

Changing Language Education Through CALL

Randall P. Donaldson and
Margaret A. Haggstrom

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Changing Language Education Through CALL

In the twenty-first century, technological resources to support language instruction are within the reach of the majority of educational institutions at every level. Yet while schools may have easy access to technology, both its newness and rapid evolution make it difficult for instructors to meet the challenge of effectively incorporating these technologies into the language curriculum.

Recognizing the need for a close link between research, practice and program development, *Changing Language Education Through CALL* is an important text advocating change that makes effective use of new research into learning styles, as well as new technology. Bringing together sixteen internationally respected experts in second-language acquisition and computer technologies, it presents teachers with user-friendly, flexible ways to incorporate technology into the language-learning process, and provides both the theoretical and practical basis for CALL applications across a broad spectrum of teaching styles, textbooks, and courses.

Practical and clearly presented, each chapter in this book concentrates on the learning process and the teacher's role in facilitating this through the proper and effective use of technology - thus ensuring that the partnership of pedagogical expertise and technological innovation remains the work's focus.

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Introduction

Randall P. Donaldson and
Margaret A. Haggstrom

The present volume is about advocacy for change. As the title indicates, it advocates changing language education through CALL. In many ways, of course, the entire educational process is one of advocacy. Teachers at any level and in any capacity have always been “professors” of their particular field of expertise. They profess their faith in the value of the material they teach and enthusiastically advocate mastery of the information they convey. In asking students to be active learners, instructors encourage them to become advocates for their own education by identifying those learning techniques which work best for them as individuals. This book advocates change that makes effective use of new research into learning styles as well as new technology in order to increase student learning.

Many might feel that there has already been change enough in the last two decades or more. Certainly the computer has brought significant and sweeping changes to almost every aspect of people’s lives, including education. There could, after all, be no computer-assisted teaching and learning without the computer. Even now the many innovations of the digital revolution—CDs, DVDs, streaming video, wireless communication—continue to have an impact, both on the way people conduct their lives and on the way educators endeavor to teach language.

There have been changes as well in the theories on how best to teach languages. Each chapter in this volume implicitly or explicitly acknowledges the tremendous

evolution in approaches, particularly since Krashen challenged so many popularly held beliefs more than twenty years ago. We in the education profession now consider closely what researchers in neurology, psychology, sociology, and even anthropology tell us about the physical, emotional, and cultural factors which affect learning. We acknowledge a variety of learning strategies and the fact that different individuals might apply a given piece of advice differently. In all, we have experienced a veritable sea change in how we teach language, what we expect of the learner, and which tools we use to aid the effort. What, then, is left to change?

The answer is deceptively simple. We need to change our attitude toward the process of education. Not that we aren't open-minded and willing to change. Instructors who introduce CALL into their classrooms are generally enthusiastic proponents of innovation. Many have spent years exploring ways in which technology can be used to make language teaching more effective and motivating for students. Some have even dared to hope that CALL might compensate for the inadequacy of the typical fifty-minute time frame for a classroom lesson by extending both instructional—and learning—activities beyond the normal class period. As technology has improved, the possibility of making any encounter with a machine-driven exercise a truly authentic and communicative experience seems both real and realistic, even as it hovers just beyond our grasp. Unfortunately, despite the very real promise of computer technology in language teaching, the hype surrounding CALL understates the difficulty of implementing CALL in a fashion which is both time- and cost-effective. The instructor dedicated to employing the latest technology in a truly effective fashion must realize the potential of recent innovations in a way that makes their relevance immediately apparent to learners and encourages them to explore further.

Research has shown that the simple fact of giving students easy access to the target language and culture via the new technologies is not, in itself, necessarily more effective than simply handing them a foreign-language dictionary. Despite the younger generation's much vaunted love of computers, students are in fact no more prepared to utilize the machine and its ancillary devices in the service of language learning than they are to learn vocabulary and grammar by picking up a dictionary or a textbook. If education is to become more effective, we as pedagogues must be prepared to meet the challenge of the changes wrought by technology. Although we might adapt our teaching methods to the newest methodology and adopt the latest texts replete with websites, CD-ROMs, and computer drills, there is little probability that our students will be able to adjust their learning styles to truly take advantage of the new technologies without some guidance from us. Rather, as we do and have done with all other teaching materials, we need to take care both to choose those programs which are based on sound pedagogical principles and to mediate, structure, and guide student learning by providing effective scaffolding. Although some have fretted that CALL programs might one day supplant the teacher, the staggering advances in digital technology have actually intensified the need for talented and well-trained instructors. Now an instructor must be able to utilize technology as well traditional methods to facilitate student learning of the content knowledge demanded by the cur-

riculum. Far from being rendered obsolete by the computer, the teacher remains a vital and crucial element of the learning process.

Despite the improbability of the idea that technology will in some fashion devalue the role of the teacher in the educational process, there are still those who harbor fear that it will do so, resulting in a large measure of skepticism toward the use of the computer in instruction. Some of the difficulty in any attempt to clear away apprehensions lies in the fact that the role of the teacher does indeed change when technology becomes a part of the classroom equation. In language teaching, as the classroom context becomes more realistic—more authentic—it also becomes more fluid. Truly communicative tasks allow for a great deal of variety and their outcomes are often unpredictable. Yet, consciously or unconsciously, we as teachers too often remain tied to the idea that the teacher must remain in control. Even those who advocate a student-centered approach often do so in the context of allowing control to pass temporarily from the instructor to the learner. The essays which follow here, on the other hand, invite the reader—whether seasoned professional, first-time instructor, teacher in training, or interested observer—to envision a basic change in the teacher/student relationship in which the teacher doesn't so much teach the student as mentor the learner in order to promote the acquisition of knowledge. They advocate the use of CALL materials to make that process both easier and more effective.

In each chapter the focus is on the learning process and the teacher's role in facilitating that process through the proper and effective use of technology. Five languages and their respective cultures are represented, and teaching experiences gathered across at least three continents and virtually hundreds of years of collective teaching experience are brought to bear on the discussion. However, no specific teaching methodology or computer platform is advocated. Whatever the background of the author or the reader, the final goal and focus of this volume is to facilitate the learning process through the partnership of pedagogical expertise and technological innovation.

In the first chapter Mike Levy argues that each CALL technology has specific strengths and limitations for language learning, and, as a result, the decision to use or not use a technology is rarely a straightforward one. The correct choice, he maintains, is likely to require the careful weighing of a number of technological, pedagogical, and learner factors. He explores questions and issues with a view to finding the right balance of technologies for particular learners and learning contexts. Finally, he insists that effective CALL requires us not only to understand the strengths and limitations of particular CALL technologies, but also their role in the light of more conventional face-to-face teaching.

Abdi Kazeroni reports on some rather surprising results growing out of a series of workshops designed to assist experienced instructors in introducing technology into their respective curricula. Kazeroni examines the process by which many teachers adapt technology to their classroom needs and makes suggestions for change which would better combine teachers' needs in designing computer-assisted tasks with the characteristics of effective CALL programming as identified in research on second-language acquisition.

Salvatore Bancheri continues Kazeroni's discussion by arguing that it is important for instructors to be actively involved in creating the technological resources which they will use in the classroom, a task too often left to programmers with little or no expertise in the field of second-language acquisition. He believes that new technologies for the language classroom should be the fruit of collaboration between an expert programmer, a graphic artist, and a teacher specialized in language pedagogy. Bancheri looks at the elements which must be considered in the development, implementation, and evaluation of CALL courseware from the vantage point of each of the parties involved—the teacher, the programmer, and the learner.

In the article entitled, 'Seven-by-Seven: Effective CALL for Troubled Times,' Bob Godwin-Jones and Kathryn Judy-Murphy explore the parameters for effective integration of CALL into the curriculum. In an innovative comparison between Covey's *The Seven Habits of Highly Effective People* and Chickering & Ehrmann's *Seven Principles*, they lay out a framework for introducing technology into L2 instruction at any level in a manner which benefits institutions, administrators, and instructors, as well as students. Their discussion addresses seven fundamentals for the effective use of technology in some depth and provides clear examples for each.

Rather than look at task design and implementation in general, Judith Frommer looks at a single skill, listening. She points out that computer-based multimedia materials make it possible both to segment the practice of separate skills and to simulate real-life listening challenges. With appropriate software and hardware, even beginning students can be exposed to authentic, natural language, thus accustoming their ears to what for them are unusual tones, rhythms, and intonation. Frommer concludes with a series of suggestions for listening-oriented tasks which amply demonstrate her thesis. The interactivity and control offered by the computer make possible the execution of a variety of tasks engaging the learner in simulated conversation, carrying-out instructions, as well as summarizing, interpreting, obtaining and sharing information, which teachers can use to facilitate progress in listening ability by their students.

The next three chapters deal with structured programs in Spanish, Chinese, and French respectively, but none of the three is a pre-packaged whole. Each allows for a considerable amount of modification and customization. Sabine Levet and Shoggy Waryn use a web-based methodology entitled *Cultura* as a basis for showing instructors how to take advantage of the best assets of the World Wide Web (WWW) to develop students' in-depth understanding of another culture. This approach enables students to access the real (but hidden) dimension of culture, namely the target culture's imbedded attitudes, values, concepts and modes of thinking. This chapter briefly reviews the literature dealing with the different uses of the WWW in the foreign language class, explains the context within which *Cultura* is used, details the approach which *Cultura* employs, shows the website developed for the purpose and its content, explains in detail how it works, and provides guidelines for instructors on ways to adapt this approach to their own classrooms. The chapter highlights the basic underlying pedagogical approach used, namely a constructivist approach, in which students don't just present information but interact in order to help each other, grad-

ually building, both in the classroom and online, an in-depth understanding of each other's culture in a process of collaborative and reciprocal construction.

Xueying Wang describes a series of pedagogically sound, technically sophisticated multimedia templates designed to assist faculty members in their courseware development. The comprehensive courseware dubbed "Gateway to China" is comprised of sixty-two lessons and covers three years of Chinese curriculum at the university level. The courseware focuses on grammar, listening, speaking, reading, and writing, as well as an additional cultural component. Wang underscores the fact that the advantage of the template system is that the process can be replicated and adapted to any language by simply revising the content of the courseware.

In their chapter Ann Chenoweth, Christopher M. Jones, and G. Richard Tucker describe *Language Online* (LOL). Over a three-year period the group produced Elementary and Intermediate French and Spanish courses for students who need a more flexible approach to language learning than that offered in a standard classroom course. All materials are web-based, with extensive use of Internet technologies for research, writing and communication. Content consists of tutorial and practice materials created in HTML and JavaScript for the LOL project, plus guides for conversation and writing practice using the Internet and other resources. The authors outline the principles behind the design and production of LOL courses, as well as the research methods used to evaluate student learning and satisfaction on an on-going basis. The authors also discuss the training and technical support required for success in this type of instruction and examine the potential of the LOL project as a model for similar projects in a variety of educational settings.

In two separate articles Markus Kötter and Cynthia Haynes look at the potential of MOOs in language instruction from two different vantage points. Kötter points out that the last few years have seen a dramatic increase in the use of online environments in language teaching and learning, such as chat facilities, full-fledged text-based virtual worlds like MOOs, as well as web-enhanced versions of these environments. Moreover, there are also a growing number of products which combine text-based tools with virtual whiteboards, notice boards, and opportunities for the exchange of spoken data. He then reviews and summarizes the main findings of available research into the use of online environments in L1 and L2 learning and teaching. The final section of the chapter evaluates a series of MOO-based projects in which the author has been involved over the past five years, looking both at elements which contribute to the successful integration of online environments into the curriculum and potential sources of difficulty.

Haynes examines both the challenge and the potential of teacher-learner interaction in MOOs. She points out that unlike email, which is asynchronous, MOOs are text-based synchronous virtual realities. All interactions and descriptions are conducted and created in text and in real-time. These two factors make MOOs innovative, especially in the fields of language and literature. Yet the textual nature of MOO architecture and discourse calls for new definitions of writing and new conceptions of text. The MOO also changes the way teachers relate to their students. Text-based reality as well as the "fluidity" associated with identity, speed, and open access on the

Internet spawn a unique set of problems with which educators need to be familiar and which they must learn to handle.

Robert Blake continues the discussion of computer-mediated communication in his chapter, 'Two Heads Better Than One.' He calls attention to the fact that researchers agree that input from or the exposure to a second language (L2) is a crucial factor for second-language acquisition, but the notion of input has been substantially modified since Krashen popularized the term two decades ago. While many researchers have focused on the facilitating role of negotiations of meaning that occur as the result of miscommunications or non-understandings, other researchers dealing with computer-mediated communication (CMC) have noted that text-based media such as email, bulletin boards, and synchronous chat tend to amplify students' attention to linguistic forms. Given that one goal of a L2 curriculum is to maximize input with the target language, Blake describes how CMC and, more specifically, chat exchanges can be used to the benefit of second language learners both in and outside of the classroom. He shows how L2 students can work in pairs via the Internet to stimulate the growth of L2 vocabulary through task-based collaborative knowledge construction. The chapter emphasizes how learner/learner networked exchanges can be superior to teacher/student discourse helping to enlarge the students' L2 lexicon. The findings support the notion that online negotiations create favorable conditions for L2 development, especially with reference to vocabulary growth.

In the final chapter of the volume Jack Burston deals with assessment, posing the question of how we recognize the successful integration of technology into the curriculum. He argues that CALL can be meaningfully assessed only in relation to an entire foreign-language curriculum. Burston sets forth in detail the parameters of CALL evaluation and provides guidance for those who wish to undertake such assessment. He suggests that taking the full measure of CALL requires a comprehensive evaluation of teaching/learning processes and outcomes as well as the overall effects of CALL upon teaching practices and learning strategies. How CALL affects student attitudes and expectations towards language learning as well as course satisfaction and its related effects upon enrollment and retention rates are no less significant in assessing effectiveness than determining immediate learning outcomes.

In all, the volume brings together sixteen internationally respected experts in second-language acquisition and computer technologies, all of whom recognize the close link between research, practice, and program development. In twelve separate discussions, the various authors focus on giving clear and practical guidance to educators who put theory into practice each day in the classroom. Each contribution provides teachers with user-friendly, flexible, and enriching ways to incorporate technology into the language-learning process. As a whole, the volume provides both the theoretical and the practical basis for CALL applications across a broad spectrum of teaching styles, textbooks, and courses.

1

Effective Use of CALL Technologies: Finding the Right Balance

Mike Levy

Introduction¹

Effective CALL requires an instructor to locate the optimal balance of approaches, resources and tools to meet the needs of particular learners in a particular learning context. The drawbacks of the audiolingual method which came to light in the 1970s and, more recently, the limitations of communicative language teaching which emerged strongly in the 1990s amply demonstrate that a balanced approach is needed. Any approach which fails to focus on accuracy and form as well as fluency and meaning, or vice versa, is destined to have only limited success. Beyond a command over the grammatical system of the language—often regarded as the core of language learning—lie other levels of language which also require attention: pronunciation, vocabulary, discourse, and pragmatics. Even broader goals might include developing learner autonomy, extending content knowledge, advancing socio-cultural awareness, or even exercising language creativity. Overall, an informed, balanced approach is required, with a careful weighing of the elements, so as to match the needs of the individual learner as far as possible (see Burston, this volume).

Achieving such a balance is not easy because of the wide range of decisions a language teacher must make in designing a curriculum. There are at least three interdependent categories of decisions which need to be addressed in light of the learners'

goals and the resources available. The first group of decisions arises as a result of the teacher's beliefs about the nature of language and language learning. Decisions here lead to the aspects of language which the teacher chooses to isolate and highlight for learners to attend to and learn, within the classroom and outside of it. Then, once the language and learning goals are clarified, the teacher must consider the pedagogical approach and methodology. In a task-based approach, appropriate tasks have to be formulated and then, through the design and implementation of the task, the learners need to be encouraged to attend to the language aspects in focus and to refine their understanding and skill in manipulating them. The third set of decisions concern the choice of technologies to support the learning tasks. Different technologies have various strengths and limitations which instructors need to understand if CALL is to be used effectively. In resolving these questions, one should employ a balanced approach which addresses the different, interrelated aspects of language, the differing needs, preferences and goals of individual learners and the resources, technological and otherwise, which are available for any given learning situation.

In striving for a balanced approach in the context of CALL, one needs to know how best to marshal technological resources and then how best to combine them with face-to-face teacher-student and student-student interaction in the classroom. Researchers have recognised for some time that for CALL there is not one activity or technology, but many; and each technology exerts its own differential effects. Negretti (1999:75) sums this up neatly: 'Different Internet technologies foster the acquisition of different learning skills.' One would expect, then, that Internet technologies such as email and chat have rather different qualities which have the potential to impact rather differently upon language learning. The point is pursued in some detail in the present chapter.

Balance is essential also when weighing the value of face-to-face interaction in the classroom and mediated interaction, of whatever variety, outside of it. To quote Sotillo:

...in the hands of professors who know what they are doing, online instruction is superior to face-to-face instruction. It appears that synchronous electronic discourse is more efficient in terms of time on task than ordinary classroom discourse, and that a decrease in teacher domination of discussions creates more opportunities for the production of more complex language. (2000:83)

One should note carefully the first few words of the quotation. Decisions must be based upon a sound foundation. Broad claims about the superiority of online learning should be viewed with some skepticism as well, especially given the complexity of language and language learning and the diversity of student goals and learning strategies. Blake, in a rather more measured statement (2000:131), reports that some students preferred the online option. Such statements must be carefully assessed because they have very significant ramifications for curricular design. What is really needed is a program of research which seeks to identify the precise conditions under which online instruction is effective taking full account of individual learner goals and

learning preferences. The existing CALL literature clearly shows that such work is already under way. Sotillo's own research work has been most helpful in this regard. In sum, then, instructors need to know how the various options fit together to create an effective online learning environment and then how best to balance their use with more conventional face-to-face classroom teaching to ensure a properly coordinated whole.

Given these preliminary considerations, the goal of this chapter will be to describe how a specific orientation toward language and learning can lead to a particular conception of the language-learning task and how the structure and goal of the task can lead, in turn, to a principled framework for the selection and use of communication technologies. In this movement from theory to pedagogy to implementation the chapter follows a well-trodden path advanced by authors such as Richards and Rodgers, who, in describing a methodological approach for language learning, framed their discussion in terms of "Approach," "Design," and "Procedure" (Richards & Rodgers: 1986; c.f. Hubbard: 1992; and Levy: 1997). As the discussion moves from the more abstract theoretical considerations to the more practical applications, it draws carefully on existing research findings and observations reported in the CALL literature to support the developing argument. Also, the chapter emphasises the need for language teachers to develop a sound basis for their decision-making at all levels (c.f. Kaze-roni, this volume).

In presenting the discussion, this chapter concentrates primarily on the use of communications technologies for language learning. It limits its attention to the use of the computer as a tool for communication rather than exploring its other roles as a tutor, or as a resource providing authentic language learning materials (e.g., newspapers). Clearly, if the balance discussed earlier is to be attained, then it will be important to see how CALL tutorial programs and web resources might fit into the overall picture too, but that discussion is beyond the purview of this chapter.

Mediated Communication Technologies for Language Learning

This section focuses on the new communications technologies which may be broadly classified under the label CMC [Computer Mediated Communication]. Although some authors work with a restricted definition of CMC, usually to include text-based forms but not spoken forms of mediated communication (e.g., Murray: 2000; Paramskas: 1999). Following Herring, I use the term CMC if the communication is mediated by technology. When the technologies are applied to language learning, I use the term CMC-based CALL (Levy: 2000). As used here, the term CALL can also be distinguished from such terms as Network Based Language Teaching (c.f. Warschauer & Kern: 2000), which is a broader definition than my own and includes any network use, and online versions of resources, such as online newspapers and other realia, as mentioned in the previous paragraph. CMC-based CALL includes email and chat, arguably the most popular generic applications in CALL so far, and

also MOO, audiographics, audio- and video-conferencing and mobile learning options, such as the cell phone and instant messaging.

In pedagogical and real-world terms, mediated technologies each have qualities and characteristics which shape their initial adoption and subsequent use. These include temporal, spatial, material, socio-cultural and individual dimensions. The temporal dimension considers whether the technology is synchronous or asynchronous, (or both, as in most MOOs), and looks at the implications. The spatial dimension recognises virtual worlds such as *ActiveWorlds* which utilise simulated 3-D environments for language learning. The material dimension includes factors such as the screen size, mobility, accessibility, range and so on. A good example here is the small screen and keyboard of a mobile phone which shape in various ways the kinds of communication which can occur via that medium. Socio-cultural factors, widely discussed in other works (e.g., Warschauer & Kern: 2000), include discussion of the cultures and normative behaviours which grow up around particular modes of communication. Lastly, the individual dimension considers such questions as individual background and preference and the assorted factors which lead an individual to favour a particular technology for a particular communication purpose. All these areas or dimensions of mediated technology use deserve attention, but here the temporal qualities of CALL technologies are given priority.

The “real-time” problem

Learners engaging in a chat session for the first time quickly realise that they must think and act very quickly, especially if a large number of other students is involved in the session. Alternatively, learners who are emailing each other find that they have more time to think and reflect upon what they are writing before they are obliged to actually send the message. This difference in the time available for a response is keenly felt by the language learner. Synchronous communication, particularly online chat, like face-to-face interaction, is governed by the pressures of processing language in real time. In this chapter, I want to argue that the difference between synchronous and asynchronous technologies is significant for language learning and that there is growing theoretical and observational evidence to suggest that the time which a technology mode allows for its interactions directly affects the language and learning which result from its use (see also Blake’s discussion of synchronous and asynchronous media, this volume).

In making the case for media effects on learning, it is helpful to consider cognitive explanations because of their concern with the mind’s representational system, real-time language processing, and the role which attention plays in learning (Robinson: 2001). From this perspective, the study of attention is central: human attention is viewed as limited, selective and only partially subject to voluntary control. How attention might be channelled through language learning tasks and, particularly, through specific technologies, will form a major part of the discussion which follows. There is not sufficient space here for a detailed review of cognitive approaches to language learning. For a rich and informative discussion, Peter Skehan’s (1998) book, *A*

Cognitive Approach to Language Learning, and the edited volume by Peter Robinson, *Cognition and Second Language Instruction*, are recommended.

In considerations of the nature of the mind's representational system, there is a debate between those who advocate generative rule-based systems and those who argue for exemplar-based systems, namely, large numbers of formulaic items which may be activated quickly. Skehan argues for a dynamic and interactive combination of these two systems and says:

Two systems coexist, the rule-based analytic on the one hand and the formulaic, exemplar-based on the other. In the former case, compact storage and powerful generative rules operate together to 'compute' well-formed sentences. In the latter, the central role is occupied by a very large, redundantly structured memory system, and (presumably) less powerful rules which operate on chunks much of the time, rather than on individual items. (1998:54)

In comparing these two systems, Skehan makes the case that the rule-governed basis of language may have been over-emphasised (1998:31). Reciprocally, following such writers as Pawley and Syder and Sinclair, Skehan argues that formulaic language is potentially more important than previously realised (1998:54). Here, formulaic 'pre-fabricated chunks' of previously memorized language can be relied upon to 'buy time' for the learner in circumstances where the time available is severely restricted. In other words, the exemplar-based system can be accessed and used more speedily than the rule-based analytic system which requires more time to 'compute.' Skehan points out that when time is available, learners are proficient at moving between the rule-based and the exemplar-based systems, and they do so naturally, but when time is in short supply, there may be a tendency for learners to rely on the system which is less labour-intensive and time-demanding. In his discussion, Skehan speaks of 'time creating devices' which include repetition, ellipsis, lexicalized sentence stems (for example, "as I was saying..." or "to cut a long story short...") and conversation matching strategies. These may be collected loosely under the rubric of communication strategies which emphasise practical solutions to immediate communication problems.

