitably overlap and interact with others and it may not be possible to isolate a particular factor. One of the current movements in SLA is to explain and not just describe SLA.

There are three classes of theories in SLA: nativist, environmentalist and interactionist. Nativist theories purport to explain acquisition by positing an innate biological endowment that makes learning possible (cf. Chomsky, 1965). According to environmentalist theories, nurture or experience is more important than an organism's nature or innate contributions to development (Larsen-Freeman and Long, 1991). Interactionist theories (Givon, 1984; Pienemann and Johnston, 1987) invoke both innate and environmental factors to explain language learning, although as Larsen-Freeman and Long (1991) point out, interactionist theories differ greatly from one another.

There are over forty theories in the SLA literature. They differ in scope, the type of data and degree of abstraction. This makes it hard to evaluate them. While some CALL researchers have reservations about SLA theories, good theories can provide direction to researchers and practitioners. One of the goals of SLA research is to provide a sound psycholinguistic basis for SL teaching. SLA research has studied the potential of formal instruction in four areas: accuracy order/developmental sequences, acquisition processes, rate of acquisition and the level of ultimate SL attainment. While development sequences seem impervious to instruction, a focus on form does appear to have beneficial effects in the other three areas (although caution is advised with the interpretation of the findings, as interpretations must take into consideration the conditions under which the study took place) (Larsen-Freeman and Long, op. cit.).

CALL and Other Fields

CALL is a relatively new field that draws on research from other fields, which in turn are relatively new. It is sometimes more convenient to apply the findings of this research directly to the CALL field, rather than having to carry out the research from scratch. Using an established theory from another field can save time and effort. Sometimes there is positive transfer from a related discipline. Chapelle (1997) refers to the benefits of SLA research for the field of CALL. For example, SLA research has methods for evaluating the quality and nature learning of the experience that CALL may lack. However, Levy (1997) warns that care must be taken with the application of theories and research from other disciplines. For example, previous applications of theory-driven language teaching technology (audio-lingual methodology) were not successful (Garton, 1992). Furthermore, it is not immediately obvious which SLA model should be used.

CALL workers need to be aware of developments in related disciplines. Advances in other fields may not always filter into the CALL literature. Progress with Natural Language technology or web authoring tools for example, could have a profound impact on the world of CALL. I believe that this cross-fertilisation works both ways. For example, CALL research could be relevant to SLA and HCI research. Although CALL still lies on the periphery of language teaching, articles about CALL are "crossing-over" into the language teaching journals. With a careful approach, CALL can create a symbiotic relationship with several of its influencing disciplines.

CALL Theoretical Basis/Research Agenda

CALL is not yet a mature field and lacks a theoretical framework. The problems suffered by SLA researchers and practitioners ring true in the field of CALL. In fact, they are even more acute due to the relative youth of CALL.

A lack of theoretical framework makes it hard for researchers to compare and evaluate findings from CALL studies. It means that practitioners have no universally accepted theoretical basis to provide direction for development and implementation of CALL materials (McCarthy, 1999). It means that mistakes are repeated and wheels reinvented. Scarce resources are diverted (if not wasted) in the process. According to Myles (1998), CALL items (such as feedback) are overlooked or procedures such as testing are unreliable because of this. Garrett (1998) states that currently CALL suffers problems in the research area. She reports that some language teachers say that the use of technology in inevitable and therefore research is not required as CALL is going to happen anyway. Another issue is that CALL research tends to try to show that CALL is effective, which is often hard to do (and should not be the only type of research). A more institutional problem is the fact that CALL research is often not valued by the institutional powers in terms of promotion in the academic world. CALL workers are often a minority within university academic environments and there is sometimes little recognition for their work.

Garrett (op. cit.) argues that CALL needs a research agenda, not only to gain more respect for CALL workers but also to justify current practice and open up new approaches. Technology is going to play a bigger role in language teaching and up to now there is little solid evidence of the good and bad reasons for its use. A lot of CALL work is informal and anecdotal – no universally accepted and empirically valid framework exists. Sussex (1999) points out that there is a need for a framework to help structure and evaluate Internet sites, software and pedagogy. A theory for CALL must encompass reality, address aspects of the target domain and be appropriate.

For the world's major languages (especially English), there are a wide variety of resources already developed, with plenty of authentic material available. Rather than reduplicate efforts and engage in reinvention of wheels, Felix (1999) suggests that global co-operation should take place. She acknowledges that it is hard to identify centres of excellence (given the size of the Internet), but that the effort spent doing so would be worthwhile. Up to now, most of the research has focused on the teaching side of CALL (Maingard, 1999) and more research is needed on the learner's perspective of CALL. Learners find CALL enjoyable (Levy, 1997: p. 144) and report satisfaction with the CALL process, but there are still many unknowns.

3.2.4 CALL Tutors and Tools

The computer can act as a tutor or a tool (Levy, 1997). As a tutor, it assumes the role traditionally held by a teacher in a language learning environment. A tutor evaluates the student input in some way. It is often designed with an independent learner in mind. As a tool, a CALL program works as an aid to a teacher in a language learning situation. For example, a program to teach German verbs or Chinese pronunciation may be used as a tool by a teacher to enhance the learning experience. A tool does not assess the learner. When evaluating a CALL program, it is important to know if it is a tutor or a tool because they have different aims and therefore should be judged on different criteria.

CALL Tutor

A CALL tutor offers flexibility on several different levels, including access time, geographical location and learning pace. It must be reliable, as it is the primary (and sometimes only) learning source. The

feedback must be timely, accurate and appropriate. Moreover, currently a tutor can only effectively deal with certain language skills. For example, the processing of user speech still presents a problem given current technologies. While technology does offer many opportunities, not everything that can be done should be done. Reflection is needed on this issue.

CALL Tool

A CALL tool is designed to assist learning - it is part of a larger process. The tool does not have a methodology and the learner is in direct control. Examples of CALL tools include email, electronic dictionaries, concordancers, Computer Mediated Communication (CMC) and the word processor. Generally, there is no feedback to the user. More teacher input, both in the planning and usage stages, is required with a tool.

Computer Mediated Communication (CMC)

Up until relatively recently, CALL programs have existed as an independent entity. A single, stand-alone program aimed to provide all the knowledge the student needed. Later web-based programs incorporated links to other sites on the WWW. Now, users could access other language resources on the Internet. However, initially, no facilities existed for students to communicate with one another or indeed native speakers of the target language.

Computer Mediated Communication (CMC) is an emerging area within the CALL domain (Warschauer, 1996; Weininger et al., 1998). It occurs when learners use the computer to communicate with each other. Often it is used in collaborative learning projects, chat groups and tandem learning projects (discussed later on in this section). There are various possible combinations. CMC can occur between second language (L2) learners of the same target language (for example, between English and French students of German). It can also occur between first language (L1) and L2 learners where the L1 learner's target language is the first language of the L2 learners and vice versa. An example of this scenario would be where German students studying English can communicate with English speakers studying German.