It is in over-emphasis on communication strategies which Skehan senses a real danger for language learners in the long term. In a detailed examination drawing upon theory and experimental data, he makes the point that whereas communication strategies are valuable in the short term to enable the learner to continue an interaction, in the longer term they may draw attention away from syntax and the development of the interlanguage. Skehan asserts:

Communication strategies give the user greater ability to handle language successfully, but at the cost that syntax is de-emphasised, even temporarily sacrificed, to enable communication ...to proceed. ...in the longer term it may well be the case that the de-emphasis on syntax, when it occurs consistently, will have a negative effect on interlanguage change and development. Learners may become

effective communicators at a certain level of structural control, but not proceed beyond that level without considerable difficulty. (1998:43)

In other words, learners do need to work on the restructuring of their interlanguage if they are to make long-term gains. Further, language use, of itself, will not necessarily accomplish this goal. A focus on meaning rather than form, as is the case when communication strategies are consistently employed, will not reliably lead to second-language change through attention to the analytic knowledge system (Skehan: 1998:27, 40).

The language of synchronous CALL

The real-time problem in CALL has not yet been explored extensively, although one might expect that synchronous CMC would have much in common with face-to-face communication environments, where most of the research which Skehan refers to has been undertaken. Given the constraints imposed by the environment, it would perhaps not be surprising if synchronous CMC environments showed a general preference for a focus on meaning rather than form. The demands for real-time processing lead to a reliance on communication strategies, a tendency for learners to rely on the exemplar-based, more formulaic system rather than the rule-based system. It is too early to make a definitive statement on these issues—more research clearly is needed—but there are grounds for believing that such is the case (see Kötter and Blake in this volume for their discussion of the importance of meaning and attention to form).

Examples taken from synchronous CALL environments such as chat sessions and the synchronous aspects of language exchange undertaken in MOO environments serve to illustrate the time pressures and the learners' reliance upon communication strategies. For instance, in a general way Weininger and Shield (2001:89) speak of the need for immediate, or almost immediate, responses in synchronous CMC because it is 'constrained by temporal limitations...' (c.f. Sotillo: 2000:97), and von der Emde, Schneider and Kötter (2001:219) emphasise the use of a 'tremendous range of communication strategies.' More specifically, Blake (2000:120) describes the 'predominance of incidental lexical negotiations, in contrast to the paucity of syntactic negotiations' which leaves 'unanswered or unsatisfactorily addressed the issue of grammatical development.' Fernandez-Garcia and Martinez-Arbelaiz (2002:290) confirm this primary focus on resolving the meaning of lexical items as opposed to any other aspects of language when negotiating meaning in synchronous CMC.

In the CALL literature, there are numerous extracts of interaction data from synchronous discourse in which specific communication strategies are in use. Schwienhorst (2002:139), who looks at the role of repetition in synchronous CMC, gives a good example of the use of repetition invoked to save time. As he points out, asking a partner to repeat is 'technically redundant in a MOO, where the previous text messages are at all times available' (2002:139). Schwienhorst argues, however, that 'the demand for repetition is not psychologically redundant' and 'repetition may also be used to gain time while decoding previous utterances' (2002:139).²

Formulaic language is also clearly evident in CMC contexts. Toyoda and Harrison (2002) state that, '[h]aving a good stock of expressions for clarification checks and confirmation checks seems to be critical' (96). Fernandez-Garcia and Martinez-Arbelaiz (2002:287) describe learners frequently using 'formulas' of the type "What is X?" and language 'chunks.' These authors believe that students learn such chunks in beginning language courses and then continue to use them afterwards. They also feel that such expressions may be a result of the written medium, presumably because it is concise and saves on typing time. "What is X?" is just about the simplest way to ask for a definition of a word. It is an effective and efficient formula when time is short and it occurs often in synchronous communication. However, the question that would need to be asked is whether learners (ever) use other forms for making requests, such as "Could you ..." or "Can you ... explain the meaning of X?". Are learners solely and repeatedly relying on conveying their meaning using the most abbreviated forms? It is precisely this kind of concern which Skehan identifies as a potential problem for students in the longer term.

So observations of synchronous interactions in CALL provide grounds for believing that a certain variety of language is favoured in this context. Largely as a result of temporal constraints, the language is marked by the frequent use of communication strategies and formulaic language, and lexical, rather than syntactical, negotiations. Synchronous CALL technologies may be said to lead learners to attend to communicating meaning and fluency rather than accuracy and form.

Balancing pedagogical goals: attention, tasks and technologies

The overall goal must be to achieve a balance between attention to meaning and attention to form, or, in Skehan's terms, a balance between the pedagogical goals of fluency and accuracy as well as complexity in the learning of the grammatical system, which enables learners to use more difficult language (1998:135). Greater time pressure will reduce attention to form, either in terms of accuracy or complexity (Skehan: 1998:142). Shifting the balance back towards an emphasis on form through appropriate task design, or task sequencing, on the other hand, may compensate for this deficiency if coupled with a careful selection of appropriate communication technologies. Clearly with regard to the latter, asynchronous technologies such as email do not require learners to process language in real time and so they may offer a solution and a way of facilitating a useful focus on form.

In task design, Skehan (1998:112) says that 'task characteristics predispose learners to channel attention in predictable ways.' It is my strong belief that the same is true for specific CMC technologies because they, too, predispose learners to channel attention in predictable ways. Furthermore, the characteristics of given CMC mode, for example, whether the medium is synchronous or asynchronous, cannot be manipulated in the way which a task design might be altered to realize particular pedagogical goals. Whereas with tasks the focus is on task design, with communications technologies the focus should be on selecting the right technology for the task. If the goal of the task is to promote a focus on meaning and fluency one would choose a CMC technology which is compatible with that focus, most likely a synchronous technolo-

gy. Alternately, if the goal of the task were a focus on form, either in terms of accuracy or complexity, an instructor would want to choose an asynchronous CMC technology, or to instigate a post-synchronous CMC activity which focuses on form. As MOOs support both synchronous and asynchronous communication, it may in fact be possible to realise a cyclic approach to attention to meaning as well as form within a single online environment.

Comparing the Language Generated in Synchronous and Asynchronous CALL

So far examples in CMC-based CALL have been taken from two synchronous communication contexts, chat and the synchronous aspects of the MOO. In both contexts, the time pressures are great. For synchronous MOO, Toyoda and Harrison (2002:178) assert, 'MOO spaces are not necessarily appropriate for practise in conversational accuracy, but they do provide an environment for conversational fluency and a rehearsal space for ... real life.' In a similar vein, Weininger and Shield (2001:89) assert that MOO environments 'offer an opportunity for learners to acquire fluency in the oral register' and, further, that 'MOO language in its synchronous aspects provides the learner with a rich rehearsal medium for spoken fluency' (2001:91). It is noteworthy that those researching the issue of rehearsal clearly suggest that synchronous CMC favours fluency over accuracy and meaning over form. Of course the same may be said about much face-to-face classroom-based interaction.

How do asynchronous modes of communication such as email compare? To date there have been very few studies which actually compare synchronous and asynchronous CMC environments for language learning. Perhaps the lack of research on this subject is due to the concerns expressed elsewhere in the CALL literature which have tended to present arguments against comparative studies because of the problem of confounding variables (Pederson: 1988; c.f. Levy: 2001). However, one comparative study that very much addressed the issues relevant to the current discussion is by Sotillo. A well-constructed research design ensured that the two communication modes could be compared effectively.

Sotillo investigated discourse functions and syntactic complexity in ESL learner output obtained via two different modes of CMC: asynchronous and synchronous discussions. Two instructors and twenty-five students from two advanced ESL writing classes participated in the study. The two research questions were: "Are the discourse functions present in ESL learners' synchronous discussions of reading assignments quantitatively and qualitatively different from those found in asynchronous discussions?"; and "which mode of CMC shows more syntactically complex learner output?".

Sotillo located quantitative and qualitative differences between the two kinds of discussions. Discourse functions in asynchronous discussions were less numerous than those found in synchronous discussions. Furthermore, the delayed nature of asynchronous discussions gave learners more opportunities to produce syntactically complex language. Sotillo notes:

While students communicating synchronously seemed to focus on meaning and disregard accuracy, those communicating asynchronously had more time to plan their answers and monitor spelling and punctuation. However, malformed sentences and inaccuracies in spelling and punctuation were evident in many of the asynchronous postings. (104)

Sotillo (2000:82) goes on to conclude that: 'Asynchronous and synchronous CMC have different discourse features which may be exploited for different pedagogical purposes.' She also argues that these two CMC modes impose both different attentional demands (2000:102) and, more broadly, different cognitive processing demands (2000:106), when compared one with another and with the demands commonly required in face-to-face communication.

Sotillo's conclusion that the media does make a significant difference in language learning raises a very important point. Many have vigorously and variously contested such an assertion (Clark: 1994; Kozma: 1994; c.f. Chapelle: 2000:212). However, Sotillo's results show that synchronous and asynchronous technologies focus learner attention differently and thus affect both the language produced and the language actually learned.

Also note the caveat given in the second sentence of Sotillo's quote above. Though asynchronous modes of communication do allow more time for reflection, they do not automatically lead to greater and more consistent attention to accuracy. This view is supported by Slaouti (1998:20) who observed that students had little motivation to edit their work in email exchanges and that accuracy only became a concern when writing to the public domain of the web. Further, in a journaling project via email between learners of Spanish as a second language conducted by Gonzalez-Bueno and Perez (2000:196), the authors found that the email medium did not 'enhance the formal aspects of grammatical and lexical accuracy.'

Gonzalez-Bueno and Perez' results are a reminder that email as a medium has its own culture of use, one which at the present time is more informal than a more traditional written form such as the academic essay, where accuracy is a central requirement. Using email in a very formal way, emphasising the production of accurate and complex language, is not how this mode of communication is normally used in the world outside the classroom. Like other CMC modes designed for native speakers of the language, email originated as a communications medium, not as an arena for non-native speakers to refine the accuracy of their language. In her study, Sotillo was "reconfiguring" a CMC technology for specific pedagogical purposes, ones for which the technology itself was not designed. This surely can be done, but in these circumstances students' use within the classroom is likely to be somewhat at odds with their everyday use outside the classroom. Given the strong normative patterns and conventions surrounding CMC technologies, instructors need to prepare learners appropriately in the use of a technology for the special purpose of language learning if they desire to avoid possible conflicts in technology cultures.

Conflicts in technology cultures are equally possibly in synchronous CMC-based CALL. Yet it can be difficult to divorce real-world uses and pedagogical uses. In

recognising the characteristics of real-world use of synchronous CMC, Crystal (168–69) speaks of the ‘predominantly recreational’ use of chat groups and ‘language play.’ Crystal notes as well ‘the presence of linguistic confusion and incoherence [which] could be inherently attractive, because the social and personal gains—of participating in an anonymous, dynamic, transient, experimental, unpredictable world—are so great.’ Instructors should be prepared to find that regular L1 chat participants expect a chat room experience in the context of a language class to be as unstructured and mildly chaotic as that in any other chat room. Of course, language creativity and play can be valid pursuits even in L2. Instructors simply need to be aware of the ways in which learners use communications technologies in their everyday lives and structure their use of those technologies for pedagogical purposes accordingly.

Task Cycles and CMC Technology Cycles: A Principled Approach

If it is not possible for learners to attend simultaneously to form and meaning, i.e. to concentrate on the pedagogical goals of fluency, accuracy as well as grammatical complexity, then it would seem that the only alternative is to recognise that some kind of sequencing is necessary. I would argue, in fact, that sequencing is needed both for the order of the tasks and the choice of technology because each in its different way channels the learners’ attention. If an instructor wants to balance all aspects of the language-learning process over the longer term, then he or she must pay attention to the tasks as well as the appropriate technologies.

In the discussion thus far, the case has been made that synchronous, mediated technologies lead the learner toward attention to meaning and fluency. There is considerable evidence already in the CALL literature to back this up. So to right the balance, so to speak, an instructor needs to employ tasks and technologies which will lead the learner to attend to accuracy. Skehan (1998:148) suggests that activities which promote a greater focus on accuracy are: an awareness of an upcoming public performance; the knowledge that a task-based activity will be recorded and analysed; and the prospect of a test. Skehan goes on to emphasise the value of learners’ having their task-based performances analysed by themselves or by others.

Willis (1996) is more specific about sequencing between and within tasks and provides the following framework for task-based learning:

1. The pre-task: The teacher sets up the task
2. The task cycle
 - Task: Learners carry out task in pairs
 - Planning: Learners decide how to report back to whole group
 - Report: Learners make reports
3. Language focus
 - Analysis: Learners discuss how others carried out the task
 - Practise: The teacher practises new language which has cropped up

It is important to note that the task itself is positioned within the task-cycle phase, and that this phase is the second within the framework as a whole. The task itself, then, sits mid-way in a coordinated sequence. Willis (1996:54) believes that the task component 'helps students to develop fluency in the target language and strategies for communication.' For Willis, the goals of the task are to focus on meaning rather than form, and she explains that were the task the only means of language development there could be various problems, including an overemphasis on the use of communication strategies and lexical chunks rather than the development of grammar and grammatical accuracy (Willis: 1996:54–55). The stages after the task in the Willis framework are designed to compensate for the potential imbalance which would occur if these post-task activities were not available to promote learner attention to meaning, accuracy, and form. Both Skehan and Willis advocate an ordered cycle of activities, recording what has occurred during the task for later analysis and discussion, and some kind of public performance (see Kötter and Burstson, this volume, for further discussion of the importance of analysis of student performance and other follow-up activities).

For CALL, it would be interesting to see how far synchronous language behaviour might or could be influenced if learners were required to write a report on the interaction or give an oral summary to the class later. Would such a requirement influence their performance in the task cycle? I would guess not, simply because, whatever the requirement afterwards, the chat moves so quickly and time pressures are so great that learners would not have the cognitive reserves to attend to such matters mid-chat. If there were any substantive effect, I would suggest it would be that learners would say less. But this personal view should be investigated.

It is also relevant here to note the now fairly extensive research data which is available on planning. Planning research looks at the roles of pre- and post-task activity in relation to the development of fluency, accuracy and complexity. Pre-task planning has been the main focus in the research thus far. In their contribution to Robinson's volume, *Cognition and Second Language Instruction* (2001), Skehan and Foster divide pre-task activities into the categories of teaching, implicit learning, parallel, modelled, and consciousness-raising activities (199). All these categories of activity have potential in preparation for CMC-based CALL tasks. From the research findings, there is strong agreement now that complexity and fluency are enhanced by pre-task planning; the results for accuracy are not as clear (201). Learners may use planning time to find substitutes for structures they have not yet mastered; in such circumstances high levels of accuracy would still be recorded, but learners would not be pushed to develop the complexity of their language output. To learn more about the processes involved as they relate to accuracy, Skehan and Foster (204) suggest the need for more introspective research designs.

Task cycles and CMC technology cycles: Practical solutions

With one notable exception, the focus in the CMC-based CALL literature so far has been on developing post-task rather than pre-task activities. The one interesting exception is Hewer, Kötter, Rodine and Shield (1999:3), who utilise email to allow

practise before an audio-conference session. Otherwise, examples in the literature refer to post-task activities designed especially to encourage a focus on form or accuracy.

One of the advantages of synchronous CALL interactions such as chat or MOO sessions is that language interactions can easily be recorded in the form of logs. Unlike the chat session itself, which is transient and dynamic, the log provides a stable reference for discussion later. Paralleling Skehan's and Willis' suggestions, these logs may be used post-chat for discussion and analysis, either by the student alone, through pair work, or through teacher-student discussions. The CALL literature provides a number of examples of task cycles which use the log for post-task analysis to facilitate a focus on form or accuracy.

In their study, von der Emde *et al.* (2001:217) describe an approach where teachers met with students once a week outside the MOO to analyse the logs which were used to: 'help students identify errors; use correct modelling done by their native-speaker partners; identify grammar exercises for their own practise, and learn the vocabulary they needed for their projects.' The results of these various activities formed the basis of the students' learning portfolios which included printouts of all their MOO work. This approach illustrates well a cycle of activities and the use of recorded material for later reflection and discussion, especially on points related to accuracy and vocabulary extension.

In thinking about the value of learner logs in native speaker/non-native speaker interactions, Toyoda and Harrison (2002:96) observed that it was only when the teacher went over the log with the learner that it became clear that there were times when the student did not understand words; it was also evident that learners often did not know how to approach the negotiation of meaning of unknown words with the native speaker. Such examples highlight how misleading it can be for researchers to simply take learner logs at face value: that a learner has responded to a prompt or question from a native speaker does not necessarily mean that the learner understood what was said.

Post-chat logs can potentially be valuable for language learning, though with important reservations. In logs of synchronous CMC, Negretti (1999:81–82) noted that multiple parallel sequences with overlaps and disjunctions were common and the adjacency pairs typical in phone conversations and face-to-face conversations were infrequent. Clearly, care has to be taken in any post-chat analysis. Here the teacher's role is very important. The teacher might highlight single sentences or limited sequences from the log for the student's attention. If the teacher can work one-to-one with the student on such occasions so much the better. Needless repetitions can often be avoided if learners create their own private space or room in the online environment for their conversation to take place.

Finally, it is worth noting that the text log is only one form of 'recording' an online task for post-task analysis and a focus on accuracy or form. For example, Ganderton describes a research project in which he video-recorded, on conventional VHS tape, a pair of learners working on a web-based task. One channel recorded the computer screen in real time and the other channel recorded the audio conversation between the

students as they worked on the task. Though this approach was devised for research purposes—basically a stimulated recall methodology—a similar strategy could be used for pedagogical purposes. Though a little tricky to set up initially, with digital video recording it is becoming easier to implement such techniques on a more routine basis for teaching purposes. In this way any online task, text-based or audiovisual, may be recorded for later analysis and reflection.

Technological ‘Affordances’: How Technologies Channel Attention

In this section I would like to consider in a little more detail the manner in which the inherent characteristics of a particular technology channel the learner’s attention. Hutchby provides a way forward in his book *Conversation and Technology* by further elaborating the concept of ‘affordances’ first developed by Gibson, which takes account of the constraining as well as enabling qualities of artifacts. Essentially, Hutchby argues that technology constrains as well as enables communication as the result of the ‘complex interplay between the normative structures of conversational interaction and the communicative affordances offered by different forms of technology’ (Hutchby: 2001:13). Thus, interaction in CMC environments is conditioned both by specific technological restrictions and the requirements of social convention.

Negretti observes that in CALL the technological context shapes ‘the structure of the interaction’ (1999:79). As an example, Hutchby emphasizes four specific constraints which distinguish Internet Relay Chat (IRC) interaction from the normative order of ordinary conversation:

1. Participants can only ‘take a turn’ in the ongoing conversation by typing something in their talk-line box and pressing <Enter>.
2. That ‘turn’ only reaches all others on the channel once it has been accepted and distributed by the server (temporal lag).
3. There is a difference between a turn’s course of production (typing in) and its public ‘enunciation’ (sending) such that other turns may appear in the interim which disrupt the turn’s sequential relationship with its intended prior.
4. While all this is happening, the conversation is going on in a scrolling window on the monitor screen which means that, on occasions of high traffic through the server, the prior contribution to which a turn is intendedly tied may have scrolled off the screen by the time the second contribution appears. (2001:183–84)

Such a close analysis of what users actually do (c.f. Winograd & Flores: 1986) helps to clarify how exactly how the technology might focus attention. Prior to taking a turn, the learner decides to respond to a particular utterance while reading the ongoing conversation. Typing begins in a talkline box. How quickly a learner responds is a result of a number of interrelated factors: the time it takes to formulate a response mentally; the individual’s typing speed; the length of the response; and whether the learner chooses to edit the message before sending it. In the meantime, typically, the

conversation will be moving up and off the screen continuously so while the learner is completing his or her response, the initial prompt may disappear. Only after the learner completes the message and presses <Enter> is the message sent to the server. The original trigger utterance by a chat participant, the talkline box, the user's typing ability, distribution via the server and, most of all, time pressures exerted by a dynamic conversation, all contribute to the shape of the message which is finally sent. The sender has no idea when sending the message whether or not there will even be a response to it. Crystal (2001:30) has stated that messages sent by a computer are always 'complete and unidirectional.' Yet in synchronous CMC to maintain the flow of a dynamic conversation users often indicate that the message is incomplete and another will follow by closing off with a series of dots.

This more detailed analysis of the procedural elements of chat also highlights important differences between instantaneous face-to-face communication and almost synchronous technology-mediated communication. The differences are crucial. "Editing" in face-to-face interactions is at first internal and then, once the words are spoken, external. Editing in face-to-conversation typically occurs on the fly with a corrected version, a recast perhaps, often accompanied with an apology. Online editing, on the other hand, proceeds in a very different way. In most, though certainly not all, synchronous mediated communication media it is possible still to produce the words in private and to make changes before releasing the initial communication, though the time pressures remain very intense. These subtle differences need to be recognised and understood for synchronous technologies to be utilised effectively, both in themselves, and as a possible preparation for genuinely synchronous face-to-face interaction.

The notion of "rehearsal" using communications technologies needs to be examined as well because the idea of rehearsal is often advanced as the major justification for the use of CMC technologies in language learning, e.g. Toyoda and Harrison (2002:178). Precisely how work in IRC or similar discourse situations might be regarded as "rehearsal" for face-to-face interaction is a complex question and worth exploring a little further. In face-to-face group interactions, one of the hardest decisions for a non-native speaker to make is when exactly it is polite and acceptable to interrupt the flow of the conversation in order to take a turn. Often a split-second decision is needed. In fact, the proper timing of a response is so challenging that even advanced learners will often prefer to wait until invited by a native speaker to take a turn.

Timing one's response is not as serious an issue in chat because of the mechanisms by which the technology processes and delivers the message. Different constraints, or technological affordances, are in play. Consequently, it is difficult to know in any precise way whether turn-taking rehearsed in CMC could lead to the development of parallel skills which would be useful later in face-to-face interactions. On the other hand, synchronous CMC does appear to be a useful rehearsal medium for practising various communication strategies which may then be used in face-to-face interactions. How exactly CMC-based CALL may be considered a rehearsal for subsequent performance is a potentially rich area for further research but for that to happen

a clear, unambiguous operational definition of rehearsal needs to be developed. It is likely that this definition will need to relate appropriately to aspects of short-term and long-term memory. Along these lines, Ashcraft (1993:211) defines rehearsal as 'a deliberate recycling or practicing of the contents of the short-term memory store.' Skehan and Foster (2001:202) consider the importance of rehearsal in relation to planning time which is used 'to bring into working memory elements of long term memory which are perceived to be relevant to the task at hand.' Once such elements have been rehearsed they can be brought to bear very rapidly during task performance. On the other hand, Widdowson (1998:715) prefers 'investment' to 'rehearsal' and says, 'The purpose of teaching is to get learners to invest in a general capacity for further learning, not to rehearse them in communicative roles they may never be called upon to play.' At present in CALL, when particular modes of CMC are recommended as instruments for rehearsal, more clarity is needed on what exactly is being rehearsed and for what ultimate purpose. Researchers need to be particularly careful to distinguish between the characteristics of face-to-face interaction and synchronous technology-mediated interaction. Given the dominance of research in face-to-face contexts in fields such as Second Language Acquisition (SLA), findings from that area will need to be applied very cautiously in CMC-based CALL.

Conclusion

This chapter concludes with three points which relate to the goal of effective CALL: the first concerns theory, the second concerns the real world-classroom interface and the third concerns the need to balance curricular goals with appropriate communications technologies.

The major theoretical perspective explored in this chapter in relation to CALL is the cognitive approach. This orientation has produced insights into CALL as it relates to synchronous and asynchronous CMC. However, this is not the only approach or orientation. In fact, in CMC-based CALL, socio-cultural models have predominated (Levy 2002; Warschauer & Kern: 2000). Sotillo remarks:

For researchers working from a socio-cultural perspective, synchronous discussions exemplify ideal environments because they encourage the intense social interaction and textual meaning construction and negotiation deemed crucial for human learning and development of higher-order cognitive functions. (2000:102)

Studies of CMC-based CALL can be conducted under both theoretical umbrellas, the cognitive and the socio-cultural. Both these perspectives have the potential to lead to research that will inform the field as they have done, for example, in the area of pragmatics and language learning (Kasper: 2001). Though socio-cultural frames of reference, especially socio-cultural theory, might lead to very strong arguments in support of the use of online chat for language learning, other frameworks and theories, such as cognitive theory, are not so sweepingly glowing in their support. A thoughtful bal-

ance of theoretically motivated research and practise is needed which properly reflects individual and social factors in language learning.

It is also crucial to recognise that many of the technologies now being considered for use in the classroom are already widely used by our learners in everyday life. Those who design tasks for pedagogical purposes must take that fact into consideration. Crystal summarises the potential dangers with an example from chat:

Foreign learners lack the intuitive sense of the boundary between standard and non-standard, or a sense of just how deviant a chatgroup usage might be, and by dint of exposure to repeated instances they may well end up misusing a construction, idiom, or other form. The bending and breaking of rules which is a hallmark of ludic (*sic*) linguistic behaviour, always presents a problem to those who have not yet developed a confident command of the rules *per se*. (2001:236)

Finally, both practitioners and researchers need to seek a balanced approach involving appropriate technological and face-to-face solutions which meet the needs of learners in a given context at a particular time. Then learning will indeed be effective.

Notes

- 1 I would like to express my sincere thanks to Randall Donaldson, Margaret Haggstrom, and Lesley Shield for their detailed and perceptive feedback on earlier drafts of this chapter.
- 2 With regard to the role and use of repetition in MOO, Lesley Shield (2003, personal communication) suspects which there is a very practical explanation for the repeat requests in which learners are using computer clients which do not allow them to lock the screen and scroll back. As a result they do not have time to read through previous input and thus request repetition. She concludes: 'It may well be a mixture of the practical and the psychological which causes this effect.'

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2

Have We Left the Teacher Out of the Equation? Strengthening the Link Between Teacher Cognition and Task Design in CALL

Abdi Kazeroni

Introduction

Of the many resources available to teachers of foreign language, few have received as much attention as the computer. No single item used as an instructional aid has been the subject of as many dedicated scientific studies, books, conferences, and journals. More recently, the advent of network technologies has added yet another dimension to the considerable role computers play within education.

The present chapter considers the implications of findings arising out of several fee-based, in-service training sessions. All of the sessions upon which the discussion is based took place in France.¹ They began in 1998 and were designed for fully qualified (i.e., officially certified for the level of instruction at which they taught) teachers of foreign language who desired to integrate web-related technology into their everyday practice.

From the onset, the main objective of the training sessions was to encourage participating teachers to design new tasks for their learners with materials available on the web and to use the technology and scripting languages which have been developed for the web to implement those tasks. One of the fundamental assumptions of the sessions was that although foreign-language teachers expend considerable time developing tasks which they believe will assist learners in increasing their knowledge

of the target language, they rarely conceptualize the principles which underlie their choice of tasks (Stern: 1983). In planning the training sessions, the organizers also assumed that when instructors undertake task design, techniques which have been effective in the past are likely to influence the development of new activities. Unfortunately, traditional classroom methods may not transfer well into computer-based assignments so many well-meaning and experienced instructors are frustrated in their efforts to adapt traditional classroom techniques to effective computer-based exercises. The training sessions were designed on the premise that once teachers became familiar with both the web and its underlying technologies, they would come up with task ideas which utilize those technologies. Moreover, the sessions were structured to encourage participants to create computer-mediated teaching tasks once they became familiar with the technology.

The discussion in the following sections focuses initially on the nature of the training sessions, the participants, and their motivations. The focus then shifts to the nature of task design as reported by the participants and highlights the difficulties in bridging the gap between the current practices of the participants and insights revealed by recent research in second-language acquisition.

Training sessions

Structure

The sessions are organized from Monday to Saturday in three two-day blocks, each block with a different focus. Participants may register for one, two, or all three blocks. Only two training weeks are organized in each academic year, and each has between eight and sixteen participants. Because all participants must pay for the sessions, there is implicit evidence that all involved are willing participants. In fact, of the 300 participants to date, only one has said that she was sent by her organization without her consent.

Target audience

The participants are drawn from both the private and public sectors. Approximately sixty-five percent of the participants have been teachers possessing the French CAPES or *Aggrégation*² with permanent positions either in French secondary schools or in the French higher-education system. In order to qualify for such positions individuals must pass a series of very competitive examinations which generally test only the future teacher's knowledge of the subject matter, namely the foreign language. The minimum requirement to sit for such an examination is four years of university studies. Future teachers receive pedagogical training at institutions for teacher education only after the successful completion of such examinations.

Twenty-five percent of the trainees, almost exclusively native speakers, teach in the private sector. Their teacher training generally consists of crash courses on how to teach their first language. The remaining ten percent are university professors. As the only factors considered in hiring a university professor in France are attainment of the doctorate and proof on on-going research activities, it is still possible to teach

in a French university without any pedagogical training. The public sector participants are foreign language teachers in secondary and higher education, including full-time university professors³. The private sector is mainly represented by private language schools or freelance teachers.

Most participants have been in their forties and have had approximately fifteen years of teaching experience on average. The youngest participant, a newly certified teacher, was twenty-six years old, and the eldest was fifty-nine, with one year to retirement. Although most participants have been native speakers of French who teach English, a total of fifteen nationalities and nine languages in addition to English have been represented. Computer literacy is a prerequisite for registration, yet some participants have had only limited computer skills.

It should be noted that all participants have been fully certified teachers of a foreign language except for a small number of native speakers of English who teach in the private sector in France (approximately five percent). None of the participants had had any formal introduction to computer-aided instruction (CAI) or to computer-assisted language learning (CALL), either as a student or as a teacher-trainee. Furthermore, most had only limited background in current theories of second-language acquisition (SLA), although everyone had subject knowledge (foreign language/culture) as well as teacher training.

Motivation

Although virtually all participants took part in the sessions willingly, their motivations varied. A few registered for the training sessions in the hope of finding out if they could be replaced by a machine. In those instances, the participants were usually anxious because their employers had expressed a desire to maximize computer use, either to increase productivity or to replace under-qualified teachers. A full ninety-five percent of the participants, however, attended the sessions because they wanted to enhance their teaching through the use of technology.

In many cases, the individual teacher had used some form of technology in the past but been disappointed in the results, seeing no appreciable increase in student learning in technologically-augmented lessons. Indeed, all participants expressed dissatisfaction with commercially available authoring languages and CD-ROMs.⁴ Most felt they have no control over content selection, organization, and presentation with ready-made CD-ROMs. They had found that authoring languages restrict the authors and designers of prepackaged lessons to a highly normative view of foreign language teaching. Commercially available material, therefore, like most traditional teaching methodologies in foreign language, are top-down, and unlike textbooks, nearly impossible to modify. Given their dissatisfaction with commercial products, the assumption was that the participants wanted to know what could be done with web-related technology that could not be done without it (Chapelle: 1997).

Task Design and Technology

Task-based teaching is a familiar concept for those doing research on second-language acquisition, and the literature is abundant (c.f. Brumfit: 1984; Nunan: 1989; Crookes & Gass: 1993; Skehan: 1998; and Ellis: 2003, among others). Yet the majority of the participants were unfamiliar with task-based language teaching and its theoretical foundations. On the other hand, most participants were in some measure accustomed to designing tasks for the classroom although unsure of how to facilitate and streamline the process by using computer technology. They had learned to design tasks based on textbooks and specific language-teaching methodologies. Participants forty-five and older well remembered the arrival of language laboratories and the introduction of audiolingual language teaching methodology in the 1960s, and the experience had left them with a very negative image of the use of technology in language teaching. Even those participants who voiced a specific desire to transfer classroom tasks to the computer indicated ambivalence towards the project.

In France, notably in the public sector, there is no one official methodology or approach. Each individual teacher controls the implementation of a program prescribed by the Ministry of Education in his or her individual classroom. Thus an instructor has complete freedom in the choice of textbooks and teaching methods. Unlike advocates of language-teaching methodologies who have well-defined and explicit concepts on teaching and learning a foreign language, few participants are able to articulate their own assumptions on the nature of acquiring a second language. Furthermore, few language-teaching methodologies make specific statements about which communications technologies complement a given pedagogical approach, leaving many instructors feeling somewhat at sea in trying to implement technology. Prior attempts at using technology—and many have tried at least the audiolingual method—have left most teachers skeptical about its benefits. Consequently, teachers tend to avoid anything which seems remotely theory-driven. This partly explains their unfamiliarity with task-based language teaching concepts, even though those ideas have been around for nearly twenty years. When using technology, explicating one's own task criteria and assumptions about the nature of language acquisition are important first steps.

The problem which most instructors face is neatly illustrated by Germain in a schematic analysis (Table 1). As a result of the transition from an instructor-centered to a student-centered classroom an instructor can no longer be concerned solely about teaching content. Rather he or she must construct a curriculum which recognizes differences in learning styles among students and facilitates learning across various learning styles. Anyone who wishes to design effective computer-based tasks must first accept this fundamental change in classroom dynamics. Consequently, the first order of business during the training sessions was to apprise teachers of the fact that some materials are better suited to certain tasks than others and then to assist them in identifying and organizing those artifacts most appropriate to the task they wished to design.

The process by which each participant was asked to refine his or her tasks was based on a suggestion by Chapelle (Table 2). Each individual had to determine the nature and structure of the necessary input as well as the time necessary to complete the task. Additionally, a participant had to articulate the nature and structure of the desired output as well as its intended effect on the learners' acquisition of the foreign language or culture. The effects of consciously working through such a process were recognizable almost immediately. Most of the participants attended the sessions in part to discover new ways of implementing tasks which cannot be presented without technology. Yet the vast majority was, in fact, already adept at transforming existing pedagogical activities from textbooks or other sources to meet course objectives rather actually creating tasks from scratch. Most were heavily dependent on documents (text, images, sound, etc.) as a starting point for creating activities to supplement those in a textbook. Such habits proved hard to break, and practical problems arose almost immediately.

Table 1: Reproduced From Germain: 1993:14

Conception of language (Object)
nature of language
nature of culture
Conception of learning (Subject)
nature of learning
role/nature of the learner
Conception of teaching (Agent)
role of the teacher
role of teaching material
Conception of pedagogical relations (O[bject]-S[ubject]-A[gent])
<i>Didactic relation</i> (O[bject]-A[gent])
selection of content
organization of content
presentation of content
<i>Learning relation</i> (S[ubject]-O[bject])
role of L1
pedagogical activities
teaching relation (S[ubject]-A[gent])
teacher-learner interaction
error correction

It became clear very quickly that participants had had little experience in generating original tasks to suit a specific learning objective. Even as a part of their initial teacher-education program, foreign language teachers in France are not generally required to create tasks; they need only to implement and, if necessary, to modify them. Few, if any, of the participants were able to cite sound theoretical reasons for choosing a given document. They were rarely able even to say whether the idea for the task preceded the discovery of the document or vice-versa. Nevertheless, it should be noted that through experience most participants had developed their own "data bank of tasks" gathered from textbooks and adapted to local conditions. When it came

to creating tasks within multimedia environments, participants reported that their only prior experience was tasks accessed on websites and/or specific language-learning CD-ROMs.

Unfortunately when encouraged to use web-related technology to create tasks, participants often relied on the document-first approach, which is highly impractical and pedagogically unsound. Even granting that the web is a rich source of authentic documents, finding a document on the web which triggers an idea for a task appropriate to the curricular goals at a given moment is a matter of pure chance. Experienced teachers find many documents which awaken a latent task idea, but unless one articulates a specific curricular goal around which the prospective task is to be designed before setting out to find a document, it is unlikely that the finished task will suit the goal. And most participants have not been in the habit of indentifying the specific pedagogical aim which a task is meant to serve.

Table 2: Adapted From Chapelle: 1997

	Input	Interaction (Intake/Restructuration)	Output
Nature			
Quantity - Time			
Structure			

The initial assumption was that experienced teachers develop a built-in mechanism for task creation which would allow them to identify suitable documents on the web and design accompanying tasks. However, it quickly became apparent that the only technology which teachers used without apprehension and which they had fully integrated into their task-design routine is the photocopying machine. Therefore, although the initial assumption was that web-related technology would enable teachers to create tasks, specifically hypertextual tasks, which they could not otherwise create, in fact, very few participants had ideas for tasks which could not be implemented without technology. Consequently, the workshop sessions were restructured to include a discussion of the dimensions and factors which are of primary importance in task design if a task is to meet specific curricular goals.

Task dimensions

A task is, of course, almost always a function of many different considerations, including the instructor's vision of the lesson to be learned, the manner in which students will or should learn that lesson, and the teacher's vision of his or her proper relationship to the students (see Table 1). Of the different task dimensions I will concentrate on five of the most important: complexity/fluency/accuracy; learning/completion; openness/closure; focus on meaning/forms/form; feedback/evaluation. For each dimension I will develop a short definition and suggest possible implementations using web-based technology.

Complexity/fluency/accuracy

Complexity is generally used to refer to one of two very different types of difficulty. A task might be complex because it requires a high level of cognitive functioning to comprehend. On the other hand, an instructor might consider a task complex because it requires structures which students typically have trouble mastering. One kind of complexity stresses cognitive matters while the other demands strict attention to grammatical structures. One looks at content; the other at form. Fluency and accuracy represent another binary opposition in language learning. Rarely are learners able to address both fluency and accuracy simultaneously. The more rapidly a task is completed, the likely it is that accuracy will suffer. Conversely, the demand for greater accuracy is likely to mean that the amount of time necessary to complete the task increases. If a task is to promote learning, it must be designed in the knowledge that learners are not likely to be able to assimilate all aspects of a language simultaneously. An effective task should focus on fluency or accuracy, content or form, but not both (see Levy, this volume, for further discussion of matching the task to the pedagogical aim of the lesson).

The key to designing tasks which address the various elements of language learning individually is proper sequencing and linking of the component parts of the tasks. HTML and online editors can be used to create websites and weblogs (blogs) respectively, which in turn create web environments for asynchronous communication. Discussion forums and online chat allow for synchronous communication. Any of the four possibilities—websites, blogs, discussion forums, and online chat— might lend itself to enhancing a task design. A simple information gap activity is a case in point. Using web-based tools it can be made complex gradually. If the information-gap activity consists of having two series of pictures each containing four pictures, students could be asked to work in pairs to reconstruct the whole story. Each individual would describe the series of pictures in his or her possession to a partner. This activity can naturally be done in face-to-face situations. However, it can also be done using a chat tool. In the face-to-face situation students can resort to a commonly-shared language, use gestures, and complete the task without having produced any appreciable amount of L2 output. On the other hand, when two students are asked to complete the same task by using a chat, it would be sufficient to provide clear instructions which insist on the exclusive use of the target language, forbid the use of abbreviations and “smilies,” and require a printout of the “chat.” The activity would then yield very different results from its face-to-face counterpart in terms of spontaneous language production. Furthermore, students may be allowed to use online dictionaries or not. The pictures series can be made more complex according to the level of abstraction they represent, or by the familiarity of objects contained in the pictures. Pictures containing less familiar objects which may not be known to students would lead them to negotiate meaning with one another with more precision and consequently more accuracy of communication. An instructor might promote fluency by imposing time limits on task completion.

Learning/completion

Many instructors assume that task completion and learning are one and the same, but depending on the design of a task, students may actually be able to complete an activity without understanding it or learning anything new. For instance, a student may be able to complete a multiple-choice task by simply guessing at all of the responses. Conversely, a student may complete only part of a task, such as a vocabulary-learning task, but still have learned ten new words. In designing tasks, then, the instructor should take care to ensure that the task design requires active student participation and promotes the acquisition of the task's pedagogical goals. On the computer, for example, several easy-to-use computer languages such as JavaScript and DHTML allow instructors to design matching activities which require a student to match a sound excerpt with a picture or a text. By including "dummy" sound excerpts, picture files or texts which students must eliminate, the task design encourages thought and learning and discourages guessing.

Open-/closed-tasks

Both paper and pen and web-based tasks may be designed to be "open" or "closed." An open task is one that results in an individualized answer. A closed task has a specific correct answer. Many online messaging tools can be used for both open and closed tasks. For example, instructors might design a vocabulary review activity as a closed task in which students can quiz each other on items of clothing in the target language (How do you say "dress" in French?). As an open-ended activity, students could be asked to exchange opinions about a current event. On the internet, a "web-quest" may also be set up to be an open- or closed-task. In the closed-task, students could be asked, for example, to go to the web and find the names of the major mountain ranges in France. As an open-ended activity, the map-quest could be organized as a two-way exchange of information. Two students would complete a web-quest together with each having only part of the task. In order for a student-pair to complete the task successfully the partners would have to exchange information in the target language. This type of activity can be organized using a web-based discussion forum or a blog that would allow a student to leave messages for his or her partner.

Focus on meaning/forms/form

Long (1991) provides a detailed discussion of what he calls 'focus on meaning,' 'focus on forms,' and 'focus on form.' Broadly speaking, focus on meaning refers to communicative activities that give primary importance to the meaning to be transmitted and pay relatively little attention to grammatical and syntactical accuracy. Focus on forms refers to task or exercises in which language is broken down into discrete items, especially grammatical points, which are then taught and learned in a given sequence determined by the teacher or dictated by the textbook. Learners are then expected to re-synthesize their discretely acquired knowledge of language (Wilkins: 1976). Focus on form is a situation in which learners notice new language structures while negotiating meaning to complete a task, and subsequently incorporate those structures into their own output. An example might be the student who notices gaps

in his or her own knowledge of the target language while completing an assignment and then undertakes to learn them.

Focus on form emphasizes the interconnectedness of the several aspects of language learning. A student is urged to learn a new structure, recognize its similarity to another, and use both together in a realistic context to communicate. Yet many instructors design tasks which are broken up into discrete sub-tasks, concentrating on one aspect of language or culture at a time. Language learning tasks (and sub-tasks) highlight one learning goal or language element at a time with no particular attention to their relationship to each other. For instance, a task might provide “the definition” of a grammatical structure without taking into account whether the learner is able to transform explicit information on grammar into acquired implicit use of the appropriate grammatical structure. Such approaches provide only explicit information on grammar. They supply a linguistic description of the target language and inform learners only of the behavior of the target language and its individual language structures. Often, when grammar teaching takes this form learners are exposed to one grammar item at a time, followed by drills on that structure. Research shows that students are more likely to benefit from explicit grammar teaching if the explanations are accompanied by meaningful communication tasks which require the learners to use some of the targeted structures. Once again, chatrooms and discussion forums provide either synchronous or asynchronous environments for appropriate tasks.

Feedback/evaluation

There are two ways of conceiving feedback: providing a model answer; or providing an explanation of why the learner’s choice may have been wrong. In closed tasks it is easy to provide a model answer. One provides a correct response and, in some cases, alternative responses by using certain authoring tools or languages which make that possible.⁵ However, the second type of feedback, often referred to as negative evidence, negative feedback, or corrective feedback is not as easy to program because the reasons for a learner’s errors cannot be predetermined. For that reason many authors model the form of a correct response in presenting the question. The hope is that the learner will mimic the model in his or her response. Long & Robinson (1998) have called feedback of this type ‘positive evidence.’

Evaluation is merely a way of giving marks on a point or percentage scale. Most authoring and scripting languages allow for evaluation in this sense. However, instructors usually want to provide two types of feedback as well as two types of evaluation—immediate and delayed. Immediate feedback is providing a cue regarding the acceptability of an individual response whereas immediate evaluation is attributing a mark for an entire completed task. Both are currently possible. Even if the answer provided by the learner does not correspond to the model answer, some authoring and scripting languages make evaluation possible on a sliding scale. Therefore, some answers may not be deemed totally correct, yet they may be considered acceptable.

Delayed feedback and evaluation presents a little more difficulty. Delayed evaluation is, in fact, not difficult to organize as it simply consists of summing up the results of immediate evaluations. Delayed feedback, on the other hand, would relay

some analysis of the overall performance of the learner followed by comments in terms of negative evidence. That level of sophistication is, however, not possible given current web technology. In order to insure that learners do receive corrective feedback, given technology does not do it, instructors might set up tasks in a chat-room which allow learner-learner interaction in meaningful communication situations in the target language.

Conclusion

The observations made and reported in this chapter are to some degree surprising. Initially I believed that teachers who became familiar with computers and web-related technologies would design computer-dependent tasks. However, familiarity with technology, although necessary, proved insufficient.

Because many language teachers have developed expertise in modifying tasks rather than in creating totally new ones, any attempt to assist instructors in computer-supported task design and implementation must include a thorough grounding in task design, including models and examples. Most language teachers who participated in the training programs described above expressed dissatisfaction and frustration with technology when they were not given models for a task they were about to create. On the other hand, once shown an example of what others had done and how a given task might be implemented technically, they would articulate ideas about adapting it to their own situation. This suggests that there is a need, at least in the French context, to include in both initial and in-service teacher-education programs instruction in SLA. Only then can we expect to see computers and network technologies used more widely and innovatively.

I have one final observation. I have often wondered why language teachers as a community have thus far been unable to agree on one mark-up language for computerized task creation now that the technology underlying computer networks allows for it. I can only offer two tentative answers. First, language teachers do not share teaching ideas easily. This is, of course, a broad generalization and potentially controversial, which means it is often left out of the literature. However, we need to consider what a highly individualized art teaching is. Although a given group of instructors might all teach the same language at the same level, the experience as well as each individual's success in teaching the material will depend on a wide variety of circumstances—locality, available resources, etc.—not the least of which is the maturity level, motivation, and receptiveness of the students themselves. Even with the best intentions it is difficult to communicate one's individual adaptations and successes to the larger community or to find the common denominator along a broad spectrum of individual experiences. Secondly, we tend to train language teachers as we might automobile mechanics (or computer operators) working within a rather predictable range of possibilities with a basically static object, like a transmission or a hard drive. In doing so, we fail to educate them for change. We need to encourage the capacity to innovate. The way forward is to see how network technologies can help

create tools which would enable language teachers to create their own tasks. Teachers need to be allowed to develop and re-conceptualize their own task design mechanisms through a process of continuing in-service education programs.

Notes

- 1 Although, similar sessions were organized in Thailand, the U.S.A., and South Korea the data collected are not included in this chapter.
- 2 See Kelly (1969) for a discussion of the *Aggrégation*. The French *Aggrégation* was created after the French revolution so as to ensure that French education would only recruit on merit and that meritocracy would replace aristocracy in general. Later, other competitive examinations, on the same basis, were introduced, e.g. CAPES: *Certificat d'Aptitude au Professorat de l'Enseignement Secondaire*. All these competitive examinations give successful candidates permanent jobs and national mobility.
- 3 Most participants from the public sector are based at universities and are full-time teaching staff. However, nearly none of them had any background in second-language acquisition, including the full-time professors.
- 4 For ethical reasons no commercial or non-commercial CD-ROM or authoring language is cited.
- 5 There are numerous JavaScripts and Java applets which can be reconfigured to allow alternative responses.

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3

A Language Teacher's Perspective on Effective Courseware

Salvatore Bancheri

Introduction

Writing about the need for teacher training in technology, Elissa Tognozzi laments the fact that 'the mere availability of technologies like the Internet does not automatically translate into enhanced learning experiences, particularly when student and teacher training are lacking' (2001:487; c.f. Anderson & Reed: 1998:235–36; Burden & Davies: 1998:101–03; Ratner: 1998:115–16; Stone: 1999:184–85; see also Kazeroni, this volume). According to Tognozzi, inadequate training, the fear of computers, the lack of technical knowledge, as well as issues of teaching loads and intellectual property rights are among the reasons which prevent teachers from using computers as language-learning tools (2001:487; cf. Lam: 2000:395). Furthermore, she adds, the fact that technology used in foreign language training is constantly changing simply heightens 'confusion and fear among educators' (2001:487).

Those of us who teach language, particularly those involved in the training of future teachers, are acutely aware of the problems posed by the situation Tognozzi describes. There is an urgent need to train teachers and future teachers¹ to incorporate new technologies into the language curriculum. Researchers in pedagogy for the teaching of Italian have regularly discussed the need to train those who teach Italian as a foreign language how to evaluate instructional software for effective use in the

classroom. In 1995, Bénéteau *et al.* published a survey of available pedagogical software in Italian while pointing to the critical need for teachers to learn to evaluate pedagogical software. Using that article as a starting point, Bancheri outlined criteria for the evaluation of pedagogical software and encouraged teachers to be more active in the process of creating computerized programs. While teachers do not necessarily have to create software themselves, they would be wise to take an active role by giving specific directions to software companies which produce didactic material.

Teacher Training and CALL

Training teacher candidates in CALL is an essential first step in bridging theory and practice. Not only will appropriate training allow teachers to overcome any fear of computers born of a lack of technical knowledge, it will also give them the ability to adapt to the constantly changing technologies for language teaching. The reward potential of technology hinges on its efficacious use, which can take place only if both the instructor and the student have control over the medium.² The training itself should incorporate two fundamental stages: 1) the preparation of teachers in effectively evaluating language technologies (software, courseware, and language web-sites); and 2) the training of teachers to become users of such technologies and to be actively involved in their creation or modification.