Collaborative learning involves learners working with other learners on a joint project. One of the philosophies behind CMC in general is that learners can learn a lot by working with native language speakers. As collaborative learning is a relatively new area within the CALL domain, the factors that contribute to the success of a project are not clearly defined. The PROCall (Project Oriented CALL) project in the University of Melbourne, Australia highlighted some interesting points (Toyoda, 2001). The project involved six language departments and more than two hundred students. It incorporated networking and multimedia composition with project-oriented learning. Toyoda (2001) reports that the learner's experience and perception of technology affect the outcomes of the PROCall process, with experienced and technology-happy learners enjoying the experience, while those not so disposed to technology had a less positive experience.

Tandem learning projects are a relatively new area within CALL (e.g. Little and Brammerts, 1996; Appel and Mullen, 2000). They usually involve two learners and can be considered a sub-domain of Computer Mediated Communication. There are various different formats that can be used and factors such as the

competence of each learner in the target language are very important. One of the interesting outcomes of tandem learning projects to date is the raising of the level of metalinguistic awareness of students. For example, understanding how plurals are formed in their own L1 and why learners of the L1 might have a problem with the process, can raise the L1 (and L2) students' metalinguistic awareness.

3.2.5 CALL Materials

CALL materials share many of the characteristics of non-CALL material (Levy, 1997). Materials can either be authentic, produced locally or commercially. Another commonality is that there is often dissatisfaction with commercially produced materials. However, the diverse capabilities of computers mean that differences exist. CALL enables the integration of sound and video into courseware materials. It adds a dynamic dimension that is impossible with a book (e.g. exercises, links to relevant information, interactivity and feedback). However, unlike a book, with CALL only a small component can be viewed at any one time - the learner cannot “flick” through the pages as s/he can with a book to get an overview of what is available on the course.

While several frameworks have been proposed for CALL materials, none has been formulated that captures the unique qualities of CALL materials. There are four different types of knowledge that are necessary for the development of CALL materials: theory of instructional design, theory of language teaching, theory of language learning and knowledge of applicability of technology. Theories of instructional design involve linking learning theories with the practice of building instructional systems (Gros et al., 1997 – see section 2.3, p21). There are many different theories of language teaching which include behaviourist, explicit learning, comprehension-based, communicative and humanistic approaches (Hubbard, 1987). The field of Second Language Acquisition (SLA) provides many of the theories of language learning (section 3.2.3). Knowledge of applicability of technology encompasses knowledge of the different types of technology available and their suitability for their intended process. This includes awareness of the alternatives available, their ease of application/implementation and their pedagogical appropriateness.

3.3 Benefits of CALL

While there are those who are still sceptical about the use of a computer to teach language (an inherently human activity), the many benefits of a CALL program have been generally accepted. Some of these come from the general field of CAI, while some are specific to language learning.

Learner Autonomy

Probably the most important benefit is that of Learner Autonomy. Learner Autonomy has been discussed in section 2.5, p24. With a CALL program, learners can work at their own pace. The learner can spend more time on those topics that are causing difficulty. Information can be reviewed and tasks can be repeated until the learner is happy to move on to a new topic. The learner feels in control, which usually enhances satisfaction levels with the learning process. Successful language learners assume responsibility for their own learning (Naiman et al., 1977).

Privacy

Another benefit of CALL programs is the private environment it offers for self-conscious language learners (Brett, 1996). Many learners are shy in a traditional classroom setting, not participating as much as they would like, for fear of making mistakes and being the object of ridicule. The computer offers a forum where learners can lose their self-consciousness. The computer will not expose them when they make any mistakes (although the errors may be stored for review). The learners can learn within the sheltered, protected confines of the CALL program. Krashen (1985) notes that this may serve to lower affective filters.

Feedback

It is generally agreed that the provision of (almost) immediate feedback is beneficial for the learner (Neri, et al., 2001). Again, in the traditional classroom setting, it may not be possible to provide immediate feedback to each individual learner. However, the computer can give feedback at the touch of a button. Thus, learners can test their knowledge and learn from their mistakes. It is important that errors are corrected before they are converted into part of the learner's "language knowledge". CALL programs can not only correct errors but also reinforce the knowledge shown in correct answers.

Motivation

Motivation is an important factor in language learning (Gardner, 1983; Scarcella and Oxford, 1992; Okada et al., 1996). Motivation encourages greater learner effort and thus greater language performance (Clément et al., 1977; Samimy and Tabuse, 1991). When looking at motivation in the field of language learning, consideration is given to the difference between foreign and second language learning (Au, 1988). Foreign language (FL) learning occurs when the language being learnt is not used as the medium of communication (e.g. learning French in Ireland). Second language (SL) learning occurs in an environment where the language being learnt is that used in everyday communication (e.g. learning English in Ireland). In the FL situation, the learner has to seek opportunities to engage in the target language.

Although integrative motivation is generally considered very important in language learning (Gardner's Socio-Education Model, (Gardner, 1983)), instrumental motivation is increasingly been seen as important, especially for FL learners. Dörnyei (1990a, 1990b) reports that instrumental goals significantly contribute to motivation for FL learners. Integrative motivation is more important for SL learners than FL learners (Oxford, 1996a).

While Gardner's model has been very influential, researchers are expanding on this model. Oxford (1996a) identifies other factors, including stimulation and setting a personal challenge. She notes also that developmental change may occur, where motivational factors may change over time. Culture also has an affect on motivation (Markus and Kitayama, 1991). CALL generally increases students' levels of motivation. Anything that increases motivation will be helpful to the learning process.

Access to Information

Another benefit of CALL is the control over access to information. A CALL program has the potential to provide more information to the learner (via links to electronic dictionaries, more detailed screens and links to other sites) (Egbert and Hanson-Smith, 1999), while conversely, learners can avoid information overload if they feel they are being overwhelmed. They can leave a program to give themselves time to absorb the new knowledge. In a traditional classroom setting, students cannot usually leave if they feel overloaded. They must wait until the class has ended, possibly not paying attention to what the teacher is saying and missing out on the topic being taught. With a CALL program, the user can leave when s/he wishes and come back to where s/he left off and start again. Thus, users have more control over the cognitive load they bear during a lesson.

Also, non-linear access to that information is possible. The learner does not have to "follow the text exactly". Links can be followed and dictionaries can be looked up. A learner may feel more inclined to read extra information if it is only a click away, as opposed to having to open another book.

Interactivity

Computers promote interactivity. Learners have to interact with the computer and cannot hide behind their classmates. If the learner does nothing, nothing happens. At the very least, learners have to start the CALL program. The program can only pass from one section to another with the "consent" of the learner. Thus learners have to drive the program. Usually they have to use the target language in exercises within the program. They have plenty of opportunities to practise the language in a one-on-one situation. They can practise the exercises as many times as they like, until they are satisfied with their results.

CALL programs promote interactivity using many senses. Not only is text presented, sound can be heard and videos viewed. Sub-titles to videos can be switched on and off. Videos can be viewed in mute mode, so that learners can use various strategies to ascertain what is happening. Graphics can be used to demonstrate not just grammar items (for example, moving words around to form questions) but also for spatial related language topics (for example, the use of "in front of" and "behind").