Phase one

Training teachers to evaluate language technologies effectively is fundamental in an ever increasing student-centered teaching approach to foreign-language learning. In this environment the role of teachers has changed; their new role is that of guides, coaches, interlocutors, mediators, evaluators, resource advisors, and facilitators. New technologies are compelling teachers to guide the learning path of their students through activities which are gradually more difficult and complex. Even though this new role has been commonly accepted in the foreign language teaching profession for over a decade, teaching is often reduced to lecturing, to a simple communication of information, to a teacher-fronted lesson. Such an approach is definitely not the most productive for students. Cremascoli (1998) has made the point that one of the problems in pedagogy today lies in the very formation of teachers and in the fact that they are too often attached to a historically determined model of transmission of knowledge and fundamentally tied to the practice of a face-to-face or teacher-fronted lesson.

Our role as teachers in the technological age is not only to impart new knowledge, but to give students the tools to acquire knowledge, to recognize the value of what they see in books and software as well as on the Internet. As Murphy points out: 'The emphasis in the new era of language learning is on construction as opposed to transmission of knowledge.' A teacher cannot be simply a 'knowledge dispenser.' He or she must be a 'facilitator' as well (2000:chapter 2).

In today's view, the teacher is transformed into a coach and consultant on the strategies used to solve problems (Jonassen: 1991:33). Von Glasersfeld describes the role of the constructivist teacher as that of a 'midwife in the birth of understanding' whose job it is to provide students with opportunities and incentives to learn rather than simply dispensing knowledge (1995:383). Teachers serve as 'guides,' and learners as 'sense makers' (Mayer: 1996:152). They strive to be coordinators, facilitators, resource advisors, tutors or coaches (Gergen: 1995:32). Most importantly, teachers themselves become learners along with students, as teaching becomes a learning process for the instructor as well as the student (Driver *et al.*: 1994:11).³

Teachers will not be able to fulfill their new role and guide students if they are uncomfortable with new technologies and unable to evaluate them properly. As CALL pedagogues it is our duty to focus the critical abilities of our students on the uses of technology at every level of study and training. Teachers and prospective teachers need a greater appreciation of the communicative and interactive elements of teaching. Learners/teachers who are able to apply the theories they study to the creation of technological aids for instruction will take a more active part in the learning/teaching process, which consequently should increase their motivation in using technology in their own classroom. Collins (1991:29) identifies the increase of motivation as one of the major shifts in teaching/learning in the classroom resulting from the impact of new technologies. Christie explains the reasons behind the increase in motivation:

... more engaged students see technology as supporting their learning and [they] increase personal investment in their work. Educational research undoubtedly confirms what teachers know intuitively: time on task leads to more learning. Technology can therefore help to motivate some of our students and become more successful language learners. (2001:499)

We need to apply the same principles when training teachers; we need to motivate instructors at every point in their training by showing them how technology can make them more successful instructors. Teachers need also to understand that there is little difference between evaluating technological resources and evaluating traditional resources given that the pedagogical principles are the same.

Phase two

The second phase of training consists of encouraging teachers to become actively involved in the creation or modification of new courseware/software. My own students report that experimenting with software requires a great deal of concentration and practice. However, they also note that any drawbacks are counterbalanced by:

- the satisfaction of creating authentic and pedagogically useful lessons with the technology;
- the ability to deliver lessons which are both pedagogically sound and interesting;
- the opportunity to be innovative and creative in planning lessons.

We need to appeal to these motivational elements to encourage teachers to create their own materials. However, active involvement does not necessarily mean that teachers must become programmers or graphic artists. What they do need is a clear understanding of the way different technologies work so that they can give pedagogically sound input to the creators of the new courseware. In an interview with Arthur Evenchik, Wang and Clark emphasize the need for language teachers to be more actively involved in creating the technological resources they will use in the classroom:

Most exciting for Wang, the new technology enables instructors to design their own multimedia lessons combining audio materials with video and text. Although language-teaching software is commercially available, the products are rarely suited to university-level instruction. As LTC director Donald Clark explains, few of the programs on the market are intellectually challenging, and many give simplistic views of foreign cultures. The solution, Wang and Clark believe, is for instructors to devise their own multimedia lessons that today's communication technology make possible. (2001; for examples of instructors who have designed their own instructional software, see Levet & Waryn, Wang, and Chenoweth *et al.*, this volume.)

The task of creating pedagogically sound and effective courseware cannot be left to programmers with little or no expertise in second-language education. Nor can the task be left to our teaching assistants or part-time language instructors who, even though fluent in the language, do not necessarily have a sound foundation in language pedagogy. If course software is going to be effective it must function in pedagogically appropriate ways. If that is to happen, then trained pedagogues must be involved in establishing evaluative criteria for software (c.f. Bancheri: 1997:499–502).

In the past few years, the situation has improved somewhat, but not significantly. Didactics is still a “servant of technology,” and pedagogy often plays second fiddle to programming. Many of the so-called second-language software, courseware or websites are lacking basic language-learning principles because the procedure to create L2 technologies is often initiated not by the users (teachers) but by software companies, which are largely interested in making a profit (see Bancheri: 1997:501). As Benyon *et al.* point out: ‘We have also found that current tools are severely lacking in a number of important respects—particularly with respect to the design of pedagogically sound courseware’ (1999:197). Echoing Warschauer (1996) and Hanson-Smith (1997), Murphy summarizes the situation well:

In spite of the advantages of multimedia for language learning, Warschauer argues that there are problems related to its use for language teaching. The lack of programs based on sound pedagogical principles combined with the lack of interactivity and intelligence of these programs limit the ability of multimedia technology to allow for the integration of meaningful and authentic communication. Hanson-Smith (1997) argues in a similar vein about the lack of an “appropriate peda-

gogy” of multimedia whereby the media aspects often drive the content rather than the other way around. (2000:section 2.3.5)

Benyon *et al.* enumerate other basic constraints:

Instructional design is concerned with the pedagogic approach taken to the courseware and is inevitably constrained by a number of factors such as time, money and the nature of the student population. However, it is also important to recognize that instructional design is constrained by both the delivery of technology and by the authoring tools available—the technologies significantly affect the educational approaches which can be used. (1997:199; for discussion of technological affordances, see Levy, this volume)

Effective Programming: A Prerequisite for Effective Teaching with CALL

New technologies for language teaching should be the fruit of the collaboration between an expert programmer, a graphic artist,⁴ and a teacher trained in second-language pedagogy (Hendricks: 1998:216). In such a collaboration no compromise should exist as far as the essential didactic elements of the program. The system I use to solve this problem comprises two steps. The first step consists of the identification of some possible student errors so that every time a student supplies a wrong answer which has been anticipated, he or she will receive recorded feedback specifically tailored to that mistake. The second step consists of recording all of the students' wrong answers in what I call the “bank of errors.” These answers can be added with an individualized comment to the original database. The process, especially in its second step, is continuous and never ending, but after a while the database will become very solid and direct in its ability to supply individualized feedback. Furthermore, the bank of errors can also be used to create new activities, thus giving the teacher the opportunity to tailor the courseware to target specific areas of weakness.

The creation of CALL materials should be an extension of the methods, techniques, and theories used in the language classroom, adapting pedagogically effective techniques to a new medium. The first step in the process is to envisage the same exercise or activity in a classroom without a computer, analyze it in all its different aspects and steps, and then imitate the same procedure in a computerized setting. Furthermore, in creating any computerized activity, I consider not only the teacher's perspective, i.e., the pedagogical view, but also the different perspectives of the student, the software developer, the programmer, and the graphic artist.

The Teacher's Perspective

Viewing courseware development from the teacher's perspective insures that all the pedagogical elements of the activity (in its computerized and non-computerized

form) are analyzed carefully to ensure its pedagogical soundness. To illustrate, I will reconstruct the pedagogical choices and structure I adopted for *Testmaker*, a computerized program which allows language instructors (Italian, Spanish, French, Chinese, Arabic, etc.) to create and administer quizzes, tests, final exams, etc., and which I use for in-class tests in my language courses. The advantage of creating a computerized testing program for language courses stems first from the need to maximize the use of the teacher's time and resources and, second, to give students an opportunity to better prepare for their exams.⁵ What follows here are the results of an informal survey I conducted at the University of Toronto, the University of Toronto at Mississauga, and Middlebury College on the time involved in the preparation of a test in Italian or other languages.

As the results show, computerized testing—which could be seen as a duplication of the “pen and paper” resource—will save each instructor ten hours,⁶ while at the same time providing students with an additional learning tool.

Table 1

Time involved in “pen and paper” test	Time involved with <i>Testmaker</i> test
Preparation = 3 hrs	Preparation = 3.5 hrs
Format = 0.5 hrs	Format = 0 hrs
Photocopying = 0.5 hrs	Distribution to server = 0 hrs
Administration = 1 hr	Administration = 0.5 hrs
Correction = 8 hrs (20 min. per test x 24 students)	Correction = 0 hrs (unlimited numbers of students)
In-class correction = 1 hr	In-class correction = 0 hr
TOTAL HOURS: 14 hrs	TOTAL HOURS: 4 hrs

The decision to use a non-web-based application is tied to pedagogical issues. Web-based testing applications are generally less secure, and therefore there is a stronger possibility of students' falsifying the results. Moreover response time on the Web is somewhat slower, with a consequent possible loss of student concentration and motivation. Finally, the implementation of what I call the “circular” structure of the test—which I consider a pedagogical priority in this activity—is more difficult to apply in a web-based application. The circular structure works as follows: In *Testmaker*, as in a regular test, the student can start with the last exercise, answer a few questions, then go to the second exercise, answer other questions, then move to the first exercise, and so on. The computer will remember each answer the student has given. This format lowers students' anxiety because they have more time to consider each answer carefully without feeling pressed for time, and they can revisit at any time the questions that they find more challenging or on which they had previously drawn a blank. Figure 1 illustrates the circular structure of *Testmaker*. The program also includes several other elements which directly or indirectly promote effective teaching: online help; and a button indicating “Time Left;” which only appears on mouse-over, thereby hopefully decreasing the anxiety a student might feel if faced with a ticking clock.

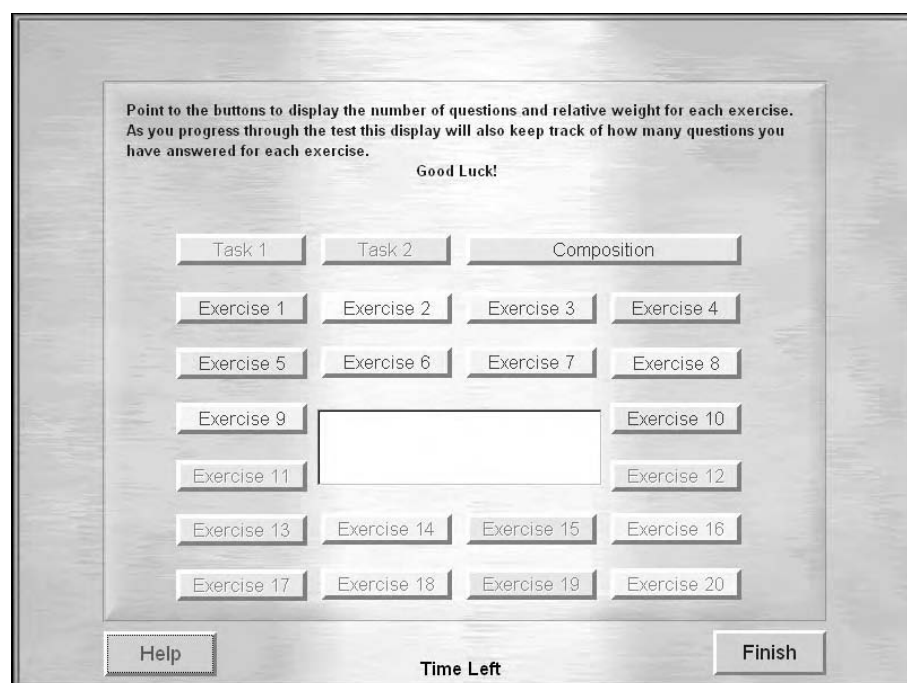


Fig. 1: The circular structure of *Testmaker*

Motivating students with well-constructed CALL exercises

Motivation is an important element in language learning which can be fostered in software, courseware and language web pages through appropriate feedback, transparency, and variety.

Feedback

In commercially available software/courseware, the first element to be compromised is often the “feedback,” a fundamental element in language teaching. Although creating personalized and precise feedback in grammar exercises, for example, can be very time consuming for programmers (and also for teachers), effective feedback is nonetheless an essential part of the learning process. Our students improve their language skills through specific and individualized feedback (Bancheri: 1997:507–508).

Transparency

“Transparency” is more than user-friendliness. Rather, a program should be considered “transparent” when there is “navigation by intuition,” where a student-user can ignore the mechanics of the program and fully concentrate on the language task. As Hendricks cautions: the ‘integration of multimedia should be seamless,’ as a clumsy and tedious navigational interface will distract from the learning activity and ‘its inherent power as a learning tool is handicapped’ (1998:215). In *Testmaker*, for instance, there are buttons which a student can use to type accented vowels automat-

ically. These buttons eliminate commands for accented vowels which often constitute an obstacle to concentration and increase a student's anxiety level.

Variety

Selecting a variety of activity types not only boosts student interest and motivation it supports a variety of learning styles as well. An obvious way to provide variety is by using audio, video, and graphic sources, which could also be used for a visual or auditory presentation of culture. One needs to find, however, a balance between the immediacy of the information and its multi-mediality. Especially in web-based programs these elements may slow the program down with the consequent risk of distracting the students. All of the activities in *Testmaker* are audio, graphic, video and text-based; they all offer immediate and direct feedback; they are based on specific semantic fields and presented within a cultural context. For this reason, I have created computerized activities using: both linear and circular structures; clickable cultural pages; clickable text; audio dialogues; clickable audio, video, and graphics; dictionaries for semantic fields; crossword puzzles; word searches; word- and sentence-level hangman, word- and sentence-based scramble modules; psychological tests; knowledge tests; personality tests; interactive dictation; dialogue reconstructions; text-, audio-, graphic-, and video-matching games; video puzzles; paragraph builders; compositions; open-question modules; and the typical multiple-choice and fill-in-the-blank templates.

Each of the activities mentioned has been carefully considered from a pedagogical perspective and has been incorporated, whenever possible, within a cultural context and a specific semantic field. Let me briefly comment on these pedagogical implementations. In the clickable culture pages, students are presented with cultural notes on a specific topic; when they click on a selected highlighted word, the program will respond with a grammatical, vocabulary or cultural explanation with either text, graphics, audio or video. The clickable text and audio dialogues offer the same features. The feedback fosters student reading and listening skills, promotes cultural understanding, and appeals to different learning styles.

The goal of clickable audio/video/graphics semantic fields, dictionaries, crosswords and word searches, word- and sentence-hangman/scramble modules is to build and test students' lexical skills. In the clickable dictionaries, students are presented with words, expressions, or full sentences on a specific semantic field. They will be offered a translation, with grammatical or cultural explanations, if appropriate; pronunciation through an audio file; images illustrating the object or the action, whenever appropriate; a video dialogue in which the word, expression or sentence is used in a contextualized situation. The definitions in the crosswords are also presented with either text, audio, graphics and video. The hangman, word searches and scramble modules deal not only with words, but also with expressions and full sentences drawn from the specific semantic field.

The psychological/personality tests as well as the tests of knowledge are used often as warm-up activities and give the instructor the opportunity to introduce vocabulary, culture, cultural differences in the specific semantic field discussed. The

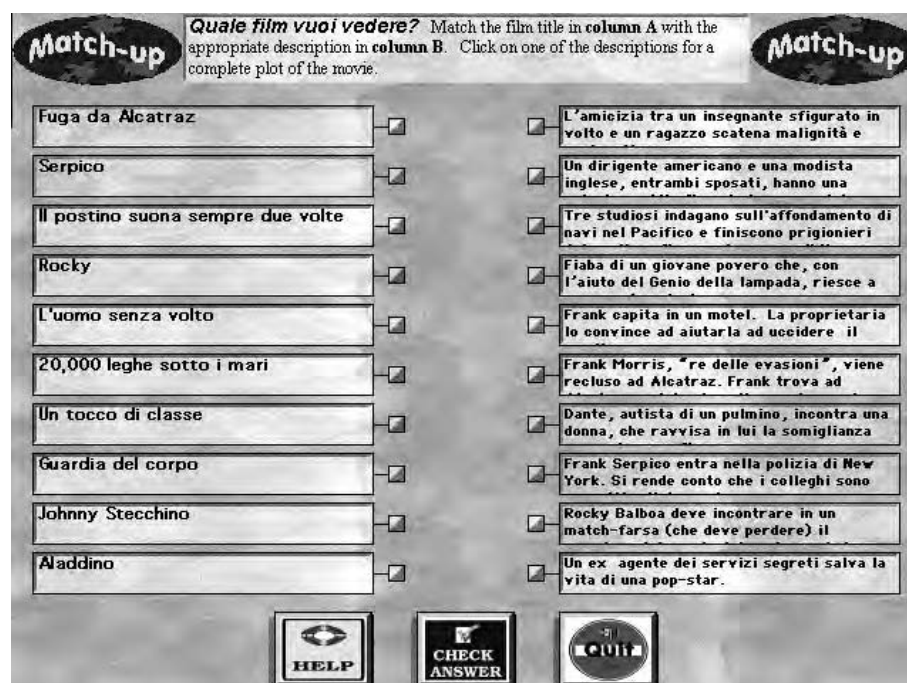


Fig. 2: Matching activity

dictation modules aim at checking the spelling ability of beginning students using simple audio or video files; one of the modules allows the student to take one of the roles and record his/her voice after the completion of a dialogue dictation. The new dialogue (with the student's voice) is played again.

The template which deals with dialogue reconstructions, text/audio/graphics/video matching games, video puzzles, paragraph builders are more complex and test students' critical skills, their reading and listening skills, as well as their memory skills. Since students feel challenged, they are both interested and highly motivated. Figure 2 provides an example from one of the matching activities.

The concept is simple: the students have to match the items in Column A with those in Column B. The items in each of the columns could be a text, graphic, or video; at times student have to connect two related words or graphics, other times a summary of a movie or book with the title, a video clip question with the respective video clip answer, etc. There are numerous possibilities. A favorite activity in my language courses is the video puzzle, where students have to reconstruct a short video dialogue (previously seen) which has been dissected into small clips of a sentence each. By clicking on the film strip icon, the image will animate and play the appropriate sentence. By clicking and dragging each image and using the empty field, students put the dialogue in order. This template tests logical ability as well as listening and comprehension skills in context.

The composition and open-question modules directly test students writing skills and indirectly their reading and listening skills and cultural understanding. I use the open-question module for answers which require only one or two sentences to complete. Again, questions are asked using not only text but also multimedia files. One can be very creative in using these modules: in a composition, for example, students are presented with a video dialogue between a client who wants to take a vacation and the travel agent who suggests a few possible places. The students are asked to describe the trip. In another composition, students reply to an authentic letter (presented as a graphic file), in which a young woman informs her aunt of her engagement and invites her to travel to Canada for the wedding. The use of multimedia is not gratuitous in these compositions, as they present the students with the vocabulary and the cultural tools necessary to write the compositions. The computer program does not mark the composition but will analyze it according to the following criteria, which will give the instructor good insight into the student's writing abilities:

- number of words used;
- number of paragraphs used;
- number of sentences used;
- average number of words per sentence;
- average number of words per paragraph;
- list and number of different words used and their frequency.

I analyze the composition with a commercially available program which provides sophisticated statistics.

The use of fill-in and multiple-choice, computer-based activities needs to be carefully examined. If used inappropriately, these types of exercises can be tedious, offer little or no feedback, and lack cultural content. However, if used effectively, fill-in and multiple-choice questions can increase students' motivation and support different styles of learning. The modules developed for *Testmaker*, for example, offer varied and interesting possibilities limited only by the amount of time available and the imagination of the creator. Such activities can be an effective way to test reading and aural comprehension in dialogues, literary passages, newspaper and magazine articles, etc.

The teacher as user of authoring software

This perspective aims at encouraging teachers to become active creators, or at least modifiers, of CALL activities. Many commercial authoring programs fail to allow for the individual with little or no computer experience as a possible user. In contrast, the templates in *Testmaker* make the process of creation or modification transparent. The teacher/creator is free to concentrate on the language task at hand and need not even be aware of the sophisticated computer programming which will make each activity work by itself or link to other activities. Teachers involved in creating activities need not be aware that they are actually preparing computerized activities, because they are working on text-based files, similar to those used in preparing tests, exercises, and

activities for the students in a regular classroom setting. The process is, in fact, even faster than normal word-processing because there is no need to worry about the appropriate format for a file. With the exception of three diacritical marks (“@”, “/n” or “~”), the teacher will not be using special codes.

Even though the program which runs the actual test in *Testmaker* is fairly complex and takes advantage of the multimedia features of instructional technologies, the creation process is transparent in that the instructor has to prepare only two text-files. The first contains the test questions, score, answers, etc; the other controls the parameters for the test, such as the time allocated for the completion of the test, the path to save the results, the order in which the questions are presented, the manner in which the answers and score results are presented to the student, etc. All that is required to create a computerized activity from a text-based file is a simple click of the mouse. The ease of creating tests and activities should encourage even the most computer-phobic instructor to supplement classroom instruction with CALL materials.

The Student's Perspective

Some of the questions one should ask in applying this perspective are: how are the students going to react to this activity? Is this computerized activity a mere duplication of another activity that could be done with traditional methods in a regular classroom setting? If so, how would the computerized form of the activity be more beneficial to the students? How would the students carry out this activity in a regular classroom setting and how could I imitate it in a computerized environment? To apply a students' perspective, one needs not only to keep open all channels of communication with them before, during, and after the activities, but also to translate their feedback into programming features.

Issues to consider

Exterior elements of the activity (feel, look, color, etc.)

These elements should be inviting so that the student will want to continue the activity, but at the same time they should not distract from the content.

Transparency

Students need to concentrate on the activity, not on how the computer works. Transparency will lower the student's affective filters.

Similarity to classroom activities

The student should be familiar with the format of the activity. For example, in testing activities, I prefer a circular format instead of a linear one because, as in regular pen-and-paper tests, it will allow test-takers to start with any task and review, compare, modify, or completely change answers at any time and as many times as they like during the test.

The opportunity to practice

Students need to feel at ease with the process and content of the activities,⁷ especially when they will be assigned “official” marks. An assessment program might comprise the actual tests as well as offer students the possibility of preparing for a test using the same database of activities in different modes. For example, a study-mode can be offered in addition to a test-mode. The study-mode gives students individualized and immediate feedback on their answers, their score, a report with all their answers, which can be printed or saved, and the possibility to check the right answers after the completion of the activity. Such a system could offer students the possibility of creating their own study/test-mode activities and therefore to work only on those sections where they need more practice. These features aim once again at lowering student anxiety by creating a familiar environment, and by allowing them to work at their own pace with actual testing items.

The Researcher’s Perspective

One of the possible features in the template applications envisioned here is the collection of the data produced by the students. A student’s answers can be recorded, with a score, if applicable, along with the time needed to complete each activity. When students use the composition module, as previously discussed, their output is saved and analyzed; among the data collected is a list of all the different words used and a list of words which have been possibly misspelled. All the files are saved in a secure place on the server, which the instructor can access instantly from his or her own computer. The collected data may be used to improve and update existing materials or to create new activities according to the students’ needs (or errors) as evident from the stored files. In grammar tasks, for example, students’ wrong responses already saved in the database may be edited so that the students will get a personalized feedback whenever they make the same error. Students’ answers can also be used to correct typographical mistakes in the database or to supply an additional answer which was not included in the original database. Obviously, this process requires a lot of dedication and can be very time-consuming, but it can also provide valuable information for both the teacher and the researcher (for a discussion of the usefulness of logs in student learning, see Levy and Burston, this volume).