If a sound does not exist in their own language, learners may have difficulty producing it. Alternatively, learners cannot "hear" the difference between their pronunciation and that of a native speaker. For example, native Japanese speakers find it very difficult to distinguish between /r/ and /l/. Learners can practise their pronunciation using visual models of the voice-producing region of the body showing the required position of the tongue and lips to produce the correct sound. Graphics of their speech output compared with the ideal can be viewed, so that discrepancies can be identified. This multi-sensory approach can enrich the learning process for the learner.

Non-Traditional Features

CALL programs should not just imitate what happens in a traditional classroom situation but enhance the learning process by doing things that are only possible with the use of the computer (Felix, 1999). One such area is that of examples. New exercise types have been introduced which can not only test the

learner's knowledge, but also avoid the boredom associated with constant repetition of the same types of exercises. The variety of exercises available helps to maintain the student's interest. Audio and video are features possible in CALL that cannot be as smoothly integrated into the more traditional learning courses.

Repetition

Another benefit of CALL is the ability to repeatedly review information (Brett, 1996). This repetition can aid reinforcement, which is an important element in learning (Hebb, 1949). This can either be text, audio or video. Learners can listen to audio portions of a CALL program until they are satisfied that they have understood what is being said. Video segments can be watched in various modes (with/without sound, with/without subtitles) as many times as the learner wishes. This is obviously beneficial to the learner and is a definite advantage over the traditional classroom situation in which it is not that easy to ask the teacher to repeat something a number of times until it is understood.

3.4 Limitations of CALL

While CALL programs offer many potential benefits, there are also limitations to consider. This section outlines some of the potential limitations of CALL and how these limitations can be avoided or at least minimised.

Limited Availability of Resources

CALL is an emerging discipline. Research points out many of the current and potential benefits of CALL. However, in many learning institutions, the availability of CALL resources is limited. Limited resources include time and money for development of CALL materials (Levy, 1997), finance to purchase computers and lack of teacher knowledge. Sometimes there is a mismatch between the CALL program and the users and/or the setting.

Often, the teacher has just one computer available and the teacher must try to maximise the benefit of a CALL program for a group of students. User resources must also be taken into consideration. Does the program assume access to speakers and a microphone? What if the installation does not have access to the Internet? Obviously, if someone tries to use a tandem learning program on a stand-alone PC with no connection to the Internet, it will either be impossible or very difficult to fully use the features of the program. In this case, the program should clarify user expectations. It should make clear to the user what resources it requires and point out the limitations if these resources are not available. It should also try to provide alternate ways of interacting with the user. For example, if a program allows the users to select an option via a microphone, but one is not available, the user should be able to interact with the computer via the mouse or keyboard.

Anti-Social Behaviour

CALL programs may promote anti-social behaviour (Pennington, 1996). Learners may get "wrapped-up" in the program and focus on learning the language in isolation. Except in certain situations (learning a language for reading purposes only or for the pure mental stimulation of doing so), the whole reason behind learning a language is to be able to communicate with others. If someone learns a language for

the purposes of interacting with another human in the same language and yet s/he only "speaks" to a computer, surely that is missing the whole point of learning the language. Although the computer cannot force learners to speak with other speakers of the language, it can suggest to learners that they practise with other speakers at various points throughout the program.

Learning Content

Another possible problem with CALL programs is that sometimes misleading, oversimplified explanations are provided. Not only will this waste the students' time, it will confuse them and will not meet their learning needs. Care must be taken to ensure that this is avoided in the design process. One further issue to consider is correctness – it is important that the linguistic elements of the language are reviewed with a native speaker to ensure correctness. This may be more difficult in the CALL situation than when dealing with more traditional learning media as the content provider may be more removed from the courseware production process than may be the case in the traditional production process.

Underutilisation of Resources

Often CALL programs provide learners with a whole variety of resources to make the learning process more stimulating and enriching. However, users may not make full use of the software (Chapelle et al., 1996; Cobb and Stevens, 1996). No matter what wonders a program contains, if the users do not use them, they will not be of benefit. This can be partly overcome with user training. If users are made aware of the features and their benefits, they will be more likely to use them. Also, if they are given guidance about when to use what feature, they will feel more confident with the use of these resources.

Ineffective Deployment

If there is a mismatch between the perceived and the actual setting of a CALL program, its effectiveness may be limited. Is it for a single user or for group use? Will the program be a tutor or a tool? Hubbard (1996) points out the importance of effective deployment of CALL programs. While the design of a CALL program can try to encompass as many different learning situations as possible, it will not be possible to cater for every situation.

Limitations in the deployment of CALL materials

There are still some drawbacks that exist in terms of the deployment of CALL materials. These will have to be addressed and include:

- slow access,
- server complications,
- end-user configuration unknown,
- potential need for plug-ins,
- technophobic students/teachers.

3.5 CALL Development

CALL development is challenging and difficult. In an ideal situation, a CALL program will be developed by a team of experts. There will be linguists, language specialists, teachers and software engineers. Each person will bring his/her own expertise to the process to ensure that the final product does what it is

meant to do. Those with the pedagogical and language knowledge will make sure that the program is not technology-driven and that pedagogical and language issues are to the fore. Several large corporations have managed to produce CALL programs developed by a multidisciplinary team. However, such is the range of options, teaching strategies and learning items in the language learning domain, that not all possible combinations of languages and learning tasks can be covered. (For example, a package may exist to teach Thai verbs to English speakers, but not to Hindi speakers).

The interdisciplinary nature of CALL contributes to the difficulty of CALL development, which often expensive and time-consuming (Felix, 1998). CALL development uses linguistics, pedagogical theory, graphics, sound, video programming and interactivity design (McCarthy, 1999). Ideally, a team of people will work together to develop CALL materials (project manager, language instructors/tutors, curriculum advisor, Internet expert, graphics designer, audio-visual team, computer programmer and evaluator (Curtis et al., 1999)). Additionally, if a commercial product is being developed, a market researcher and advertising agent will be involved in production and promotion of CALL materials.

However, such multidisciplinary teams do not always exist. Also, while there are many CALL programs available ("for profit", shareware and freeware), many teachers find that they cannot find exactly what they are looking for in an already developed package. When a Spanish teacher wants to teach Central American Spanish to Dutch students, there may not be a package already available to do so. One for European Spanish may exist but it might not cover the particular feature that the teacher wishes to teach (for example, the use of *vos*[1] in Central America).

Sometimes, a teacher will work with a software developer to come up with a CALL program to teach a particular topic, but sometimes the teacher will try to develop something on his/her own. However, in the past, the whole process was not entirely straightforward. A language teacher had to learn something on the computing side (for example, a programming language or an authoring tool that was rather limited in its capabilities) before s/he could start to develop a package. Occasionally, a software developer with an interest in language would write a program to teach some part of a language, possibly without the background knowledge of language pedagogical issues. Sometimes, good programs were developed, but other times the outcome was not so successful. CALL practitioners need to know how to convert the theory into practice, as this is a non-trivial process (Zhao et al., 2000).

With the arrival of more user-friendly web authoring packages, teachers from the language "side of the fence" can design their own CALL programs. They can decide what they want to teach and how they want to teach it. As time progresses, more and more CALL programs will be developed by teachers and this should further advance the whole CALL field. Not only will there be more programs that cater for previously unaddressed topics, there will be more language students using CALL programs. Thus it will be possible to determine more precisely what are the "good" features of CALL and what are the ones to avoid.