The Programmer’s Perspective

In creating applications for language teaching and learning, it is important that the teacher and the programmer establish a strong working relationship. The programmer needs to understand the pedagogical issues, and the teacher needs to be able to envisage the proposed computerized activity from a programmer’s perspective. Gimeno-Sanz and Davies point out that:

Designing and creating a multimedia CALL package is an extremely demanding task, calling upon a range of skills and meticulous attention to detail. Such is the complexity of computer programs these days that it is highly unlikely that a single person will have all the necessary skills to undertake a CALL development project alone. *Team work* is therefore essential, and each member of the team must have some understanding of the roles of the other members of the team ... The language teacher who joins a software development team, for example, does not have to possess computer programming skills but he/she must have some understanding of basic programming concepts. Similarly, those responsible for the programming do not have to have a knowledge of foreign languages, but they need a good understanding of Natural Language Processing ... (1999:module 3.2)

In working with a programmer, compromises are necessary. The language teacher must consider how important a feature is from a pedagogical perspective. Is it essential for sound pedagogy or can it be sacrificed with little or no pedagogical implications? In each and every situation the teacher and the programmer must discuss and analyze together the issues and all their implications.

The Perspective of the Graphic Artist

The exterior appearance, feel, and look of a program or even the setting where the computerized activity is conducted affect student motivation. A condition for positive implementation of CALL, writes Hendricks, 'is that it should be interesting to the students and attractive in its design, appearance and interface. It should also motivate the student to take full advantage of the content presented therein' (1998:216). Graphics and visual effects should highlight certain aspects of a presentation, enhance clarity, and 'reduce ocular tedium' (Neussel: 1996:545). Danesi champions a well-coordinated graphics interface which makes a program more inviting, captures the user's attention immediately, and stimulates both hemispheres of the brain. (1983; c.f. Antenos-Conforti: 2001:30–35). However, although the graphic interface and technical quality of any piece, of course, is important, one must look beyond appearances. When evaluating the content of a program/activity, we need to "undress" the technology by eliminating all of its most captivating aspects (graphics, video, audio, etc.), which might divert our attention from its grounding in effective pedagogy.

The above perspectives are only the beginning of the creative process of computerized activities for language students. In order for these activities to have an impact on the learner, many pedagogical decisions need to be taken during the creative process, chief among them:

- choice of theme;
- goal and level of the activity;
- skills to target;
- student motivation;
- the language to use in instructions;
- cultural content and context.

Conclusion

Ultimately two questions present themselves:

- How does one use the templates discussed here?
- Are they effective?

In answer to the first question, it should be noted that when using any technological material in the classroom an instructor should be certain that it fits naturally within the lesson plan. Technological activities should not be a mere duplication of traditional activities and should be undertaken only if they are more beneficial to the student learning. It is also important to place the computerized activities strategically within the framework of the lesson. In general, one needs to keep in mind Barson & Debski's admonition that 'teachers' effectiveness consequently depends on their ability to perceive and seize opportunities for sustaining the communication with minimal intrusions and directives' (1996:54). With computer activities, as with traditional activities, teachers need to follow the students closely and guide them to the goal of the pedagogical exercise. Instructors can physically move from one computer to another, listen to the signals which the program is giving with regard to the progress of the students, work with students on a one-to-one basis to clarify errors, and encourage further efforts. In short, instructors must continue to use the same techniques employed effectively in the traditional classroom.

With regard to the second question, the anecdotal information is encouraging, but the jury is still out. In order to conclude that specific templates and modules are pedagogically effective, one would need to conduct a full-blown empirical study.⁸ In planning such an undertaking, one might consider the following as possible indicators of effectiveness:

- a high level of interaction and discussion between students and instructors while using CALL materials;
- a reduction in the number of technical questions from students on the operation of the program and the computer;
- an increase in the time spent on-task outside the classroom as documented by the number of student files generated;
- positive and continuous feedback from students with regard to the CALL activities, indicating that the students are taking an increasingly active role in their own learning;
- positive feedback through official surveys of student views on the effectiveness of teaching;
- an increase in enrollments in courses using technology.

Notes

- 1 For the present purposes the term "future teachers" will refer to undergraduate students registered in Language Teaching and Learning or a related program, Masters-level and

- doctoral students taking methodology courses, and students registered in Education courses. "Teachers" will normally be used to indicate those currently employed in the profession as well as teachers-in-training. The term "CALL students" will be used to indicate those in any of the above categories involved in teaching or learning about CALL.
- 2 Compare Mezzadri 2003:345; Mezzadri 2001:42. According to Hendricks, 'Technical and logistic frustrations must be minimal,' otherwise 'little learning will take place and strong negative emotions will ensue' (1998:215).
 - 3 For this summary of the teacher's role, I am indebted to Murphy (2000:chapter 2).
 - 4 Interesting enough, in my 1997 article I did not include a graphic artist among the collaborators, even though I discussed the importance of the graphical interface in software. Only later did I realize the pedagogical importance of collaboration with a graphic artist and the potential of effective graphic presentations for increasing student motivation.
 - 5 For this task we use *Studymaker*, the study-mode format of the program. Every time a student starts a test, the program will present different questions for every exercise until the entire database has been cycled.
 - 6 Similarly, there is also a small saving on the resources (\$6 per a 5-page test for 24 students), as the process of photocopying the test has been eliminated. The amount of time saved, in particular, could be quite substantial once we multiply it by the number of tests in each course and the number of different sessions. Furthermore, the capability of *Test-maker* to choose a random pool of questions from a database will eventually eliminate the necessity of producing new exercises/activities, and will consequently lessen the total time of testing to the hour needed for its administration.
 - 7 In a new web-based application which is presently under development, students will be asked to take a one-time-only navigational test before using the program. They will also be monitored on the time it takes them to read the instructions before they go on to a specific activity.
 - 8 A study on one of my templates is part of a doctoral dissertation being prepared by Lydia Rende. Her study compares and analyzes the marks obtained on the final examination by students of three different sections of Italian for Beginners (ITA 100Y) in order to determine 'whether the exposure to the computer (through various activities) as a didactic aid did in fact enhance linguistic competence in students in Italian for Beginners.' Of the three sections, the first group used technology regularly, the second group sporadically, and the third did not use technology at all.

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4

Seven-by-Seven: Effective CALL for Troubled Times

Robert Godwin-Jones and Kathryn Murphy-Judy

Introduction

In today's increasingly global community, it is essential to train students who are able to negotiate successfully across linguistic and cultural borders. To meet this challenge, we must develop strong, effective education in second and foreign languages and cultures. In the United States, however, where monolingualism rules the day and there are widespread biases against languages other than English, foreign language education (FLE) encounters obstacles. FLE is considered to be less important than other subjects in the curriculum and, as a result, is the target of budgetary cuts during economic downturns. Foreign language education often fails to attract new teachers because of the prevalence of English and prejudice against any second language. Enrollment figures indicate that fewer language majors are preparing for teaching careers. To compound the problem, large numbers of current FLE teachers are retiring while new teachers drop out at a rate of fifty percent within their first three years. Finally, student numbers are increasing as is the diversity of learners' needs. As financial pressures eat away at FLE programs specifically, the worsening erosion of the elementary and secondary teaching corps is complicating the staffing crisis in language classrooms. The FLE scene has reached a critical stage in the United States.

In what might seem an ironic, even counter-intuitive twist, the federal government has mandated a “highly qualified teacher” in every classroom in every public school by 2005 and learning standards and outcomes which must be met to obtain funding for education (the “No Child Left Behind Act” of 2001). The gap between supply and demand in FLE defies quick fixes and easy answers. Still, for each problem area, there are new social and technological resources which offer promise. Computer-assisted language learning (CALL) is one of those resources.

Even before the escalating crisis, CALL was expected to prove its effectiveness, in particular its cost-effectiveness. Barely beneath the surface of this expectation has lurked a persistent dream—more that of administrators and learners than educators and developers—that the right technological configuration can create a “black box” out of which will pop fully proficient language users. Ads touting “miracle” CD programs fuel the quick-technological-fix fantasies by promising shortcuts around the hard work of language learning. Although far from a panacea, CALL does offer timely interventions into improving language learning by marshalling technological enhancements. It is important to consider, however, the effectiveness of both a program and its implementation.

Using Steven Covey’s *The Seven Habits of Highly Effective People* (1990) as a framework for the present discussion of effectiveness, seven habits for effective CALL are discussed. Each habit is linked to one or more CALL tools readily available to most language teachers throughout the world. The discussion of the seven CALL habits is complemented by Arthur Chickering and Stephen Erhmann’s seven principles for using technology to improve the overall educational experience (Table 1), drawn from their article, *Implementing the Seven Principles: Technology as Lever* (2002). The Chickering/Ehrmann principles, though written for post-secondary education, apply substantially to elementary and secondary education as well. The subject of CALL effectiveness covers a wide variety of aspects: from product design to classroom application, from technological obsolescence to teacher training, from classroom to lab to home use, from program evaluation to learning assessments. Yet,

Table 1: Characteristics of Effective People and Effective CALL

Steven Covey <i>The Seven Habits of Highly Effective People</i>	Arthur Chickering & Stephen Ehmann <i>The Seven Principles: Technology as Lever</i>
1. Be proactive.	1. Encourage contact between students and faculty.
2. Begin with the end in mind.	2. Develop reciprocity and cooperation among students.
3. Put first things first.	3. Use active learning techniques.
4. Think win/win.	4. Give prompt feedback.
5. Seek first to understand, then to be understood.	5. Emphasize time on task.
6. Synergize.	6. Communicate high expectations.
7. Renew.	7. Respect diverse talents and ways of learning.

the bottom-line in any discussion of educational effectiveness must be student learning.

In the discussion which follows, Covey's seven habits provide the grounding for general educational effectiveness which we tailor to CALL, and Chickering and Ehrmann's article spells out a technological approach to sound educational practices. Together they offer a hopeful paradigm for redressing some of the more serious problems facing foreign language education today.

Where Efficiency Ends and Effectiveness Begins

Effectiveness is sometimes confused with cost-effectiveness, efficiency, or efficacy, albeit all have important roles to play in many domains, including CALL. Works on effectiveness too often reduce it to efficiency, positing "managed" solutions, that is, ones that, in the short run, optimize cost with respect to production and/or productivity. In *The Seven Habits of Highly Effective People*, Covey elaborates a framework of personal as well as professional effectiveness based on years of research on the literature of effectiveness and efficiency. Effectiveness, based on inner character and self-conscious principles, balances production with production capacity, which he illustrates in the fable of the goose that laid the golden eggs: if one does not sustain the goose (production capacity), the eggs (production) disappear, too. Enduring success in education arises from a synergy, then, between knowledge and the capacity to produce knowledge, i.e., the learning community. The habits outlined by Covey apply well to the educational context and indeed are inspired, in part, by his experiences as an educator. In what follows here, Covey's 'habits' are tailored specifically to CALL. Covey's paradigm balances human variability and indeterminacy—what we might label the irrational—with rational design and well-managed implementations of modern production systems and institutions. This is the nexus of effectiveness and efficiency which is fundamental to both education in general and CALL in particular. Importantly, this approach is grounded in character and values—the foundation also prescribed in Covey's first habit. It does not simply promote the newest thing or a quick fix. As has long been the mantra of one of the present authors, "[i]t's the pedagogy, not the technology!"

The first habit: Be proactive

Proactivity for Covey involves much more than taking the initiative. It includes a careful articulation of one's mission and value system. Today, many foreign-language educators define their educational mission as one of improving global communication and understanding by training students to be cross-culturally competent. For Covey, proactivity also requires an unblinking appraisal of existing conditions. The benefits of this examination for foreign-language educators are multiple: it can help to establish learning goals and objectives, define the role of technology in this educational and communicational field, and determine how to integrate it most effectively into teaching.

In “Creating Sustainable Learning Communities for the Twenty-First Century” (1999), Marshall points out that the chaotic onset of the Age of Information has prompted profound rethinking and re-structuring across the entire field of education. She calls for new mental models using ‘fluid, organic and biological metaphors’ to come to terms with global interdependencies, the information explosion, and new knowledge about learners and learning. She envisions post-modern learning and teaching communities governed by adaptive systems which break with a still prevalent, modern, industrial-based one. Marshall’s description of the elements of twenty-first-century learning is outlined in Table 2.

Table 2: Characteristics of Effective Learning in the 21st Century (Marshall: 1999:183–184)

Connected to real-life, meaningful research, and inquiry
Engaged in authentic dialogue with internal and external members of the community
Networked to the exclusion of physical, spatial, and temporal boundaries
Responsive to learners and offering adaptive instructional environments
Information- and experience-rich for all learners
Open to emergent and generative knowledge
Organized around core principles and mutually agreed-upon directions
Deliberately diverse across all differences
Flexible and innovative
Interconnected and collaborative, personally and across organizations
Focused on inquiry, complex cognition, problem finding, and problem resolution
Committed to increasing the intelligences of every individual
Comfortable with ambiguity, paradox, and change
Playful
Trusting
Responsible

Marshall’s vision dovetails neatly with the one articulated in the *Standards for Foreign Language Learning in the 21st Century* (1996) published by the American Congress of Teachers of Foreign Languages (ACTFL) and endorsed by a consortium of forty-seven other foreign language education (FLE) organizations in the United States. With language and communication defined as the center of all human experience, the *Standards* call for FLE to produce students ‘equipped linguistically and culturally to communicate successfully in a pluralistic American society and abroad’ (1999:7). The European Union, immigration patterns, and other supranational, multilingual and ethnically diverse realities instantiate the worldwide need for FLE and pluralistic communication and understanding. Furthermore, the ACTFL document posits three assumptions:

- that competence in more than one language and culture allows for people to grow and interact in our globalized reality;
- that ‘all students can be successful language and culture learners’ through individualized and integrative learning; and
- that ‘language and culture education is part of the core curriculum.’ (1999:7)

These assumptions are also generally accepted beyond the United States.

There are several exemplary CALL programs on the market today which incorporate a number of Marshall's principles for learning in the 21st century learning and incorporate the Standards. For example, Carolyn Fidelman's the *Face-to-Face Project* presents a solid principle-based learning program which responds to several of Marshall's guidelines: it is flexible, innovative, responsive to diverse learning styles, playful, and collaborative. Perhaps most importantly, Fidelman began her project on a FL-learning platform to which she has long ascribed and with which she has intimate knowledge and experience. Through funding ups and downs and obsolescence of platforms (the videodisc and *HyperCard*), the strength of the project and its sustainable principles have kept it viable over the past ten years. (Fidelman: 1997). Two other excellent programs are the *French/German Body* and *Dialogos Colombianos* based on the Wylie Method designed by Laurence Wylie at Harvard. Based on the principles outlined in the *Standards*, these two programs promote communication using a particularly important linguistic-cultural approach and at the same time personalize and literally "embody" learning. CALL programs such as those described above that are founded on solid principles provide real learning solutions in times of plenty as well as in moments of crisis and change. This, then, is the essence of the first habit of proactivity at work in CALL.

The second habit: Begin with the end in mind

One could design the most elegant CALL routine possible, replete with the latest bells and whistles and serving vast numbers of students to produce immense quantities of data, but if learners do not exit the program having improved their ability to communicate, it has failed. The second habit urges CALL developers and integrators to consider what the pedagogical outcome should be. The goal is complicated by the complexity and instability of today's learning environment that Marshall's new learning model addresses. The *Standards for Foreign Language Learning in the 21st Century* outline five interconnected learning goals drawn from the collective wisdom of leaders in the field. Four goals—Cultures, Connections, Comparisons and Community—are subsumed under the fifth, the umbrella goal, Communication. These interwoven goals are routinely called the five C's in American FLE. CALL effectiveness, therefore, increases language learning that builds communicational competence. Yet, as Heidi Byrnes, in line with so many other experts in second-language acquisition, states, 'language learning is a long-term process that is neither cumulative, nor linear, nor mastery driven, but circuitous in complex ways and inherently error prone, even though it is remarkably predictable in its major stages' (Byrnes: 2001:160). Effective computer programs, then, are those that promote learning, i.e. improved communication in the target language, and take the predictable "major stages" into account. Furthermore, as Jonassen *et al.* (1999:179) state: 'Meaningful learning will result when technologies engage learners in: knowledge construction, not reproduction, conversation not reception, articulation, not repetition, collaboration, not competition, reflection, not prescription.' Thus, effective CALL will also equip learners with the tools necessary for lifelong, intentional learning.

The function of computers in language learning has changed dramatically, especially since the advent of the Internet. Originally, when language learning was conceptualized behaviorally and the learner was seen as a *tabula rasa*, the function of most teaching was to be a drillmaster or a programmatic guide with automatic testing and feedback loops. Linear and branching programming meshed neatly with the prevalent mental model of learning as a clear-cut progression. As the cognitive and educational sciences have expanded notions of learning styles, multiple intelligences, attitudinal and affective factors, scaffolding, the zone of proximal development, learning communities, etc., CALL has by and large kept pace, increasingly directing efforts toward learner individuation, activation of former learning, skill and knowledge transfers, group processing, real-world applications, and critical thinking. Circuitous, complex, and open to learner error, CALL has often arisen from and been integrated into current best practices, if not actually creating or providing vehicles for them. Yet, even some earlier CALL products maintain currency for certain types of learners (generally those who benefit from mastery learning techniques, drills and repetitions). Whereas earlier approaches were advanced as one-size-fits-all, today the field recognizes variety in learning venues. Thus, what is 'remarkably predictable' in Byrnes' words is put to work for mainstream learners, but "niche" learners, too, can find spaces for their brand of success in an openly structured CALL integration. CALL, even when not philosophically aligned with current methodologies, can still be an effective tool for some learners or may be "retro-fitted" by a teacher to elicit learning never intended by the developer. The object of effective CALL is not *either* groups *or* individuals; it is maximized learning for *both* groups *and* individuals.

Now that multimedia functionality is available in the computer itself, computer assistance in language education has evolved into something more central. CALL's new functions are key to maximizing the effectiveness of CALL: effective language learning for the purpose of communication today is intimately connected to computer-mediation. Language-learning goals now include computer-mediated communication. Indeed, the increasing need for bi- and multilingualism as well as for easier access to authentic materials are well served by the wide array of telecommunication options today.

With regard to the second habit, then, the foundational basis for effectiveness resides in the creation or implementation of CALL which leads to or promotes learners' communication in the target language whether one ascribes to a psycholinguistic, socio-cultural or techno-constructivist approach. Substantial, verifiable language-learning growth generally results from attention to this habit of beginning with the learning goal in mind. In fact, all teacher education and training in language stress the importance of setting communicative learning goals. It applies to overall curriculum design as much as daily classroom planning. One begins with a clear idea of what the learner should be able to do at the end of the program (and how to assess that learning), backward engineering the learning process to its starting point. Good CALL does, as well (see Levy, Kazeroni, and Bancheri, this volume, for discussions of the importance of identifying pedagogical goals before beginning task design).

Two of the very important changes in learning for the new century involve learner communities and intentional learning. The goal of “Communities” is clearly articulated in the *Standards*, and has found its way into teacher training in the United States as evident in Joan Kelly Hall’s subtitle, *Methods for Teaching Foreign Languages: Creating a Community of Learners in the Classroom* (2001). Marshall emphasizes learning communities and their importance as an educational goal for a globally interdependent reality. She promotes the notion of learning communities ‘that enable learners to direct their own learning toward greater rigor, coherence, and complexity; to increase their intellectual, social, and emotional engagement with others; and to foster collaborative and dynamic approaches to learning that enable them to develop thoughtful and integrative ways of knowing. We must create a learning culture that provides a forum for risk, novelty, experimentation, and challenge and that redirects and personalizes learning.’ (Marshall: 1999:183)

The individual-community relationship that underpins communities of learners connects integrally to lifelong learning. Moreover, it entails intentional learning: the American Association of Colleges and Universities (AACU) uses this term in its *2002 National Report* to describe learning which is ‘purposeful and self-directed in multiple ways’ to adapt to a ‘turbulent and complex world.’ (AACU: 2002:21). The intentional learner develops ‘self-awareness about the reason for study, the learning process itself, and how education is used’ and thereby sees ‘connections in seemingly disparate information’ and draws ‘on a wide range of knowledge to make decisions.’ Intentional learners learn to be adaptable, resourceful, and responsible in their intellectual and practical skill attainment and applications, ready to ‘succeed even when instability is the only constant.’ (AACU: 2002:22) An intentional learner confronting the need to communicate in yet another language will be ready to take on a new idiom, having first learned how to study foreign languages. Creating sustainable learning communities and intentional learning are the gateways to effective language learning for the 21st Century.

Current projects that foster learning communities range from key-pal exchanges (<http://www.ed.gov/Technology/guide/international/questionsanswers.html>; http://www.paducah.k12.ky.us/curriculum/internet_projects.htm; <http://www.teaching.com/keypals/>) to chat forums and group creative sites like the one to collaborate on writing a French novel (<http://www.agers.cfwb.be/pedag/tice/rechitice/ecrireaunet/9vf.asp>) to various learning chats (<http://www.launchsite.org/espanol/clubes/main.html>).

Discussion forums and chats are text-based, involving the real-time or time-independent exchange of written messages. Studies have shown that discussion forums are effective in fostering language use for real communication and in encouraging participation by all members of a group (Warschauer: 1995). The possibility for users to send voice messages can add even greater effectiveness and flexibility to computer-mediated communication (CMC). Programs such as *Wimba* voice-boards enable students to engage in discussions through either written messages or voice recordings. The resulting discussion is displayed as a typical threaded forum, as illustrated in Figure 1.

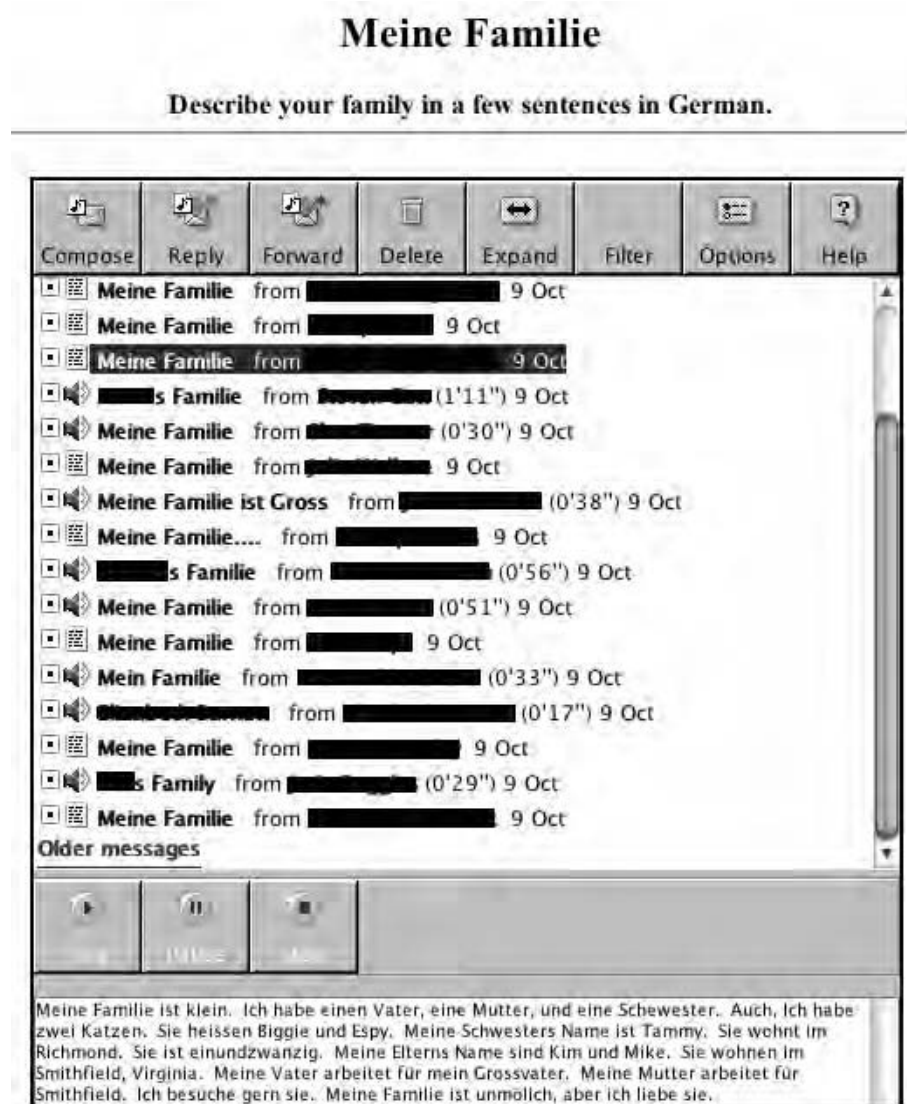


Fig. 1

Students may choose either format, both in originating threads or posting follow-ups, although the instructor can override those options to force use of voice recording. Adding audio to discussion forums not only allows for individual flexibility in communication, it offers valuable outside-of-class practice in speaking and oral comprehension. It should be noted that, as is true in written forums, recordings in voice forums are not usually spontaneous utterances. In messages shared with peers, students tend to place more emphasis on accuracy than is typical in spontaneous class-

room exchanges (for a discussion of accuracy versus fluency in online communication, see Levy and Blake, this volume). This provides the added benefit of students reflecting on structure as well as meaning. A well-chosen theme, like the family, connects the learner at a personal level to other learners, forming a classroom community which feels quite “heimlich” (“homey,” “comfortable”) This in turn fosters more intentional learning thanks to the personal topic being shared with fellow learners.

The website *LangNet* (<http://www.nflc.org/infolangnet/>), maintained by Madeline Ehrman and Gerald Lampe, facilitates intentional learning by providing a place where FL learners can assess their learning styles, background, and motivations. A template then helps them to develop a plan for language acquisition and to discover learning strategies which are effective for their individual styles.

Effective CALL builds, then, upon the seemingly paradoxical *terra firma* of preparing learners for instability and unpredictability. By learning how to learn and establishing learning communities, today’s students are preparing for a lifetime of learning. The effective CALL professional begins with the goal of communicative language learning in mind, all the while recognizing that learning entails learner intentionality within the supportive framework of a learning community.

The third habit: First things first

The first two habits are essential to creating an effective vision for real learners and the world of learning. Without the right destination, even the newest and best “smart” road would lead nowhere. Habits one and two work out the right destination point, habit three conceptualizes the design of the road from start to finish. Thus, it targets design and management. Design in the context of CALL refers either to product design or implementation strategies or both. It strives to balance the multitude of learning issues with real-world concerns which include time, money and logistics.

First things first in learning means identifying and beginning with the prime mover: in the words of Mihaly Csikszentmihalyi (2000), ‘It is not that students cannot learn, it is that they do not want to.’ Motivation is the key that opens the learning door. Jere Brophy maps out motivational strategies that easily transfer to CALL. To motivate learners to learn, educators must demonstrate the value of the academic activities as well as ensure learners that they can succeed. Brophy (1987) lists three categories of strategies. The first, the preconditions for motivating to learn, include:

- A supportive environment;
- Appropriate levels of difficulty/challenge;
- Meaningful learning objectives;
- Optimized but not overused motivators. (42)

The second are strategies to establish and maintain expectations for success in students. These four strategies are:

- Program for success;
- Teach goal-setting, performance appraisal and self-reinforcement;

- Help students recognize linkages between effort and outcome;
- Provide remedial socialization. (42–43)

Finally, there are strategies to enhance the value which students place on learning while completing school tasks. These include both intrinsic and extrinsic motivators as well as stimulating self-motivation. Extrinsic incentives include:

- Rewards for performance;
- Appropriate competition;
- Attention to the instrumental value of the subject matter.

The intrinsic motivational strategies call for:

- Adapting tasks to student interests;
- Including novelty and variety;
- Allowing learner autonomy;
- Providing opportunities for active student response;
- Giving immediate feedback;
- Seeking finished student products;
- Including simulation, role-play, fantasy;
- Playing and gaming;
- Striving toward higher level thinking and divergent questioning;
- Giving opportunities for peer interactions. (43–44)

Teachers can help students develop self-motivation by exhibiting motivation and enthusiasm for learning as well as by modeling thinking and problem-solving skills. Elsewhere, teachers can strive to lower student anxiety during activities, testing, and oral performance. The current emphasis on articulated assessment rubrics is a prime example (Hall: 2001:219–220). Learning environments where learning rather than performance is valued; thus, errors are treated as learning opportunities rather than the indelible mark of learner inadequacy can go a long way toward reducing student stress. (Brown *et al.*: 2001). Personalizing content and skill acquisition can be effective ways to motivate students. For global learners providing advance organizers and for analytic learners giving sequential learning progressions reduce anxiety equally well and can be used simultaneously in a single learning module. One type of effective CALL design focuses heavily on the expectations for success and extrinsic incentives. Communicative and constructivist CALL designs tend more toward intrinsic ones. Successful CALL design and implementation derive from the essential preconditions (the first and second habits), modeling sound practices and motivating students to learn.

In a beginning French course at Virginia Commonwealth University, one of the authors has devised a *Blackboard* survey of student interest for use in the first week of class that has been intentionally designed for motivational purposes. The survey, written in the target language and relying heavily on cognates and familiar cultural

terms, is inserted into the first week of the course to explore and expand student motivation to learn French. The survey begins with a French-English matching exercise of reasons to study a foreign language (a scaffolding task underscoring cognates). Next, students are asked to prioritize a list of reasons for learning French. They then have an essay space (actually writing a paragraph in French in the first week of class) in which they write what they individually want to explore (“*Je désire explorer....*”) during the semester. The essay is built on a clear, simple model for sentence production and a list of nouns and recognizable cultural terms like *la cuisine, l’art de Renoir, le champagne*. Students then move to a checklist of reasons why French is important in today’s world (again in French, but easily understood). The last segment is a scale of how enthusiastic they are about learning French. The survey motivates students because:

- it presents cognates and makes them realize that they already know some French;
- it provides a playful environment (the segments are like little puzzles);
- it is not “graded,” yet it furnishes a formative assessment strategy and encourages exploratory learning;
- it reinforces textbook learning (-er verbs, masculine/feminine nouns, the pronoun “je”);
- it urges them to think about why language learning in general is important in today’s global society;
- it leads them to articulate what they want to learn about French language and culture.

The survey draws upon several strategies from each of Brophe’s categories. An important pre-condition is to provide a supportive environment by using a survey instrument rather than a test. Once the surveys are in, the *Blackboard* facility allows the class to review its composite answers, discuss motivations, determine what the class, as a whole wants to investigate during the semester, and visualize who they are as a learning community. At the same time, it is a tool for targeted practice of skills being learned in the first week as well as a transforming practice. Students are asked to go beyond what they think they can achieve in the target language but in a way that ensures success. If motivation is the key to learning, then this type of CALL presents a model for an effective language-learning task, by putting first things first.

Due to learner variability, first things for one learner are not first for others. A successful CALL design or implementation will allow learners to readily match their learning needs to the material to be covered. Optimally, it will allow them some autonomy in devising their learning path. The very nature of CALL facilitates opportunities for learner self-direction. Still, the learner needs to know who she or he is as a learner, which strategies are most applicable to the specific knowledge or skills to be acquired and what opportunities are available. Thus, if a language-learning tool is maximally effective, it should make the appropriate level of comprehension assistance available to the user. This is particularly important when working with multimedia. Today audio and video in a variety of languages are widely available over the

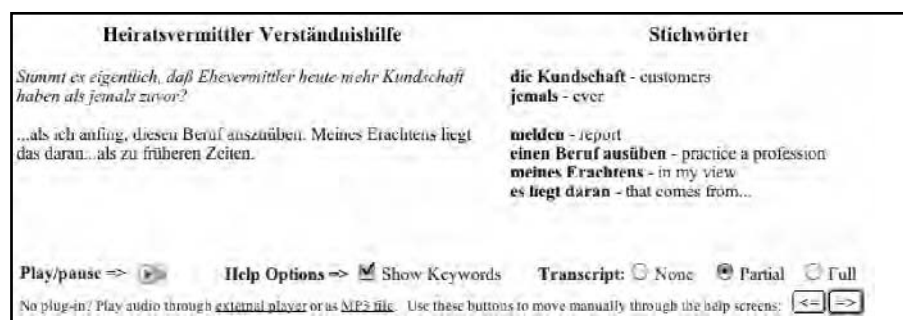


Fig. 2: A more flexible and individualized design

Internet, through Internet streaming of news broadcasts, brief travelogues, and documentary shorts. The challenge is to make such materials comprehensible to language learners. One approach (Figure 2) is illustrated by Scola's *Insta-Class* (<http://www.scola.org/insta-class/index.html>), which makes available short audio excerpts from broadcasters in fourteen different languages. In addition to the audio files (available as streaming audio or downloadable files), *Insta-Class* also provides complete transcripts, English translations, keyword lists, and comprehension questions. This is a welcome and valuable service, but it illustrates a one-size-fits-all approach to comprehension aids.

Students are able to access the file in *RealMedia* or MP3 formats and are provided with several real-time aids in listening to and understanding the audio—a keyword list, a partial transcript and a complete transcript. As the audio plays, the comprehension aids selected by the student are supplied for that segment of the clip and are updated automatically as the clip progresses. Students are asked to use the level of help appropriate to their needs, with the suggestion that they first listen to the audio with no help, then listen again, successively adding keywords or transcripts as needed. The benefit of this approach for students is individualized support and for the instructors, re-use of the same multimedia for multiple learning levels. Given the time-consuming demands of annotating and transcribing media clips, it makes sense to maximize their use whenever possible (for a discussion of ways to use to CALL to increase listening comprehension, see Frommer, this volume).

As Tufte's important work, *Envisioning Information* (1990), reminds developers and users, design must be both inviting and intuitive: it is the first thing the learner encounters. Besides being a motivating factor, an inviting design elicits curiosity and pleasure. Pleasure may also derive from the compatibility of learning style to teaching style; elsewhere it may actually issue from the right kind of dissonance or competitiveness. A good design provides enough assistance to prevent frustration but not so much that the learner is bored or unchallenged. Intuitive design helps bring order or familiarity to a learner's first confrontation with a foreign concept or an alien structure. Most of all, however, effective CALL motivates the learner either to come back to the specific CALL program or to seek new learning adventures, optimally both.

First impressions are lasting and often determine one's willingness to pursue a course of action (see also Bancheri, this volume, on effective screen design).

The fourth habit: Think win/win

Covey's notion of win/win forms the cornerstone of "Interdependence." One can only establish and maintain effective interpersonal relationships if those relationships are grounded in independence. To move beyond "Dependence" into "Independence" one must take responsibility proactively, begin with the end in mind, and then put first things first. Interdependence grows from a win/win mindset, seeking first to understand and then to collaborate and synergize activities. Win/win for CALL involves a myriad of interpersonal relationships: educator-administrator, teacher-students, student-student, and university-community. In typically hierarchical structures, it promotes setting up collaborative rather than competitive situations, along the lines of Marshall's notion of communities of learners. Effective CALL, then, optimally reduces a teacher's more onerous tasks (corrections, repetitions, multiple presentational modes), saves the administration money, and improves learning. It redistributes teaching and learning times and spaces to the benefit of all parties. It responds to educational goals recognized as essential by faculty and to professional goals of immediate concern to students and the community. Win/win has many facets.

An example of a win/win technology which many CALL developers and users are discovering is the integrated learning environment. Technology tools only work if they are easy for both teachers and students to use (on the importance of ease of use for instructors, see Kazeroni, this volume). Institutions will in turn only make tools available if administrators are convinced they are cost-effective. This helps explain the popularity of learning management systems (LMS), such as *WebCT* and *Blackboard*, which feature an intuitive interface and tend to be widely used by both teachers and students. An LMS provides a great deal of built-in functionality useful to language learning, such as group/individual communication tools, drill and practice, and assignment submission/management. The ease of use of a LMS has made it a "just-in-time" tool instructors can use quickly before or after class. This allows for daily adjusting of content and tools to changing student needs, thereby integrating technology more closely into the course. Students benefit from a familiar and convenient storage and retrieval system for course documents such as handouts, review materials, or sample exams. Students are also able to monitor their performance through an online grade book. This convenience for students and instructors is matched by the convenience for administrators and IT Departments, which need purchase and support just one basic instructional software package.

Many developers and users see CALL for as a win/win tool. In many instances it improves learning all the while reducing the drudgery of repetitive teaching tasks such as workbook grading, discrete-point testing, and ongoing repetitions by providing missed work, explanations, etc. However, the teacher must take special precautions to ensure that CALL is a winning medium for the individual learner.

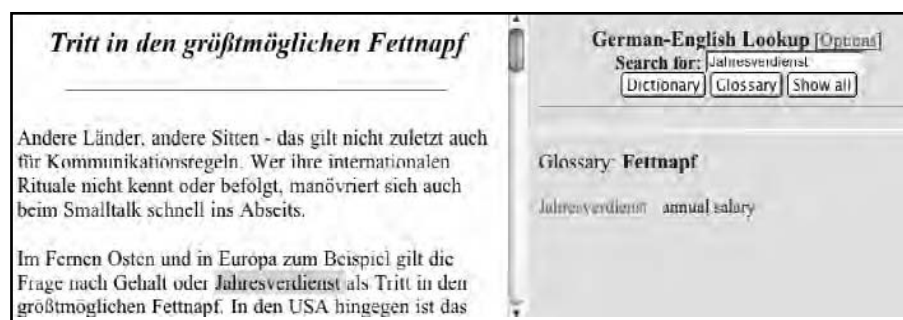


Fig. 3: One approach to designing a flexible glossing system

The fifth habit: Seek first to understand, then to be understood

In *The Seven Habits of Highly Effective People*, understanding promotes interdependence and, as a result, encourages educators and CALL developers to listen intently to what their administrators, colleagues and students want and need. The habit of understanding addresses the question of what the learners really need and want, which educators can only know if they listen to the students and communities which they serve. In this section the discussion of the habit of seeking to understand targets comprehension as FLE educators typically understand it. CALL in its infancy was not a tool for promoting comprehension as much as a drillmaster and grammarian. Increasingly, however, online translators and websites dedicated to skill development, such as listening and reading, have proliferated. One that connects the French learning community in Virginia to new French cinema is the VCU-PBS French Film Festival site (<http://www.frenchfilm.vcu.edu>). This site coincides with PBS broadcasts of new French cinema, offering pre-viewing information and study guides. This is a simple but very effective use of computer assistance for promoting understanding, in many senses of the term.

The Internet offers a fantastic boon to content-based language instruction with an abundant supply of authentic materials in many languages. Up-to-date documents in actual use by native speakers are easily available, including the daily press, broadcast outlets, government documents, company reports, city guides, and much more. The challenge, of course, is to make such materials accessible to language learners. Items in written documents, for example, may need semantic or cultural glosses, although individual learners will differ in the extent of help they need.

The left side of the screen in Figure 3 contains the original text, with comprehension aids on the right. Users can click or highlight individual words or phrases for look-up. If the item is cached in a local glossary, a definition will be provided immediately. If not cached locally, an online dictionary is consulted. In this implementation an equivalent in the learner's native language is displayed, but the gloss could instead be a definition in the target language or a pictorial or auditory illustration. Students may prefer to have glossed items indicated by underlining or by other means in the text. The idea behind the system is to provide an on-demand look-up used only when needed.

“Understanding” in foreign-language education is a fundamental tenet. When the CALL field extends it to activities beyond the classroom, the entire endeavor benefits.

The sixth habit: Synergize

Synergy, of course, deals with complementary interweaving, a natural effect of computerized learning. CALL allows teachers to re-structure the times and spaces of learning to suit both their needs and those of their learners (for an adaptation of the ratio of the in-class to out-of-class time, see Chenoweth *et al.*, this volume). For example, a class of twenty learners can easily break into five discussion groups online, the teacher monitoring and intervening as necessary in each. It is a mistake, however, to increase teacher-student ratios under the false notion that CALL and logistical reconfigurations allow fewer teachers to guide more learners. The teacher must still read and respond pedagogically to learner input. Most CALL teachers report increases in teaching-related hours, not reductions. This problem is discussed below.

It is important that there be no disconnect between classroom and computer, that pedagogical consistency be maintained throughout the course. The computer materials should support and reinforce classroom activities and in turn the classroom can extend and expand computer-based activities. Discussion forums, for example, can be used to continue classroom discussions. Group assignments done through CMC might explore issues raised in class. In turn instructors may use classroom time to point briefly to common structural or semantic problems showing up in forum messages.

At the same time, it makes sense to think about using the computer for learning activities best suited for that environment. In addition to CMC another obvious use is drill and practice of discrete grammar points or vocabulary learning. Instructors using an LMS have built-in tools for creating such exercises. However, there are a number of other options specifically developed for language learning, such as *Hot Potatoes* (<http://web.uvic.ca/hrd/halfbaked/>), *Interactive Exercise Makers* (<http://lang.swarthmore.edu/makers/>), or *WebPractest* (<http://www.wm.edu/CAS/modlang/gasmit/webpractest/>). Exercises created with these tools can be used independently or incorporated into a LMS.

A completely different example of beneficial FLE synergy is found in the Richmond, Virginia, foreign-language community. FLEX, the Foreign Language Exchange, started as a K-16 articulation project. K-16 teachers from public and private institutions gather monthly in person for FLE potlucks. Lessons and information are shared both at meetings and online (www.vcu.edu/lex/). A listserv keeps participants apprised of FLE events in the region. The synergy created through this simple, technologically enhanced project is allowing the Richmond area to respond to the crisis created by the lack of qualified teachers in that region. It is also creating more seamless language learning vertically and horizontally throughout the region. Finally, it serves as a model of collaboration and communication for learners living in that area.

The seventh habit: Renewal

Covey calls this habit ‘sharpening the saw,’ which makes tree cutting easier and faster. In the goose/golden egg analogy, it means treating the goose nicely to get more eggs. If the production capacity is well maintained, the production will remain high and healthy. There are several FLE “saws” to consider with respect to effective CALL. First, there is the administrative-faculty saw. Even when CALL enhances learning and is cost effective, it does not reduce the time faculty spend in preparing teaching materials and lessons. Indeed, faculty often spend much additional time learning to create and use CALL and keeping abreast of technological innovations and how they impact teaching and learning. Barely an issue of *Syllabus* goes by without the explicit caveat to administrators to allot time, attention and money to faculty development in instructional technology. Other administration-faculty “saws” include hardware and software updates and keeping the university mental model in tune with changing financial and intellectual economies. In particular, the tenure process and merit increases, even today, do not adequately account for teachers who have invested in CALL.

The FLE “saw” that feeds back into this entire discussion of CALL effectiveness concerns language learning. How can CALL sharpen the learners’ language “saw”? CALL promotes individualization and not just for initial learning sequences or classroom activities. In a language-learning program that is designed and implemented based on the first six habits, the seventh habit flows forth naturally. Proactive, responsible students take upon their own shoulders the joy of learning. Self-motivated and aware of their particular learning style and best strategies, they will be able to make intelligent choices to improve their communication skills and knowledge. By the time they have succeeded in the win/win language learning, they will not only know how to maintain their language skills but will want to do so. The Internet is a language learner’s dream, replete with multiple venues, supports and media for interacting and improving learning. Importantly, too, there are sites where students can evaluate their progress in learning various skills themselves. The about_.com language sites, for example, contain a number of short assessments which sharpen the tongue, in the best sense. Elsewhere, the wide accessibility of the Web, day or night, at home or in the office or school, means that effective CALL is but a keystroke away. Through effective CALL, the intentional learner joins learning communities for lifelong learning.

Finally, sharpening the saw brings one full circle and back to the first habit. As we learn more about learning and communicating, we necessarily must change and adapt to the new generations of learners, their circumstances, and evolving technologies. And so, we continually cycle through the habits to ensure that CALL remains effective.

Conclusion

The article by Chickering and Ehrmann is a ‘saw-sharpening’ review of effective technology applications to learning (Table 1). The article is brief and online at

<http://www.tltgroup.org/programs/seven.html> so it will not be discussed in detail here. Still, it should be noted that Chickering and Ehrmann discuss specifically how email and asynchronous chats build community (teacher-students, student-student, student-native speakers) and how ‘students from different cultures open up in and out of class when email became available’ (2002). Teamwork and the community aspects of learning are shared through several electronic facilities. Effective CALL promotes active learning. Many CALL routines facilitate prompt, accurate feedback. They demonstrate the importance of time spent on task by emphasizing that ‘[t]ime plus energy equals learning.’ Herein lies a caveat, however: it is crucial that instructors who integrate CALL into the curriculum not inundate learners with too much work. As some learning time is shifted to online venues, the instructor needs to rethink the amount of time learners spend in the classroom. Chickering and Ehrmann’s notion of high expectations coincides with the discussion on motivation and goal setting. Without high expectations, learners will not feel validated in their learning. And the final principle of respect for diverse talents and ways of learning is where the first habit and the discussion of Marshall’s vision of a new world of learning and learner communities began. We began with Covey’s seven habits and end with the Chickering and Ehrmann’s seven principles. Effective CALL design and implementation adheres to these fourteen guidelines.

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5

Wired for Sound: Teaching Listening via Computers and the World Wide Web

Judith Frommer

Introduction

From the very beginning of the language learning experience, students should be taught to listen as they do in their native language, with the purpose of understanding the meaning of an oral message. The thesis of this chapter is that authentic, natural language¹ in an audio or video format, presented with appropriate techniques, can effectively teach listening and prepare students for natural, authentic communication in the target language. Moreover, modern computer and Internet technology are the ideal means to accomplish this goal.

The approach suggested here emphasizes the transposition of input into meaning as in L1 listening. Students learn components of speech—words, expressions, and structures—practice them, and then hear how they are produced in natural speech patterns and how they express meaning. Provided the teacher, textbook, or class activity furnishes the key linguistic elements and the essential schemata, students develop the capacity to listen without translation or word-for-word processing. Based on identification of language they have already acquired or are in the process of acquiring, they learn to recognize information and to infer in order to interpret aural input.

It is probably no longer necessary to convince foreign language (FL) teachers that listening should be taught. Recently, this aspect of language competency seems to

have assumed its rightful place as an equal partner with speaking in the act of communication. This change in attitude can be seen in the difference between the references to ‘understanding’ in the *ACTFL Proficiency Guidelines* (1986) and in the *Standards for Foreign Languages* (1996). In the ACTFL guidelines, comprehension² is implied in the descriptions of speaking whereas, in the *Standards*, established in the late 1990s, ‘understanding’ is specifically addressed. Coinciding with the realization that listening should be taught and with progress in understanding the listening process (based on research in both SLA and neuroscience), technology has given us the means and materials to teach listening effectively. Computers and the Internet have made it possible to improve listening activities with regard to both technique and content, as will be explained below. Before discussing CALL, however, it is useful first to present the listening process and types of listening in order to show the ways in which technology can overcome the obstacles to effective teaching of aural comprehension.³

The Listening Process and Listening Comprehension

Considered a “passive” skill until fairly recently, listening is now seen as a process in which the listener participates actively. According to Coakley and Wolvin, “[in general,] listening is a process of “receiving, attending to, and assigning meaning to aural stimuli”” (1986:18). While these three sub-processes are essential to listening in any language, the way they are executed differs in L2, especially for young adults learning their first foreign language.⁴ Although L1 and L2 listening processes may be similar, the role of listening comprehension in a second language is more complex than in the native language (Wilczynska: 1993:105).

In L1, we listen faster than the rate of speech, so our minds wander while waiting for additional input (c.f. Coakley & Wolvin: 1986; Witkin: 1993; Johnson: 1993). This is probably not true for learners of an L2, who must listen for sound perception as well as for comprehension and need all the time they can get to ‘assign meaning’ to the sounds they hear (Ur: 1984:11). The initial challenge in teaching listening is to have learners understand the sound properties of the language they are learning, often quite different from the sounds of their L1. Along with sounds, learners need a familiarity with the prosody of the language, including intonation, rhythm and stress, and exposure to these is one of the principal reasons for using authentic materials regularly.⁵ Although students may understand the audio or videotapes prepared for their textbooks, they may not comprehend the same utterances in authentic, natural speech in which sounds are often elided or omitted altogether.

In addition to sound perception, listeners have to recognize the underlying patterns of a language, that is, they should understand the usual order of a sentence, the possible combinations of words in idiomatic expressions, and the types of words that can be used together. With such knowledge, the listener can anticipate what comes next without actually having to hear it.⁶ According to Witkin (1993), typically listeners do not decode a message, rather they identify the pattern and then listen for the

information that will make this message different from the generic message of a particular pattern. For example, in French, as in English, there are many expressions using the preposition *comme* (“as” or “like”), such as *maigre comme un clou* (in English: “thin as a rail”),⁷ which follow the pattern adjective + *comme* + indefinite article + noun. Once learners have become familiar with such expressions, they will automatically anticipate a noun after the structure “adjective plus *comme*.”