[1] *vos* is used in some Central American countries instead of *tu* for the second personal singular. The conjugation for *vos* is also slightly different than the conjugation for *tu*.

3.5.1 The Design of a CALL Program

There are many different starting points for the design of a CALL program. These include theories of instruction, theories of learning, curriculum imperatives, experiments with a new technology, exercise types, learning problems, language skills and the delivery of materials to a large number of students (Levy, 1997). The design used in the present project is discussed in more detail in chapter 6, but it basically follows that of Hubbard (1996). Hubbard's Methodological Framework is comprehensive yet flexible and builds on previous models. It is not constraining and provides CALL developers with a map of the CALL process from design to deployment. Hubbard's Framework provides a useful checklist and guide for CALL development. In all, there are more than 40 items mentioned, each of which can be further broken down and expanded. The Framework is helpful when designing CALL courseware and is neither prescriptive nor restrictive.

Chapter 6 outlines the elements of the Framework and the fit between it and the template. Culture is one facet of the language learning process that is not addressed in Hubbard's Framework (Levy, personal communication). The template overcomes this by incorporating a section on culture and by the flexible file structure enables cultural information to be provided with most courseware elements.

Some of the general elements in the CALL design process are considered here, while chapter 6 deals with the template design in more detail. The order is not significant, as each CALL development project will have a different starting point. For example, if PCs are already available, the issue of what hardware to use may not arise. As detailed analysis of each element would fill many chapters in itself, a brief summary of the key points of each is provided.

Hardware

In an ideal world, a CALL developer would be able to customise the hardware to the needs of the proposed system. However, this is hardly ever the case. Time-Shared Interactive Computer-Controlled Television (TICCIT, 2001; Levy, 1997) is an exception which had specific hardware developed for the project. Most projects use commercially available hardware for their systems. Currently, that implies that an IBM PC or compatible or a Macintosh computer would be used. The hardware decision is an important one, as it can often determine what software is available or possible. In the platform independent world (cf. Java, XML) that is fast becoming a reality, this may not be as much an issue in the future as before.

Software

In CALL terms, software development can range from making minor modifications to an existing program, using an authoring package to writing a program from scratch in a High Level Language (HLL). Using an authoring package is much easier than programming with a HLL. Authoring packages are one of the easiest ways for language teachers to construct CALL programs (Ahmad et al., 1985). Some packages have an authoring language with a small set of instructions available to the users to produce CALL programs. A disadvantage of authoring tools is that the developer is tied into a particular structure and there can be a lack of flexibility.

HLLs offer the user more control over what the program does (Underwood, 1984). They are more difficult to learn and it usually takes longer to produce the desired outcome. However, the more recent authoring packages are quite flexible and accessible for language teachers, with some providing access to a scripting facility or allow the integration of HLL code. Usually there is some component that allows the incorporation of multimedia technologies into the application. One widely available option that is increasingly being used is the World Wide Web and markup languages such as HTML and XML. There are now many sophisticated packages that developers can use to develop creative pages to enhance the learning process.

Authoring Packages

Obviously, not everyone will have a multidisciplinary development team at their disposal. Teachers often find commercially produced materials (both CALL and non-CALL) unsuitable in terms of pedagogic content. On the other hand, it is not feasible to convert content writers into programmers (Bangs and Shield, 1999).

One approach adopted is the use of authoring packages. Authoring packages enable teachers to develop CALL materials without having to learn how to program. Templates are provided which courseware developers (teachers) can modify or populate with their own data. Web pages with various different language exercises and lessons can be created with authoring packages. A teacher can develop material that is locally relevant and based on student needs and, importantly, can keep material up to date and add new material.

Apart from the constraints that may be imposed by the authoring packages (e.g. what is doable given the design), there are other problems that may occur. Occasionally, due to the fact that authoring may be a new skill for the teacher, the material produced lacks academic rigour, as most of the effort is spent on getting something produced. The final products are often text-based and materials are mainly aimed at the lower-proficiency levels. If something is produced in collaboration with an IT department, it will often be software driven.

The CALL author is not always to blame. It is technologically easier to produce text-based materials, as the integration of sound, images and video is often not straightforward. A lack of a clearly defined theoretical framework robs the author of “ammunition” when dealing with the IT department. Another problem that arises is that the knowledge gained and the material produced often stay local. Even within the same university, there may be little sharing of CALL skills and resources produced. Materials are rarely used in other universities and often there is little or no impact at a higher (i.e. outside) level.

Bangs and Shield (1999) outline two projects that aim to address this problem. The Open University has developed authoring tools that allow externally held resources to use a central engine. They use a combination of scripts, node labels and data, hyperlinking and formatting to produce CALL materials. Content (sound, image, text) is separated from logic (scripts and templates). It is proving successful at achieving economies of scale. The MALTED (Multimedia Authoring for Language Tutors and Educational Development) (Malted, 2000) project is a European-wide project that not only aims to

provide user-friendly authoring tools, but also to avoid duplication of previous development efforts. An asset database is being set up so that CALL materials can be shared and reused. Curtis et al. (1999) point out that CALL development requires capital investment, a systems development approach (which is expensive) and that there is no guarantee of return.

The Internet and Email

The Internet has made access to authentic language materials easier. For the world's major languages, there are online newspapers and news services with up-to-the-minute information. Email, chat and message boards are all available to the learner of one of these languages.

It has been stated that assigning a tutor role to the computer frees up a teacher to work on the more creative aspects of language teaching (Levy, 1997). However, this may actually place a greater burden on the teacher. Also, it assumes that the computer actually successfully completes its side of the bargain (undertaking the 'more tiresome labours of language teaching'). The use of the Internet creates an additional workload for the language teacher. Suitable web sites will have to be researched in advance. If long-distance collaboration projects are being worked on (for example, between different universities), organisational and curricular challenges must be faced.

3.5.2 CALL Evaluation

It is difficult for CALL authors to evaluate their work as there is no reliable conceptual framework or yardstick available. It is hard for CALL workers to know if they are comparing the same things. As of yet, no metalanguage for describing CALL methodologies and materials has emerged. This causes confusion and hampers the sharing of knowledge and experience. In evaluating a CALL program, factors such as ease of use, quality of the user interface, screen design and organisation must be considered.

The following checklist is recommended by Rüschoff (1998):

- functional aspects and content appropriateness need to be established,
- linguistic aspects, both in terms of effective presentation of content and in terms of fruitful learner-software interaction, must be investigated,
- learner and tutor satisfaction are further important issues of any significant evaluation,
- the effectiveness of tutorial strategies and navigational procedures integrated into the courseware must be considered,
- levels of progress and results achieved by learning with a given item of courseware are to be examined but difficult to measure,
- guidelines for the most effective learning scenarios in view of different types of courseware need to be part of evaluation and testing, i.e. whether courseware is best used in a classroom setting, for self-study, or as part of a telecooperative learning scenario.

3.5.3 CALL Success Factors

It would be too simplistic to assume that a magic formula exists for the success of CALL. Too many factors and variables need to be considered. The following general guidelines should be taken into account.

Needs

- appropriate expertise, hardware, software, administrative and technical support (Felix, 1998),
- CALL practitioners need to keep abreast of development in related fields,
- consideration to methodology and all the other elements applied in a non-CALL situation,
- teacher training (McCarthy, 1999) (teachers are often more technophobic than their students),
- student training (keyboard skills, navigation skills and general IT awareness (McCarthy, 1999)).

Things not to do

- do not assume that students are excited by CALL (McCarthy, 1999),
- do not underestimate the confusion and disorientation that may be experienced by novices,
- do not create unstructured materials (assuming that the students will "figure it out"),
- do not just reproduce what could be in a book (Felix, 1999).

Things to do

- do place emphasis on interactive strategies for feedback and teaching (Felix, 1998),
- (for tutors) do include friendly discourse, different activities, cultural information, exercises with feedback, interactive exercises and links (Felix, 1998),
- do provide good front pages (Felix, 1998),
- do provide a mental map of the site (unlike a book, the totality of a site cannot be easily viewed/grasped at once) (McCarthy, 1999),
- do promote self-regulated learning (Zhao et al., 2000),
- do be responsive to learner's needs, capabilities and interests (Zhao et al., 2000).

Language learning is generally eclectic in nature. No one theory covers all aspects of the learning process. The same is true of CALL (Curtis et al., 1999; McCarthy, 1999).

3.6 CALL and Culture

3.6.1 Language and Culture

Culture is often seen as mere information conveyed by language and as separate from language. However, Halliday (1990) argues that culture dictates grammar, vocabulary and metaphors. Culture in language learning is not an expendable fifth option that comes after the four skills of reading, writing, listening and speaking (Kramsch, 1993). Kramsch points out that there are limitations of communicative competence and that just knowing the rules of a language may not be sufficient if the necessary cultural knowledge is not also present.

Language and culture are inextricably intertwined and culture naturally plays an important role in the language learning process. Paige et al. (2001) provide a review of the literature on this subject. The register and vocabulary to be used and the implicit assumptions used in a language are influenced by the cultural knowledge and metaphors of its speakers (Lakoff and Johnson, 1980; Lakoff, 1987). Learners must be aware of the linguistic choices that exist, how they are to make those choices and the significance of those choices when studying a language. It is not just a matter of learning the rules - the language learner must also aim to understand the culture of the speaker to gain an insight into a native speaker's thought process so that s/he can deal with those situations where the rules are undefined. Learners should be aware of the similarities and differences between their culture and the L2 culture. For example, students studying Japanese need to know that there are different levels of politeness and these vary based on the relationship between the speakers. While native English speakers may initially find this unusual, it is not an uncommon feature in Asian languages. It may be of interest to native English speakers to realise that English has different registers and that an English speaker will use different vocabulary when dealing with different people (e.g. an interviewer or a friend).

A language is inherently imbued with cultural references. It is difficult for a beginning language learner to understand or sometimes to even notice them. However, exposure to the L2 culture can help the learner understand these initially obscure references. Language and culture are never frozen in time - words and linguistic structures disappear and evolve. For example, in English, the use of the subjunctive is declining while new words relating to technology (e.g. Internet) are emerging.

The traditional end target for the language learner is to achieve near native speaker fluency. However, Kramsch (1993) points out that there is no one stereotypical native language speaker. This holds true even in a relatively homogenous society such as Japan, where a middle-aged housewife will speak differently than a schoolgirl. Even though a language learner may be aware of the cultural differences, s/he may not be comfortable with adopting the culture of the L2 speakers. Jordan (1992) reports on a Japanese man studying English who did not want to be addressed by his first name (as he felt more comfortable with the Japanese custom of addressing people by their family name).

3.6.2 Issues for the language learning process

Learner cultural background

Where possible, it is important to take the cultural background of the learner into consideration when developing CALL and language learning materials. The similarities and differences between the L1 and L2 cultures can determine how easy or difficult it is for the learners to understand the target culture (this is not to imply a direct correlation). The native culture of the language learner can also shape the explanations required by the learner. Items that are common between the learner's own culture and the target culture often do not require an explanation, but those elements that are different must be explained. For example, Nawat uses the word *taha* for *you* second person singular in English and the English version of the courseware simply provides a translation of the word. However, the Spanish version of the courseware needs to explain that *taha* is used for both *usted* and *tu*, as Central American Spanish uses both words for the second person singular. Another example occurs with the word *zacat*, which means *grass* in English or *césped* in European Spanish. However, the word used in El Salvador is *zacate*, a

borrowing from Nawat. Therefore, the translation provided in the Spanish version of the courseware is *zacate*, which is culturally and pedagogically more appropriate.

Language Learners level and environment

The issue of culture and language is more challenging for foreign language learners than it is for second language learners, although it is not entirely straightforward for the second language learners either. In the foreign language classroom, learners can learn about the L2 culture by looking at cultural rules that differ from their own culture. L2 beginners usually enjoy the language learning process as they have an opportunity to talk about themselves, but intermediate learners find that they have less to say. Their study often involves the use of texts which are more challenging for the learner as they contain unknown socio-historical connotations (Kramsch, 1993). She also points out that silences (i.e. what is not written) vary from language to language and the language learner must be aware of this.

One interesting aspect of the issue of culture and language in the language learning situation, is the impact of the education system on the learning goals and approaches. Europeans may be more interested in meta-communication (i.e. how best to learn to communicate (Breen, 1985)), while people in the United States of America may value action and communication (e.g. Omiggio, 1986). The native culture of the L1 classroom may inhibit understanding of the L2 classroom culture. For example, it is challenging for Japanese students of English, who are used to a hierarchical education system, to be comfortable with the more open environment of a European or North American classroom.

Authenticity

Authenticity is an issue in the language learning process. Widdowson (1979) argues that authenticity has to do with the use of a text rather than what is in the text. For example, although a menu in German might be an authentic text, using it to teach superlatives may be not an authentic *use* of the text. The challenge for the language teacher is to make the authentic text accessible to the language learner, not by altering it substantially, but by providing backup information for the learner.

3.6.3 CALL and Culture

CALL can contribute to enhancing the learner's grasp and understanding of the L2 culture. The hypermedia aspects of CALL (via links) provide the learner with multiple access points to the same material and can enable the learner to read cultural information about language in the material. This information may be presented on several different levels. For example, *padiux* is Nawat for *thanks*. An accompanying cultural note might state that this comes from borrowing *por causa de* (for the cause of) and *Dios se lo pague* (God will pay you back) from Spanish, meaning that "(I hope) that God will reward you". More detailed information about other Spanish borrowings or the cultural and linguistic effects of the Spanish arrival on the Pipils could be provided via a link to another page which, in turn, could have more information on other related topics.

For the world's Most Commonly Taught Languages (MCTLs) and Less Commonly Taught Languages (LCTLs), there is now a wealth of different material available on line. This includes newspapers, videos,

radio and television shows, chat rooms and discussion groups. These materials are directed at the native speakers and provide the language learner with a unique insight in to the L2 culture.