According to Coakley and Wolvin (1986) another factor affecting understanding is concentration, which they consider an essential element of effective listening comprehension. In fact, paying attention is the *sine qua non* of listening: ‘Attention is the factor responsible for determining whether or not the visual or auditory signal is processed and proceeds into short-term memory’ (Witkin: 1993:34). Without retention in short-term memory, i.e., without attention, interpretation and formulation of meaning cannot take place.

Witkin adds three ideas that are relevant to listening in the context of teaching of foreign languages to adults, that is, those who have mastered concept formation, including college students as well as those in their final years of high school. First, she cites a study showing that visual stimuli are stronger than auditory stimuli in attracting attention and inspiring a response, suggesting the importance of video in teaching listening. Secondly, she says that the more a stimulus corresponds to our interests and familiarity, the more likely we are to notice and pay attention to it, indicating the importance of using material for which students have background knowledge (c.f. Herron: 1995, 1998; Ur: 1984). Thirdly, she mentions research stressing the importance of pre-attentive processes for homing in on what we pay attention to while listening or viewing, underlining the necessity of providing students with pre-listening or pre-viewing activities (Dunkel: 1986).

Even when learners pay attention and can identify sounds as words or morphemes, however, they still may not be able to assign meaning to them. In order to understand the aural input the listener has to be able to match the new information, i.e. the message, with his or her own storehouse of knowledge and prior experience, Witkin’s second point (Witkin: 1993:29; Wilczynska: 1993). If we accept Roberts’ and Maccoby’s assertion that ‘[m]eanings reside not in messages but in people’ (Roberts & Maccoby, quoted in Witkin: 1993:26), a message is meaningless without adequate knowledge possessed by the listener. Thus the role of background knowledge in comprehension cannot be overemphasized. In a broad sense it encompasses everything from knowledge related to the topic under discussion—facts, events, associations—to awareness of aspects of the topic that will be emphasized and the direction the discussion will take. According to Johnson (quoted in Coakley & Wolvin: 1986:181), ‘[t]he more...shared meanings we have with the speakers, the easier the process of listening,’ that is, the more we already know about what is being said, the more we understand. In the case of audio or video material used in FL courses for listening comprehension, students, especially beginners, need to have all materials contextualized in order to appreciate their cultural, historical, sociological, or linguistic richness (Dunkel: 1986; Rost: 1990). For example, to a student of first-year French who has had no contact with French culture, a photo of the Eiffel Tower is an esthetic

image which he or she may find attractive or unappealing; to a French teacher, on the other hand, the photo has multiple connotations—the first time he or she visited the *Tour Eiffel*, dining in one of the restaurants there, the historical significance, the scandal it caused when it was built, just to name a few. Depending on the teacher's familiarity with the target culture, any visual or aural document about the culture he or she is teaching will have layers of significance unknown to students. Teachers must be aware of the discrepancy between their background knowledge and that of the students, as the listeners' interests and familiarity with the context of listening material will affect their predisposition to be attentive to it and therefore to perceive it. The more background knowledge students have, the more they will be able to cope with and appreciate more difficult material (Mendelsohn: 1994:13).

Another aspect of the listening process relevant to the teaching of listening comprehension is the way in which aural information is stored in memory. In Richard's analysis of listening, the sixth and last step is '[r]etaining the meaning and acting upon it, without necessarily remembering the actual form in which it was encoded by the speaker' (quoted in Lee & Van Patten: 1995:61). As nearly all researchers and psycholinguists agree, this implies that the listener neither hears nor remembers all the words in the message: 'What is extracted in listening as perceived meaning is not recorded for storage in its original syntactic form. It is stored in memory in a simpler form that preserves the gist' (Rivers: 1993:79). This suggests that listening comprehension activities should be distinct from those which promote speaking, such as "listen and repeat" audio exercises, and that listening tasks expecting total recall are both unrealistic and unproductive.

Types of Listening and the Role of the Listener

Just as there is more than one type of speaking, as evidenced by the concept of speech acts and the various roles of the speaker, such as narrator or conversant, there is more than one type of listening. Thinking about the type of listening we want our students to learn to do is important because it will determine the type of tasks that we have them do in listening activities. In a chapter entitled "A Listening Taxonomy," Coakley and Wolvin 'address... the need for a classification system of listening purposes' (1986:15). With regard to L1 listening they mention:

- discriminative listening, or 'distinguishing the auditory and/or visual stimuli' (determining whether one is hearing a "t" or a "d," for example), which is the basis for all other listening as the units of meaning must be identified before meaning can be assigned;
- listening for comprehension to obtain information;
- therapeutic or empathetic listening, in which the listener expresses empathy toward the speaker allowing him or her to 'talk through a problem;'
- critical listening, involving an evaluation of what is heard and leading to a judgment;

- appreciative listening, or listening for enjoyment to music or television, for example. (1986:19–21)

Writing about L1 listeners, Coakley and Wolvin state that ‘much of the educational process is based on comprehensive listening’ with ‘students ...asked ...to understand and retain vast amounts of information’ (1986:11). This is all the more true of L2 listening, as is borne out by Ur (1984) who, focusing on L2 learners, divides her ‘suggestions for classroom activities’ into ‘listening for perception,’ which is like Wolvin’s and Coakley’s discriminative listening, and ‘listening for comprehension,’ with the bulk devoted to the latter (about 115 pages for listening for comprehension compared to only nine pages for listening for perception) (Ur: 1984). With this approach, the purpose of listening activities is exclusively to find out if students understand the contents of the listening documents, so that listening remains an academic exercise for them, never becoming a meaningful cognitive experience. The typical listening comprehension activity consists of questions about “what happened” presented in chronological order. For example, a narration of the mishaps occurring during Marie-Odile’s trip from Paris to New York is accompanied by questions such as whether it was a direct flight, whether the plane left on time, where her checked suitcase went, and where the plane landed. Listening to the same narration would be a more natural, meaningful experience if students were asked to note down what they consider the most significant aspects of the trip.

According to Rost (1990), listening can be described as interactional or transactional, depending on the relationship between the listener and the speaker. In interactional listening, in which two or more people engage in a conversation, the listeners can play more than one role. They can answer questions, challenge the speaker by asking questions, contribute new information, change the course of the conversation, use words or expressions that keep the conversation going (using back-channeling signals indicating to the speaker that one is listening or prompts to encourage the speaker to continue [100]), react with any one of a number of attitudes, or use appropriate phatic speech or paralinguistic expressions. They can also follow the accepted script (series of schemata) for a specific situation, or not follow it because of lack of experience or background knowledge (96). An example of not following the script would be an American in a formal restaurant in France who attempts to “get to know” the waiter by asking personal questions, something not done in that context. In interactional listening, the listener has to understand speaker behaviors inherent in interaction (depending on the language), such as repeating and using pause words. Also, the listener has to recognize his or her role in identifying misunderstandings, executing repairs and making queries (112). As most non-native speaker (NNS) learners in a classroom situation can engage in interactional situations only with their teacher, who usually communicates through “teacher-talk,” or with their fellow students who are also NNSs, it is assumed that misunderstandings will occur. For this reason, literature on L2 interactional listening often concentrates more on interaction and negotiation of meaning than on listening skills themselves.

Students in university and secondary school FL courses are more likely to experience transactional rather than interactional listening in which the listener is ostensibly not obliged to respond. Transactional listening is used for television, film, radio or other audiovisual input, as well as for lectures or theater, situations that do not require an oral response. It is not exactly true, however, that transactional listening requires no response at all. For example, the audiovisual materials which students listen to or view for a course are usually accompanied by an assignment including a written product and/or preparation for class discussion. Likewise, although students do not have to interact with the lecturer in a class with over one hundred students, a fairly common situation in large universities, they often respond in writing by taking notes, or non-verbally by giving a nod of the head or some other sign demonstrating understanding. In addition, not all lecture situations demand the same approach to listening. For example, understanding an art history lecture based on slides can be differentiated from a lecture about a literary text. In the first case, the listener has to relate what is said to what is seen on the screen; in the other, the listener has to remember a text—from having read it before the lecture, or by having heard it during the lecture—or to understand the speaker without having any knowledge of the text.

Students have to respond, also, to what has been called interactional-transactional situations, a hybrid type of listening that occurs in a FL learning environment. That is, listening situations that are interactional, such as conversations, are presented transactionally, usually in audiovisual materials, to expose learners to language as it is used by L2 speakers in real-life communication. The interactional-transactional situation is similar to participation in a conversation in L1 involving more than two people in which those who are not speaking need transactional listening skills to follow what is being said.

Advantages of CALL for Listening

Regardless of the type of listening students are doing, the advantages of technology for fostering improvement of foreign language listening comprehension can be divided into two categories, those inherent in the computer and software themselves and those resulting from the contribution of the Internet and the World Wide Web. Although there is overlap between these two areas and although the web would have no advantages without the basic computer technology, it is the accessibility, interactivity, and ease of use of the web that have greatly improved the teaching of listening and have made it possible to involve students in real-life communication in a classroom setting.

Basic advantages of the computer

Compared to previous technology—tape recorders and VCRs—computer technology offers a number of advantages that make it easier to understand and to improve one's understanding of oral language and audiovisual materials. With CALL listening, students are engaged continuously in an interactive experience, can control delivery, can

verify their comprehension, can view multiple types of input, and can access more than one input simultaneously.

Interactivity

Because concentration is a key factor in successful aural comprehension, anything that will increase students' attention span will also help them to improve their listening skills. In contrast to a tape recorder or VCR, which will continue playing an audio or videotape until the end or until the user pushes a button, a computer can be programmed so that listening/viewing is interactive. The technological capacity to manipulate digitized audio and video files means that listening/viewing can be presented in such a way that students have to be continuously involved. They must react to the computer if the listening activity is to continue. The result, with well-programmed software, is that they are always alert to what is happening on the screen, avoiding the hypnotic state induced by watching TV or a VCR.

Control

Most people would say that live interaction is better than computer interaction. While this is true as far as spontaneity of language is concerned, in some cases, especially transactional listening, the computer may actually be better, as it gives students control that is not possible in a live situation. Rather than hearing the aural input only once as occurs in live interaction, thus increasing anxiety, which leads in turn to decreased attention, the learner can listen as many times as desired to computer-delivered audio or video, replaying parts that cause difficulty and identifying the problem points. Assuming that the software allows students to use the materials individually and to listen as many times as desired, the processing load of listening is decreased.

Even if the listening material is not presented in short segments or "chunks," the learner can "chunk" listening input if the software includes a control bar. Perhaps the single most significant contribution of the computer to student control of input, the control bar allows individual users (at the discretion of the program, of course) to locate particular points in a listening or viewing passage in order to listen more than once.⁸ While it is possible to rewind an audio or video tape player, from a pragmatic point of view it is difficult, with either one, to find the exact place one is looking for (for a discussion of online help for students, see Godwin-Jones & Murphy-Judy, this volume).

Self-assessment

When engaged in a conversation, the attentive interlocutor will either recognize instances of miscomprehension or have them pointed out. In contrast, learners, challenged by an audio or videotape, accompanied by any one of a variety of activities, may not know when they have misinterpreted or just simply missed important information. The previously mentioned advantages of the computer, interactivity and control, make it possible for learners to assess their listening experience, verifying comprehension as they go along. The self-assessment can be programmed so that verification takes place after a short chunk of listening, with students prevented from con-

tinuing until they have found or been given the correct answers. Another option is global verification of an un-chunked document, with incorrect answers or other evidence of miscomprehension resulting in directing listeners to the source of miscomprehension.

Multiplicity

Before the advent of the computer, students had access to text and images in their textbooks or in the print media. When listening or viewing, they accessed audio via a tape recorder and saw films projected on a screen or in videotape format on a VCR. Text accompanying audiovisual documents was a separate component, so students had to deal with different inputs at the same time, not an impossible task but cumbersome enough to annoy students and distract them from their primary purpose. In contrast, in CALL multiple materials in multiple formats can all be put on a single computer and can be viewed on the same monitor. For example, a text introduction or images can set the stage for the listening activity. With regard to language, difficult expressions can be presented in text format with explanations, or an object or situation mentioned in the document can be illustrated by an image. Teachers can also provide an online transcript, accessible to students freely or only after they have watched or listened to the audio selection a specific number of times (usually once or twice). Another option is to provide students with more than one version of input, an extremely useful tool when working with authentic materials. Students can have access to an audio file replicating the content of a natural, authentic document, clearly articulated at a normal but slower speed with standard pronunciation. Teachers can also make an authentic document less difficult by offering it as a series of shorter segments, allowing students to listen to the series of short segments before listening to the entire document.

Simultaneity

The “linking” feature of computer software means that the computer interface of a listening activity can give students simultaneous access to the multiple types of information mentioned above, limited only by the speed and capacity of the hardware. Thus, it is not only that a film and transcript can be accessed on the same computer but, much more impressive, that there are clickable buttons giving students access to all of the available features from the same screen. They can click on the video controls to see the transcript of the scene they are watching, on the transcript to see the scene from the video, or on a dictionary to see definitions of key words (for a brief history of technology use in foreign-language instruction, see Burston, this volume).

Advantages of the Internet and the web

The web expands the basic advantages of the computer dramatically, making it possible to give students the exposure to authentic language which is essential for the acquisition of native-like listening ability, either through access to materials or electronic contact with actual native speakers (NSs). Moreover, the multimedia capabili-

ties of the web facilitate the creation and implementation of listening comprehension activities.

Access

The ability to digitize sound files and the new mode of streaming audio and video have made audiovisual documents readily distributable from and accessible to any place in the world. Radio stations and TV channels in major languages have accessible websites and some (BBC, RFI, and TV5) even have special pedagogical pages. Free downloadable software (*RealOne Player* and *Windows Media Player*) allows the audio or video files to be played on any appropriately equipped computer.

Contact

Offering students a true NNS-NS interactive listening situation in the classroom environment, as if they were in the C2 country or engaging in an actual conversation with a NS, was previously difficult, if not impossible, to arrange. This type of communication is now possible, however, using the audio input feature of computers and, for video, webcam technology (See below under Listening Materials and Listening Activities.).

Ease of use

The great advantage of the web for any purpose, but especially for listening comprehension, is the ease of use which comes from the ability to have everything on the same page, without having to install complicated software (even if certain programs must be on the local hard disk). As was true when progress resulted in automobile drivers no longer having to crank up the engine, shift, or know anything about the engine, with regard to computers now all the user has to do is click. The fact that the web allows for communication using a low cost hardware item, such as a webcam, and connecting through a local server and, therefore, does not entail the costs associated with long distance phone calls or complicated distance learning technology, can also be placed in the category of ease of use.

Teaching Listening Comprehension

Whether in a more traditional context or using CALL, teaching listening involves giving students sufficient exposure to appropriate audiovisual input consisting as much as possible of authentic, natural language, accompanied by pedagogical materials focusing on the various aspects of the listening process and the various types of listening, as mentioned above. Specific techniques and materials, different from those used in teaching speaking, are needed for students to master L2 listening. The present section concentrates on principles for the effective teaching of listening comprehension; the following one describes materials which allow an instructor to realize this effectiveness.

An essential element in the teaching of listening is the integration of language learning into the curriculum from the outset. From the very first day of a language course, students should be exposed to natural, authentic language other than that spoken by the teacher (assuming that the teacher is a NS or possesses near-native fluency and, therefore, can provide authentic language, which is not always the case). In addition to practice in speaking and writing, students should do listening activities at all levels of language learning. Additionally, the materials used should be based on audiovisual materials intended for NSs or in some way should involve interaction with NSs other than the classroom teacher. The early introduction and continued implementation of such materials solves the problem described by Goh: '[if there is] difficulty with a message at the level of perception or word recognition, there will be little cognitive capacity left for high-level processing' (Goh: 2002:188). Early, consistent training in understanding of prosody and perception of morphemic and phonemic features of the language studied will increase the efficiency of the students' language processing skills, leaving them more time for processing meaning. Exposure to authentic, natural language, presented in the context of activities that focus on key information or general themes will make students realize that there is more than one type of listening and that it is not only unnecessary but counterproductive to try to understand every word.

A curriculum with substantive content and a focus on language lays the foundation for good listening comprehension. That is, in addition to the techniques which teachers use for specific listening activities, their general pedagogical approach should incorporate development of skills and acquisition of knowledge that, while providing a solid basis in the language, also lead to better listening comprehension. Such a general approach includes, among others, the following five points:

- Giving students essential linguistic knowledge about identifying phonemes, morphemes and word boundaries, and understanding and recognizing various types of expressions (phatic, temporal, those that indicate whether an utterance is intellectual, practical, or affective) as well as stock phrases, especially those used in everyday communication, presenting them as lexical expressions rather than analyzing them according to their structure (Nattinger & DeCarrico: 1992);
- Helping students to use natural pauses, stress, and intonation to help them to understand meaning;
- Making students aware of how discourse operates above the sentence level, based on principles of coherence and cohesion (Scarcella & Oxford: 1992:141–149);
- Teaching background knowledge related to the culture, geography, history, and current events of the C2 so that students will recognize and understand the socio-cultural significance of names, dates, and places mentioned in audiovisual documents; and
- Training students in skills such as recognizing NS prosody, identifying specific information or making inferences, regardless of whether the focus is on grammar, reading, culture, or any other area of language study. Inferring, or deducing the meanings of novel or unfamiliar words based on contextual and pragmatic cues is

especially important for both reading and listening comprehension (Lee & Van Patten: 1995:62).

As is true of essentially all aspects of language pedagogy, the best approach to the teaching of listening comprehension consists of three steps: preparation for new material, interaction with the new material, and recycling/reuse of new material. For aural comprehension, these steps are a pre-listening/viewing activity, the listening or viewing activity itself, and a post-listening/viewing activity.

Pre-listening/viewing

The pre-listening activity should familiarize students with the language and content they will hear in the listening activity. This can be done through in-class or homework activities based on an introductory text, visuals, or oral/aural tasks that activate general world knowledge, schemas and previously learned vocabulary. Focusing student attention on advance organizers, such as titles or related images, appears to improve comprehension and retention (Herron: 1994; and Herron *et al.*: 1995). Another approach is to have students listen to and then produce sentences, phrases, or words before listening to a video segment that uses them. Students should be made aware of the redundancy of much oral input and have practice listening to audio/visual documents to identify information they hear more than once. According to Mendelsohn (1994:12), the pre-listening phase should include activities involving all elements of listening and allowing students to predict and guess. If the listening task requires students to form inferences, the clues should be included in the pre-listening activities.

Pre-listening/viewing activities should also foster the development of metacognitive skills. Along with information about content and practice in language, students should be given hints about how to structure the information so that it informs their listening and makes it more efficient. During the pre-listening phase, letting students know or helping them to guess the genre of the audiovisual document they will listen to or view will help them to anticipate what they should be listening for. If they will be listening to a narrative, then they will know there will be a story with a beginning, a middle and an end, as well as recurring characters. If the document is in the form of a current news broadcast, they will think about the news they are aware of in their own language and will listen for specific facts and information (Friedman in Wolvin & Coakley: 1993; Weissenrieder: 1993).

Part of metacognition, according to Lundsteen (1993), is to know what you don't understand and to ask for clarification. In order for L2 learners to do that, they have to learn how to determine the information necessary to make sense of what they are hearing. This means that the final step in the "pre-" phase is a thorough explanation of the tasks to be performed while listening, so students know that they have to identify only those words that are necessary for comprehension of the message, not every word they hear. It cannot be overemphasized that clear directions are part of the pre-listening stage and should always be presented in class if the listening activity is to be done outside of class as a homework assignment. In fact, especially with beginning and intermediate learners, an initial portion of the listening/viewing document

can be shown in class and the first part of the listening activity done by the class as a whole. Alternatively, a short activity similar in nature to the listening activity and based on a short, but similar document can be done in class.

Although all listening activities should always be introduced in class, it is not only unnecessary but probably impractical for all of the pre-listening activities to take place in the classroom. Much of the preparation for listening, such as acquiring background knowledge or listening to and repeating expressions used that the students will hear in the listening activity, can be done through CALL activities on a stand-alone computer or online.

Listening/viewing activities

According to Lynch, listening tasks—what we ask students to do in the listening activity—should be authentic, that is, ‘closely related to [tasks] we carry out daily on various forms of spoken discourse’ (Lynch: 1982:13). Lynch’s point is that we don’t hear everything when we listen in our native language so why should we oblige students to understand everything in a test or class activity situation? The idea is to shift the emphasis from ‘what we listen to’ to ‘why we listen’ (1982:15). Lynch proposes two types of activities: 1) ask students to listen for specific information rather than asking them to answer questions on an entire document; 2) prepare students for listening by situating the document contextually and then ask them for the gist rather than asking discrete-point questions (1982:14). Another approach suggests that in an actual listening activity there should be two passes, the first for general information and the second for specific information. This approach ensures that both top-down and bottom-up listening is practiced. At the same time, doing the activities one after the other helps students to understand how the two types of listening differ. The sample CALL listening activities proposed below rarely have two passes, as suggested by Lynch, but they guide students in the direction of key information or general ideas rather than requiring students to understand everything. In any case, during the actual listening, there should be a clear focus on specific listening tasks appropriate for the content and form of the material.

Post-listening activities

The purpose of post-listening activities is to recycle the vocabulary, structures and topic of the listening material, thus adding to students’ linguistic and background knowledge and facilitating bottom-up and top-down processing in subsequent listening comprehension experiences. The specific activities can be based on the results of listening tasks and can involve any language skill. Students can also be requested to relisten to portions of an audiovisual document for interpretation, extrapolation, continuation of a story, or prediction of future events.

Level of language

The features and presentation of both pre-listening and listening activities depend on the level of the students who will be doing them. Beginning and low-intermediate students need more exposure to discriminative listening. At these levels, authentic doc-

uments can be segmented to increase comprehensibility so that students have less to remember (Witkin: 1993:47). Aids, such as glossaries and illustrations, or even a transcript, can be made available during the activity, toggled on or off based on either teacher or student option. Another possibility is to set up the CALL activity so students have access to help only after listening a certain number of times. What all teachers seem to agree upon is that advanced learners need less pre-viewing and pre-listening preparation and that supports should be gradually withdrawn. The more proficient students are, the more the listening tasks should focus on details of the oral input that change the interpretation in subtle ways (irony, indication of style, etc.) or that are crucial to an accurate understanding of the message.

Listening Materials

Since the 1960s, traditional listening comprehension materials for classroom foreign language learning have included audio-tape series published as part of a textbook package, with videotapes added to the mix starting in the mid 1980s. A characteristic of these products, like “teacher-talk,” is that they usually adhere to Krashen’s “i + 1” principle, keeping as yet unstudied vocabulary and structures to a minimum and consisting principally of modified discourse or short segments of selected authentic language deemed accessible to the learner. Foreign films have also been used, but usually with subtitles. In the late 1980s and the 1990s, as technology improved and became more ubiquitous, language teachers started taking advantage of audio-visual documents for native speakers (radio broadcasts, TV programs, unsubtitled versions of films from the L2 country) and videotaped conversations or interviews with native speakers speaking naturally without adapting their speed or lexicon for the NNS listener. The complexity of this newer type of material made it difficult to implement to its full pedagogical potential at beginning and intermediate levels. Today, the computer, with its capacity to control delivery of input and to provide aid, has solved this problem.

It is important to remember, however, that the computer is not a panacea and that the key to success in teaching listening is to offer students interesting listening material. According to Tomatis (as quoted by Thompson: 1993:143), ‘listening is the active, motivated whole-body tuning in to sounds one wants to hear and tuning out those one does not.’ Usually, students are motivated to listen to teacher-talk in the classroom because of the public venue, the need to get a good grade, the physical presence that, given a dynamic teacher, is almost impossible to tune out, and the adjustment by the teacher of his or her language to the students’ level. Authentic documents do not have the human advantages of teacher-talk, so the teacher must select them and present them with motivation of listening in mind. If adult L2 learners, like children learning their L1, tune out when the language they are listening to is too difficult (Thompson: 1993:153), teachers must make sure to contextualize all authentic documents both linguistically and culturally and to present them to students with tasks that mitigate their difficulty. The capacity to present such tasks is one of the

most important contributions of the computer to improvement of students' listening comprehension.