Computer Mediated Communication (CMC) provides a unique opportunity for language learners to interact with native speakers of the L2. In tandem learning projects, learners use both their L1 and L2 in communication with other learners. Learners can learn a lot from the cultural feedback and corrections of their tandem learning partners. Müller-Hartmann (2000) reports on a tandem learning project in which involved German, Canadian and USA students. He outlines the benefits for the participants including the development of positive attitudes and an awareness of the other culture, increased factual knowledge of the other culture, the acquisition of interpretive skills and improved intercultural communication skills. He states that a task-based approach has potential for initiating and sustaining intercultural learning processes in an electronic learning environment and points out that close monitoring of the learning process is important in order to enhance intercultural learning.

Kramsch and Andersen (1999) report on the use of multimedia technology to teach language in an authentic cultural setting. They state that authentic video recordings and other cultural information can help learners grasp the socio-cultural setting of the language use. However, care must be paid to how the material is interpreted and the learner must be able to observe the context and know how to blend the linguistic features of what is being said with the context in which it is being said. They present an example of a multimedia Quechua language program (*Ucuchi: Quechua Live and in Color!* (Andersen, 1987, 1996; Andersen and Daza, 1994)) that is based on a two-hour ethnographic film taped in Bolivia in 1989. The courseware could use the video as a rich semiotic text that could be interpreted in many ways and could be used to develop a learner's socio-cultural competence. Herron et al. (2000) report on the effectiveness of using instructional video to teach culture to beginning foreign language students, particularly with regard to cultural practices.

While CALL has several potential benefits for the teaching of culture in the language learning process, care must be taken to ensure that culture is not compartmentalised as a separate, optional or ancillary component of CALL courseware. Kramsch (1993) points out that culture is not an expendable, extra option in the language learning process. Also, learners may feel overwhelmed at the quantity and level of material available online. If CALL courseware provides links to external, authentic sites, it would be helpful to the learner to provide background information on the site, even thought there may always be some level of frustration for the learner. While culture is recognised as very important, time limitations constrain the amount of time available/allocated to the study of culture in the language learning process. CALL may stretch that time by providing cultural information in an enticing and appealing manner that may encourage the learner to explore the culture of their L2 community.

3.6.4 CALL, Culture and Endangered Languages

Culture and Endangered Languages

ELs are disadvantaged in most aspects of CALL. However, they may have a unique advantage when considering culture. While second and foreign language learners may be unfamiliar with the culture of the L2 community, EL learners, who come from the EL community, live in (almost) the same culture as

the EL speakers. They can understand many of the cultural references in the CALL courseware and most of the materials and settings will be familiar to them. For example, learners from Santo Domingo de Guzmán will be familiar with the lifestyle portrayed in the Nawat courseware, as it is also *their* culture. There is no need to explain why people get up early or why women walk around with baskets on their head. Even learners one or two generations removed from the EL community will have a greater understanding of the target culture than a learner from a different culture. They may still share some of the EL culture and may recall other aspects of the culture via remembrances of things their parents or grandparents said or did.

Challenges and Opportunities

Developing CALL materials can be more challenging for ELs than MCTLs and LCTLs. It may also be difficult to provide cultural information as the culture of the EL community may not have been previously documented or may have been documented a long time ago and may no longer reflect current culture. However, the act of developing CALL materials may spur cultural documentation efforts. CALL courseware can also provide a forum for the publication of cultural material. For example, lecturers in the Universidad de El Salvador have documented aspects of the Pipil culture but they lacked a medium of public dissemination. They have expressed an interest in augmenting the cultural information available in the courseware with their own material.

The development of CALL materials also provides members of the EL community with a method of recording and presenting their culture. For example, the song provided with the courseware is an original song by Paula López, who is probably the youngest remaining competent speaker of Nawat (see section 5.6, p90). Paula composes songs and poems that generally go undocumented and unrecorded and are therefore inaccessible to those outside the community. The CALL courseware provides an outlet for Paula and other members of the community to express their culture. This is one of the benefits of CALL in the EL context (see section 3.8.1).

3.7 CALL and Less Commonly Taught Languages (LCTLs)

From the point of view of this project, it is interesting to consider the position of LCTLs. This includes all the world's languages except English, French, German and Spanish (which are the MCLT – Most Commonly Taught Languages). Languages range from Amharic to Zulu, from Chinese to lesser-spoken languages.

Morahg (1996) reports that considerations of heritage were pre-eminent motivations for the study of many of the LCTLs. He notes that the survival and legitimisation of ethnicity as a form of communal identity in the United States has been one of the great sociological surprises of the post-modern age. He points out that the integration of culture is very important to the curriculum of LCTLs. Given the limited resources available, teachers of LCTLs have expressed the need for co-operation among teachers, both with and across individual languages, particularly with regard to technology. Native speakers need training in language pedagogy. Courses that offer an overview of teaching methodologies and SLA theory could be helpful.

LCTL teachers are aware of the fact that they could make more use of the research on language acquisition and the need to prepare students to be life-long learners. Cross-language communication and training is viewed as beneficial. One interesting idea is to integrate native speakers from the community. In the LCTL Summit (CARLA, 1996), 58% of the participants wanted materials that potentially involve the use of the computer. The issue of resource development (knowledge necessary to exploit the technology and materials) is a real one. LCTL teachers want basic templates that are not based on a specific language but can be used by all. Not everyone has the technology skills necessary and thus help is required.

While some of these items may not be directly applicable to ELs, it is instructive to review LCTL issues, as they could be considered to be a "half-way house" between MCTL and ELs. Considerations of heritage would probably be the pre-eminent motivation for the study of an EL also. Along with this, the integration of culture into the language learning program is especially important with ELs. It is pedagogically sound, it provides a means to teach and preserve the culture and it may enable the use of latent cultural/linguistic knowledge of the learner. For example, words for local foods and places may have come from the EL.

When people have moved beyond worrying about basic survival, they may focus on other matters, such as ethnic identity. With EL communities, it may be the case that the people most interested in learning the EL may not necessarily be those who reside in the community. They may be people whose parents, grandparents or ancestors originally come from the community. The issue of who "belongs" to the community is a contentious issue is some parts of the world. For example, in some tribal communities in North America, membership of the tribe is determined by blood lines. To be a member of the community a person must have a specified percentage of tribal blood e.g. a person must have at least one tribal grandparent or great-grandparent.

If the LCTL teachers feel that they have limited resources, the situation for EL teachers is surely more acute. Co-operation may be possible within language families and geographically close regions, especially considering the increasing organisational skills of indigenous groups. Even if the languages are very different, most EL communities face the same issues with regard to CALL development (e.g. limited resources– see chapter 4, p61 for more details). LCTL teachers have expressed the need for basic templates for the development of CALL materials and one would image that a similar need exists for EL teachers.

However, some of the LCTL features do not carry over to ELs. For example, those involved with LCTLs would have more access to computers than those who work with ELs would. I believe that Computer Mediated Communication (CMC) can be especially powerful for LCTLs but it may not be as feasible (initially) for ELs. Also, like MCTLs, LCTLs have access to a plethora of authentic material – something that is lacking for ELs. Furthermore, the limited number of native speakers of ELs imposes extra constraints. Native speakers of ELs (who often have little formal education) will have significant involvement in the production of language learning materials (and not just CALL materials). They will have to be trained, not just in computer usage, but in language pedagogy also.

While there are plenty of CALL materials available for MCLTs, this is not the case for LCTLs. Felix (1999) notes that collaboration is very important in the CALL/LCTLs context, given the scarcity of resources. She suggests that complementary development be seen as the way forward for LCTLs and CALL.

3.8 CALL and Endangered Languages

Chapter 4 discusses Endangered Languages in detail. This section presents some of the benefits and challenges of developing CALL courseware for ELs.

3.8.1 Benefits

Mainstream CALL benefits (such as Learner Autonomy, privacy, feedback, motivation and interactivity) can also be available to Endangered Languages. However, CALL can provide extra benefits in the EL context.

Language documentation

In many cases, there is very limited printed information available about an EL and almost no information available online. Developing a CALL program for an EL means that printed material will have to be sought out and supplemented with oral material provided by its remaining speakers. This provides a language documentation forum for the language that may otherwise not exist. CALL materials can be put online and made available to a wider audience than is often possible with printed materials. This increases the pool of possible contributors and may encourage others to help in the language and culture documentation efforts.

For some ELs, currently available language materials may only document the language as it was spoken at some time in the past and may not document that language as it is currently spoken. Developing CALL materials for ELs now means that a current snapshot can be taken of the language. For example, most of the limited material available on Nawat (with the exception of Campbell (1985) - see section 5.4, p79) documents Nawat in the first half of the 20th century. The process of developing CALL materials for Nawat meant that words for previously undocumented objects (e.g. bus) and references to time of day could be recorded for the first time.

Online documentation

Another important aspect of CALL in the EL context, is the ability to put language information online. This bestows several benefits including making the information available online for the first time, making it available to a wider audience and improving the perception of the language amongst the EL community members and the wider community by showing that it can be part of the digital age. For example, when the Nawat courseware was put online, it was the first time such language information on Nawat had been electronically available. People who were interested in finding out more about Nawat, but who could not travel to Santo Domingo de Guzmán, were able to go to the Nawat courseware website and learn more about the language.

Online publication also means that information previously available only in printed form that was not widely distributed for economic reasons, can now be distributed without too much cost. For example, lecturers in the Universidad de El Salvador expressed an interest on adding cultural information to the Nawat language learning courseware. They told me that they had information available about the Pipil (Nawat) culture but had no forum in which to publish it. Traditional printed materials were not considered appropriate as the expenses involved would have meant that only a limited number of copies could be produced. However, as there were limited material costs involved in making the information available in electronic format, they felt providing the information on the Internet via the Nawat courseware was now a viable option.

Multimedia documentation

CALL permits the multimedia presentation of information about language and culture. In the case of ELs, it may be the first time the language has been presented publicly in a format other than a printed one. Audio, image and video elements can all serve to document the language in a more holistic way. It can also make the information more available to those with low levels of literacy (which is often the case in EL communities). For example, the audio portion of the courseware was the first time Nawat was recorded in a format that would be publicly disseminated and that Nawat was made available to those with no literacy skills. The use of video in CALL materials can further enhance the delivery of cultural information by showing the typical scenes for the daily life of its speakers. This would be of use to those several generations removed for their ancestral community but also to those from within the community to demonstrate that video is not something that is only appropriate for non-ELs.

Community involvement

It is very difficult, if not impossible (or unethical), to develop CALL materials for an EL without the support of the members of the EL community. The development of CALL materials could potentially foster a sense of importance within a community concerning its EL and possibly make community members aware that they are the custodians of valuable information (about the language) that is of interest to others and not just something without value. For example, Genaro Ramírez (one of my Nawat informants) is well aware of the benefits of being a Nawat speaker and tries to impress upon the youth of the community the potential benefits to them of being Nawat speakers. There are various ways that community members can be involved in the development of courseware, even if they are not language speakers. These include drawing images of local scenes and informing about the cultural life and arts and crafts of the community.

Care must be taken when working with EL communities on language materials. Obviously community support is essential and care must be taken to ensure that as many community members as possible feel involved in the project rather than excluded. As in any society, it is impossible to please all of the members all of the time, but inclusion rather than exclusion should be the aim where possible.

Opportunities for Expression of Culture

Language and culture are inherently intertwined. Communicative competence in a language is limited if the cultural application of that language is unknown. The development of CALL materials provides a

forum for the public and external presentation of cultural information. Communities can have a platform for publicising their songs and stories. Anecdotes and phrases that community members may have felt where not of much interest can be sources of useful information in the language learning context. Cultural items permeate the language used in CALL courseware, even if they are not explicitly identified. For example, in the Nawat courseware, most time references are in relation to the sun (rather than a specific time of day), there is little formality between speakers and various references to the family appear throughout the courseware. This reflects the way of life of the Pipil people, whose daily life revolves around the natural time determinants and who tend to live with or close to other family members. For example, to get to Genaro Ramírez's house, you have to pass through his daughter's small garden, while another daughter lives on the other side of his house and most his children live within walking distance of his house. During my stay there, his many grandchildren were constantly dropping in or passing by the house and were constantly made welcome each time.

3.8.2 Challenges

Assumptions that do Not Hold

Endangered Languages present unique challenges in CALL. Mainstream CALL makes several assumptions that do not hold in the case of ELs. For example, in mainstream CALL, it assumed that those working on the courseware are fluent in the language and that support materials (e.g. dictionaries and grammars) are available in case of doubt. Mainstream CALL assumes that there are plenty of available speakers and it can choose whom it wants to work with for the audio portion of the CALL courseware. It generally assumes that a standard alphabet or writing system exists. It usually assumes that a standard dialect exists and is aware of the common differences between other widely spoken dialects (if they exist). Often, these assumptions do not hold in the case of ELs.

Lack of Available Material

In the EL situation, there may be no previous material available on the language. The remaining speakers are usually not linguists with knowledge of language structures and may often not be fully competent in the language. CALL courseware developers do not have the luxury of choosing some clear-spoken member of the community to do the audio recordings and often have to accept whoever is able and willing to work with them. If the language has never been written or no formal alphabet has been established for it, CALL practitioners will have to agree on a writing system with the community. In other situations, where several alphabets or writing systems have been used for the language, one alphabet or writing system should be chosen for the courseware (unless, of course, agreement cannot be reached, in which case the courseware may be developed for two writing systems).

Cultural Acceptability

Mainstream CALL assumes that the development of CALL courseware is culturally acceptable for the speakers of the language. However, in the EL situation, this may not always be the case. While some EL communities may welcome the development of modern CALL courseware for their language, other EL communities may not wish to disseminate information about their language to outsiders. Some EL communities may have cultural reservations about having recordings and images of those who have died

(as is the case with Aboriginal people in some Native Australian communities). Section 4.7, p71 has more information about ELs, CALL and the web.

Lack of resources

While mainstream CALL practitioners may not have sufficient computers and money to implement CALL courseware, it is especially challenging in the EL context. The EL community may not even have electricity, let alone a computer or computers. Even when electricity is available, it may not be very reliable. Furthermore, financial resources are generally very limited in EL communities, with many members of the community living on meagre resources. It is very rare indeed that EL communities could afford computers without external support. In many parts of the world, EL community members are subsistence farmers or have to work long hours. They may not have the time or the energy to work on the development of CALL materials. The lack of resources is a far more critical and challenging issue in the EL context compared with mainstream CALL.

Syllabus Design

For the world's MCTLs there is a wealth of syllabus information available. Much research has been carried out into different types of syllabus design and, for certain languages, the order in which linguistic items should be taught. If the language being studied uses a writing system different from the one used in the learner's native language, this will have an impact on the selected syllabus. Most of the information available on syllabus design pertains to languages that are well known by the syllabus designer and often have a rich literary tradition. With the exception of some ELs (e.g. Irish and other lesser-endangered languages), this is generally not the case.

The most basic aspect of syllabus design is to know what the learner profile is and to decide what goes into the syllabus (see sections 6.6.2.1, p102 and 6.6.2.2, p102 for more information on learner profile and syllabus design). There are various approaches to syllabus design but ultimately the contents of a language course must be specified. In the case of ELs, there are several problems to consider. Firstly, there may be no one person fluent in the language and syllabus design principles. This means that the syllabus designer and native speaker must work together as best they can to arrive at a syllabus that presents the linguistic information correctly and in a coherent manner. Secondly, a native speaker may consider some linguistic feature important that is difficult to present to the learner without prior linguistic information. Thus, the issue of ordering of syllabus items must be dealt with. Even amongst researchers of English as a Foreign Language (EFL) and English as a Second Language (ESL), there is no clear consensus as to what is the optimum order of presentation of linguistic information. It is unreasonable to expect that such an order could be selected for EL learners, at least, in the first few drafts of the syllabus. Thirdly, if the underlying linguistic structure is unclear or unknown, it makes it more difficult to structure the presentation of the limited information that is known.

A syllabus normally deals with a language learner at a particular level, be it beginner, intermediate or advanced (with several layers in between). A syllabus for one level can draw on the knowledge learnt in the previous level and expand on it. Ideally, a comprehensive language course will contain a suite of syllabi that takes the learner from the *ab initio* stage to the advanced level. In the case of ELs, initially

only an *ab initio* syllabus will be designed (as it may be considered unnecessary initially or too optimistic to develop further syllabi for more advanced learners). It is important therefore, that the syllabus can easily be enhanced and extended if required.

Typical language syllabi include general information about greetings, the family and work. These elements are also quite suitable for EL syllabi. However, there are some elements from syllabi that are not immediately relevant in the EL context. For example, writing a job application or preparing a phone conversation would be alien things to do in many EL environments. In the case of Nawat and the Pipil community in Santo Domingo de Guzmán, most jobs do not require an interview, let alone a written application. Furthermore, most homes in Santo Domingo de Guzmán do not have a telephone, so a phone etiquette has not emerged and is not yet required learning.

3.9 Project Impact

Learner Profile

SLA research shows that motivation and attitude are important. One of the aims of the present project is to encourage younger members of the community to take an interest in learning the Nawat language. Crookes and Schmidt (1991) identified some ways of relating motivation factors to classroom techniques, curriculum and syllabus design. These include personalising material and focusing on the concrete rather than the abstract. Thus, the syllabus will concentrate on concrete items and the CALL program will provide puzzles for the learner. The material can be personalised by using references to relevant place names and realistic and known settings (e.g. the local village, rather than an anonymous town or city).

Motivation

EL community members generally lack instrumental reasons for learning the EL. However, instrumental motivation could be fostered (e.g. awarding diplomas for achieving a certain level of course completion). In the Pipil community of El Salvador (in Santo Domingo), Genaro Ramirez (one of my principal informants – see chapter 5, p75) tries to (instrumentally) motivate the learners by telling them of all the opportunities that have come his way by virtue of the fact that he is a Nawat speaker. These include his current position as director of the cultural centre in Santo Domingo and various trips to international conferences.

Attitude

Attitude towards the target language and proficiency may be correlated (Savignon, 1972). Okada et al., (1996) point out that negative attitudes toward the target language can be detrimental to learning. If a positive attitude can be fostered, it will help the learners. Showing that the EL can be part of the digital age can help create a more positive attitude to the language. Parents, peers, the learning situation, teachers and ethnicity can have a positive effect also. The present project aims to ensure that the learner enjoys the courseware, has a desire to use it and does not feel threatened by overly technical language or very difficult exercises.

Learner Autonomy

It is rare that students learn how to learn. Learner autonomy is an important part of the learning process, but often students do not know how to learn. Oxford (1990) outlines different language learning strategies (both direct and indirect). The template will provide the learner with a set of language learning tips to help them be more effective language learners. Several writers have pointed out the importance of technical support. This is not something that an EL community may have available to it. This means that the software produced must be very reliable (a non-trivial task). Felix (1998) has pointed out that CALL workers should avoid reinventing wheels. The present project aims to learn from other sites and projects, using successful ideas where appropriate.

CALL Benefits

CALL seems to offer many potential benefits in the EL context. While such mainstream CALL benefits as learner autonomy and privacy may not be so important in the EL setting, other benefits such as language documentation (general, online and multimedia) and cultural expression may be more important in the longer term. Thus, the template aims to make the language information available in different formats (print, online and audio) so as to facilitate multiple ways of expression. It also aims to make it easy for non-technical people to add information to the template so that they will be encouraged to contribute to the courseware.

Syllabus

Given the difficulty in designing an appropriate syllabus for a well-studied language (e.g. English), the template does not pretend to present a perfect syllabus. However, the template aims to present an outline syllabus that is a *guideline* to those who will use the template to develop CALL courseware. Appendix C (p185) contains the syllabus provided by the template and gives information on the course objectives and content. It takes the *ab initio* learner through the basics of a language, using the communicative approach grounded in everyday speech situations. Not all EL communities live in the same environment, but humans, regardless of where they live, have several things in common, such as friends and family, eating and work. The template is very flexible and users of the template can easily change the order of teaching, remove or add new items as their situation demands. The syllabus provided with the courseware is based on the learning needs of a rural EL community in Central America, but it could also be suitable for similar EL communities.

3.10 Summary

This chapter gave an outline of the CALL domain. It provided an introduction to CALL including an overview of its multidisciplinary nature, the CALL development process and the tutor/tool distinction. Both the benefits of CALL (e.g. learner autonomy, privacy, feedback, motivation and interactivity) and its limitations (e.g. limited availability of resources, anti-social behaviour and ineffective deployment) were outlined. CALL development is a non-trivial task and issues involved in the design and evaluation of CALL materials were highlighted, along with CALL success factors. Culture is important in the language learning process and the interaction of CALL and culture was reviewed, including the unique advantages that EL learners may have over the mainstream language learner when culture is considered. CALL and Less Commonly Taught Languages were reviewed as they can been seen as a “half-way

house" between ML (Majority Languages) and ELs. The benefits (e.g. documentation and cultural expression) and challenges (e.g. lack of knowledgeable speakers, money, time, computers and resources in general as well as competing priorities) of CALL in the EL context were outlined. Finally, the impact of these topics on the project and the design and development of proposed template were discussed