Writing before the ubiquitousness of digitized sound and video and the advent of the web, Ur (1984:23) criticized 'listening comprehension exercises...based on a text prepared in advance and read aloud by the teacher or on tape' but, at the same time, mentioned the drawbacks of 'recordings of authentic unrehearsed discourse,' principally because of lexical and technical difficulties. Even if she could not anticipate the technological advances, such as multimedia materials available via computer under student control, Ur (1984) gives exactly the reason for having students listen to authentic discourse from the very beginning of their L2 experience in her explanation of difficulties in listening in a second language earlier in her book. She writes that in the beginning learners hear short utterances and have to understand them all and that later they '[find] it very difficult to get used to the idea that [they] can be perfectly competent listener[s] with less than 100 per cent perception and/or understanding of what is said' (14). She says that this has to be overcome (15) and suggests activities to foster this ability, without realizing that all of the activities she proposes can be done just as well with well-chosen authentic documents.

Those who think the purpose of listening is to learn to produce better and more speech usually think, like Ur, that authentic documents are appropriate only when students reach the advanced level. Although teacher talk from a native or near native speaker of the L2 can provide speech models for students to imitate, not only for pronunciation of words and syllables but also with regard to structures and appropriate rejoinders, an individual teacher in a classroom cannot provide the type and quantity of natural, authentic language that students can get from authentic audiovisual documents⁹. In general, even teachers who are native speakers slow their speech rate at least slightly or simplify their vocabulary, rather than speaking completely naturally in the classroom. There are two important aspects of the FL that students usually do not get from teacher talk that are necessary for learning how to listen to natural, authentic L2 speech (Ellis: 1986). First, since teachers try to restrict their vocabulary to words that students have already learned, students are not confronted by the large variety of words in the average native speaker's conversation and, consequently, with the necessity of understanding a message even if one does not know all of the words. Secondly, teacher talk does not usually offer segments of L2 language of sufficient duration to expose learners to its sounds, intonation patterns, and rhythms. While this aspect of natural authentic materials is essential for teaching listening, it also contributes to speaking. In fact, the reason for using authentic recorded material from the very beginning, whether audio or video, is phonological just as much as lexical or grammatical. Hearing is linked to speaking by the "Tomatis effect," that 'the voice can only produce what the ear can hear' (Ellis: 1986:136). Applying this to second language acquisition, we can say that it will be difficult for an L2 learner to speak with appropriate rhythm and intonation without having heard both extensively and that, in the context of a conventional FL course, this hearing experience can be provided only by authentic documents or materials prepared for NSs.

Language teachers now have ready access to authentic CALL materials on CD-ROMs, DVDs, or the web, produced by publishers, educational institutions, radio stations or television channels. In addition, many professors have created their own CALL materials or websites, which they have made available to the public. It would be impossible to give an exhaustive list of FL titles or sources, as websites are continuously appearing and disappearing, and CD-ROMs quickly go out of print or become technically obsolete. Frequent checks of publisher sites plus software reviews in periodicals such as the *CALICO Journal*, *Language Learning and Technology*, and the *Modern Language Journal* will also ensure awareness of the latest materials for CALL listening.¹⁰

Pragmatic considerations will probably determine the format of the materials that individual teachers choose for their classes. If students have easy access to a high-speed Internet connection, a teacher will feel free to use streamed video and other web-delivered audio and video. In other cases, CD-ROMs or materials that can be downloaded to a student's hard disk may be better. The CD-ROM may be preferable, also, because of video quality. The great advantage of the web and individual CD-ROMs is that students can work when and where they prefer. The only caveat here is that the learners must have the appropriate hardware, for the use of audiovisual documents and the web for listening will be effective only if students have access to properly equipped computers. A computer used for listening will need a high-speed processor and as much RAM as possible in addition to a web connection and a browser, both of which will probably be needed in any event for many CALL applications, including a number described in other chapters of this volume. The computer should also have the application required for playing the audiovisual file or files chosen for the activity. Today most well-designed websites will facilitate the free downloading of programs such as *RealOne Player* or *Windows Media Player*, and students need only follow directions to install them, usually not a problem for them (although it may be for their less savvy teachers!). Other software, such as *Quicktime* or *iMovie*, may be needed for playing video on CD-ROMs or DVDs. If songs are used, computers may need to play MP3 files. Most educational institutions now have technical support staff to advise the uninitiated teacher about all of this; this brief paragraph is included here to alert teachers to the preparation they will need to do before incorporating CALL listening into their syllabus. If local help is not available, messages to the mailing lists of associations such as CALICO or LLTI usually elicit answers to neophytes' questions.¹¹ Finally, although students can use their own computers, one advantage of having students do their listening in a Language Resource Center is that the teacher is sure that the materials and hardware are adequate and compatible, and arrangements can be made for a technician to be present to help students with technical problems.

CALL Listening Activities

The one element common to all CALL listening activities is an audio or video component, sent as streaming audio-video from the web, downloaded from the web or a

local server onto the student's hard disk, or copied to the student's hard disk as a file from a CD-ROM, an audio CD, or a DVD. CALL activities are differentiated by:

- The format of the listening document (medium [whether audio or video] and length [from short conversation rejoinders to full-length feature films]);
- The desired input, or information the student has to obtain from the document (specific information, general understanding, or total recall);
- The requested output, or the way the student must respond to the input (in writing, orally, by answering multiple choice questions requiring students to click on a check-box, or non-verbally by clicking on an object on the screen or by dragging an object from one area of the screen to another);
- The reaction to the output (a correct/incorrect message, acceptance or rejection of student output, or progression to another activity depending on student input).

Much CALL listening material found on the web or available from publishers consists of video segments accompanied, unfortunately, by chronologically arranged multiple-choice or fill-in-the-blank questions, thus not taking advantage of the potential of CALL to make the listening experience more interactive. In contrast, the activities presented below are task-based, requiring students to perform actions or provide information, and emphasizing understanding both of key words and of general ideas rather than requesting total recall. There are also examples of listening in a conversational context.

With the exception of free-form answers, another feature of the CALL activities presented below is the immediate feedback which allows students to identify what they have or have not understood. Depending on the way the activity has been programmed, the computer also offers ease of re-listening and identification of misunderstanding that is not possible with other means of input.

The examples of specific activities presented here are grouped according to student output in order to give the reader an idea of the way the computer and the web can be used to offer students effective listening experiences. In each case, in the interest of brevity and also because the point is to show the advantages of the computer for teaching listening, the activity is described without reference to pre- or post-listening/viewing activities.

Group 1—Activities in which students respond by clicking

Activity 1

Students see a telephone (Figure 1) and are told to call a specific number, spoken in double digit numbers as is done in France, rather one digit at a time, as in the United States. The students must then click on the buttons for the right numbers in the right order as if they were actually pushing the buttons with their finger. A student who dials a wrong number will hear a message like the one heard on French phones, saying that the number just dialed is not in service and that the caller should hang up and dial again. This activity, included in the first unit of a first-year French CD-ROM (as

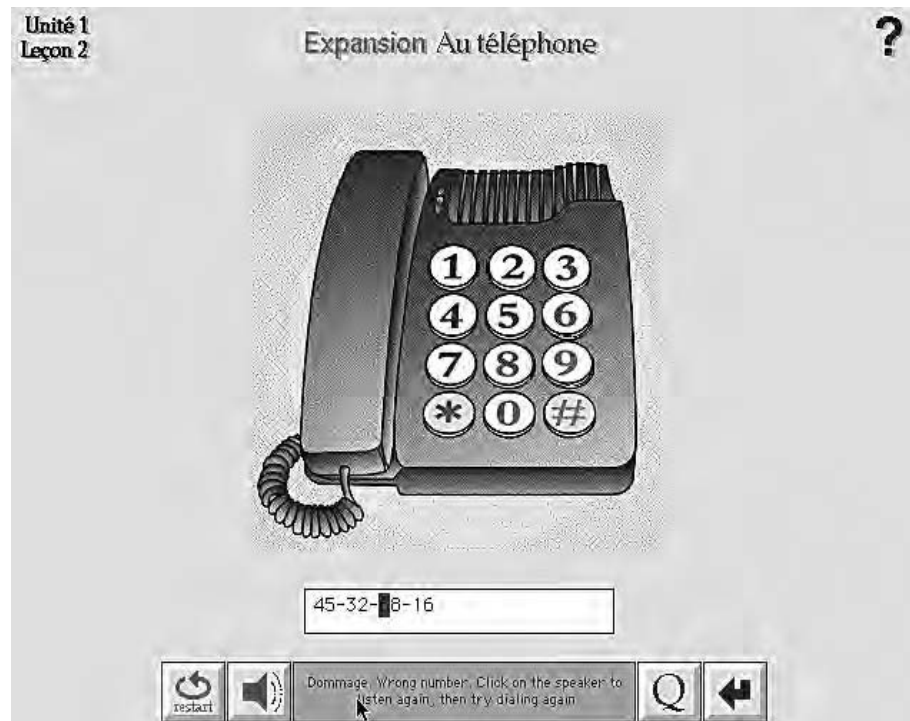


Fig: 1

are the next two below), exposes students to spoken double-digit numbers and to the prosody of a recorded message.¹²

Activity 2

While viewing a video of a French teenager saying what his father likes to do, students click on an illustration of each activity mentioned (Figure 2). This teaches them to listen for key words. They can listen to the video as many times as they wish (and to the other videos that follow) and can respond without either speaking or writing.

Activity 3

A video of a purchase in a pharmacy, about one minute long, is presented in its entirety, with a control bar so students can replay it at will. On the screen they see a list of statements about the video—both true and false—and, based on what they have heard, click on those that are true. Because the statements do not use exactly the same words as in the video, students must go beyond recognition of key words, understanding ideas and processing sentences in a normal manner. The advantage of CALL in this case is the control of replay and the immediate feedback telling students if they have understood. If they have not identified all of the correct statements after checking three times, both unclicked true statements and clicked false statements are itali-



Fig. 2

cized, allowing them to listen again focusing on correcting their misperceptions (Figure 3).

Group 2—Activities in which students respond by dragging an image or text to a new location

Activity 4

An activity for a video segment explaining the multiple relationships in a modern family requires students to understand both a vocabulary word (the family relationship, such as “stepsister” or “brother”) and the name of various family members. Students drag the name of the family member to his or her appropriate place on the family tree. When they succeed they have the satisfaction of seeing the tree completely filled in (Figure 4).

Activity 5

In an activity demonstrating both the interactivity of the computer and its power to present multiple stimuli simultaneously, students see images and text descriptions of places and hear an audio description. Their task is to match these three elements so they all pertain to the same place. They do this by dragging the audio icon, the photo and the text so they are aligned with the corresponding place name at the top of the screen. Here, students have to listen to key words, but at the same time need a gener-



Fig. 3

al understanding of the audio portion which gives information about the significance of each place (Figure 5).

Activity 6

“Jumbled conversations” is an activity that assesses whether students can follow a conversation in which they are not participating, i.e., a transactional-interactive situation. On the screen they see sentence fragments representing the idea and/or key words from each rejoinder, with each speaker indicated by a background of a different color. Their task is to arrange the rejoinders in the correct order, by dragging and dropping each line of text in the appropriate place (Figure 6).

Group 3—Activities in which students respond by speaking or writing

Activity 7

In general, to improve listening comprehension, it is preferable to allow students to concentrate on listening and not ask them to respond by using another skill, such as speaking or writing, which could distract them from their primary purpose. Also, a problem with speaking or writing could make it difficult to know whether an inappropriate response was the result of an error of expression or a lack of comprehension. In reality, however, speaking or writing is the way one demonstrates one's comprehension in real life so, especially at higher levels, it is not only a normal but advis-

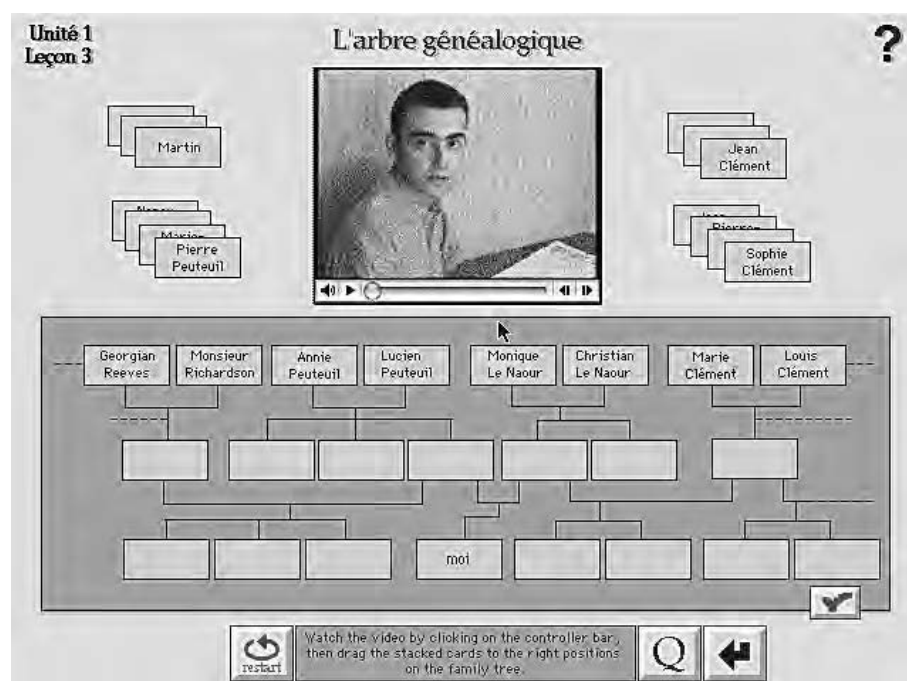


Fig. 4

able task. To offer practice in understanding general ideas, it is useful to request a written or oral summary as in the activity presented in Figure 7, where students see a video interview of a resident of Besançon describing his city and then paraphrase in writing what they have heard.¹³ The advantage of the computer here, as opposed to a VCR and a handwritten summary, is the multiplicity and simultaneity features. Using one device, the computer, the students can control the video and enter their text without juggling the controls of the VCR and writing tools and without being obliged to look at two different screens, first in one direction and then in another. A program under development goes one step further, taking even greater advantage of the possibilities of the computer. A web-based application, it allows students to give their summary orally or visually, using a webcam, with the file sent to a server where the instructor can access it and respond with a voice, video or written assessment.¹⁴

Activity 8

Computer technology provides the opportunity for “virtual conversations.” In an existing CD-ROM and a proposed web application (see note 14), students see a photo of an L2 speaker on the computer screen and click to hear him or her ask a question (or, in the web version, see as well as hear the L2 speaker in a video segment). The student then uses the speaker controls to record an answer. This can be repeated a few times, after which the student can click another button to listen to each of the L2 speaker’s questions followed by each of his or her own answers, thus hearing a vir-



Fig. 5

tual conversation between him or herself and the L2 speaker. The student answers are stored for the instructor who, in addition to assessing structures and vocabulary, will determine the level of listening comprehension based on the appropriateness of the response. This works at the beginning and low-intermediate levels, as the questions will be short and direct, due to the students' limited knowledge of the language, which will result in simple answers and will most probably not change the direction of the conversation. In contrast, at a more advanced level, more varied and individual student responses might make the pre-recorded questions seem illogical.

The most recent technology makes it possible to engage in synchronous oral/aural exchanges over the Internet, meaning that the last activity presented above, the virtual conversation, can be replaced by real communication. A language teacher can bring his or her laptop and webcam to a networked classroom and, providing the appropriate software is available and a networked classroom of NSs can be found, can have the class engage in real communication in the L2. Given enough NSs, students with adequate computer equipment could also communicate individually. Software already in existence or under development (see note 14) allows an audio or video discussion to take place via a single web page, with postings in audio or video rather than text format. Other students, as well as the instructor, can listen to or view what was said, so all comments can be heard and compared. This is another example of an activity which combines listening and speaking. The discussion will be enhanced if the instructor can find a class in an L2 country to participate in such a discussion, thus

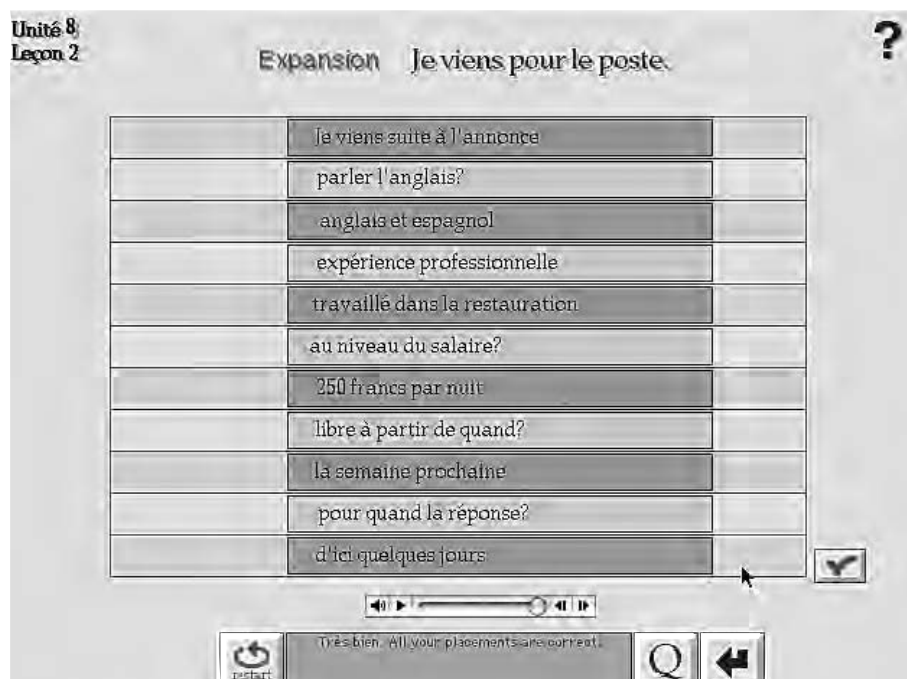


Fig. 6

making it a truly authentic listening experience. The advantage of such a program is that the instructor does not need to know how to design a web page, to understand the details of video format and embedded video players, to manipulate multiple files for a single activity, or to set up drop boxes for receiving student files.

In addition to the activities just described, the web offers teachers and learners a wide assortment of authentic listening materials easily accessible to an extent that no one could have imagined even a few years ago. First and foremost, radio and television broadcasts from all over the world are accessible to anyone with an Internet connection and a recent model computer.¹⁵ A web search (using a search engine such as *Google* [www.google.com]), will produce sites with lists of media.¹⁶ In some cases, such as *Radio France Internationale* (RFI) or the BBC, pedagogical materials accompany the broadcasts. RFI's daily feature, "*Accents d'Europe*," is presented on the BBC website (<http://www.bbc.co.uk/languages/french/news>) with annotations and the entire transcript. Moreover, RFI has other programs, such as "*La Francophonie*," which can be listened to online or downloaded and then adapted for use in a particular course. The BBC has television and radio broadcasts in French, Spanish, German, Italian, Portuguese. On the *TV5 Monde* website, students can listen to or watch a variety of cultural materials, such as music, film clips, television news and weather, to name but a few. In addition to German, *Deutsche Welle* has television in Spanish and a radio program in Portuguese, "*Programa em Português para África*."¹⁷ In Spanish, there is "*Pasajero: [la primera serie de ficción para la red]*," a serialized television



Fig. 7

drama from Argentina. With the exception of RFI, TV5, and the BBC, pedagogical materials are not usually provided so teachers will have to provide their own activities.

Language teachers may want to create their own CALL listening materials, either because they have recorded their own audio or video files, or because they are dissatisfied with the activities accompanying existing audiovisual documents. While this may be challenging, it is not impossible. The first step is to consult the technical services of the school or university in which one is teaching, as they often offer training in the design, creation and management of web pages. In addition, local universities may offer outreach courses about the web specifically designed for foreign language teachers.¹⁸ Using a program like *Dreamweaver*, a teacher can master the creation of activities in which students click or drag based on an audio or video file. At the very least, there are shareware authoring systems, such as *Hot Potatoes*, which allow teachers to add video or audio files to predetermined exercise templates.¹⁹

Conclusion

The premise on which this article is based is that listening should be taught as a distinct skill from the very start of a language-learning experience, both to accustom the students' ears to the sounds and patterns of the FL and to train them to listen for mean-

ing rather than attempting to translate literally into their NL. As the goal is comprehension of the FL as spoken by NSs today, the preferred listening materials, in lieu of communication with real NSs, usually not available or only minimally available to FL learners, are authentic documents. Despite their advantages for fostering the development of aural comprehension ability, the latter present a formidable challenge for language learners because of their lexical and structural complexity, but technology provides the tools to overcome the difficulties that such materials present. When exploited to the fullest by well-designed CALL software, the computer's interactivity, control, capacity for self-assessment, multiplicity and simultaneity offer students exposure to what would otherwise be inaccessible material. Above all, the delivery of sound and video, via CD-ROM, DVD or the Internet, plus the possibility of live communication via webcams, means that anyone, anywhere, can have the same contact with natural, authentic language as a resident of a country in which the FL is spoken on a daily basis. There is no doubt that this is something that could not be done before the advent of technology, suggesting, if not proving, that language learning with regard to listening is done more effectively with computers than without.

Notes

- 1 "Teacher talk" (or "foreigner talk") is, like "motherese," the slower, more articulated, simpler form of the foreign language that teachers use with students, which is not the way they would normally speak. See Ellis (1986:129–138) and Snow (1976).
- 2 Authentic language is any language used by native speakers; natural language is spoken in conversation and everyday situations.
- 3 In addition to Romance languages and English, the theory and examples presented here should be valid for all other languages. It is possible, however, that some aspects of this chapter may not apply to languages with non-Roman alphabets or with structures significantly different from those of the student's native language.
- 4 As will be shown here, listening comprehension depends to a great extent on recognition of sounds and on background knowledge. Consequently, a mature adult with international experience learning L3, will already have developed strategies for listening to non-familiar language and therefore his or her listening skills may not be that different in L1, L2, and so on.
- 5 This does not exclude the use of specifically prepared audiovisual materials; authentic materials are essential but not exclusive.
- 6 This may actually cause problems. In our native language we can think we know what a person is going to say and thus "tune out" and hear a message which differs dramatically from what was intended.
- 7 The translation for *clou* is "nail," which is not the word used in the English expression.
- 8 While such control could be built into computer-linked laser disc applications, it still did not have the automatic control feature available on all computer-delivered audio and video, at the discretion of the instructor/author. This control capacity is less effective with streaming video than with independent digitized sound or video files.
- 9 It should be emphasized that the discussion here is about listening skills. The author considers classroom teacher-talk and specifically prepared audiovisual materials appropriate for the teaching of speaking but not the most effective support for listening instruction.
- 10 Information about the *CALICO Journal* can be found at <http://calico.org/calicopubs.html> CALICO also has a software review site: http://calico.org/CALICO_Review/index.htm

Language Learning and Technology is an online journal: <http://llt.msu.edu/>. The *Modern Language Journal* website (<http://polyglot.lss.wisc.edu/mlj/index.swf.html>) has an index of all articles published between 1916 and 2002, plus the table of contents of the last three issue-years along with article abstracts.

- 11 The mailing list archives and information about subscribing are accessible as follows: LLTI (Language Learning and Technology International Information Forum) <http://listserv.dartmouth.edu/archives/llti.html>; CALICO <http://listserv.modlang.swt.edu/archives/calico-members.html>
- 12 These activities come from the CD-ROM for *Portes ouvertes* (Haggstrom, Frommer, Jones, Bunting, & Patenotte, Holt Rinehart 1998). Programmed in *Macromind Director*, technologically they could all be web compatible. Although all of the examples are in French, they could be done in any language.
- 13 As the activity was originally on a CD-ROM, students had the option of printing their summary or saving it to a file. The same activity could be available on the web, with the option of sending the summary by email to themselves or their teacher. Another option would be to send it to a web page listing all student summaries so the class could compare different points of view.
- 14 *WebSpeak*, an authoring system under development, uses the Macromedia Flash Communication Server MX to develop web-based oral and video communication activities. In addition to the activity already described, *WebSpeak* supports the virtual conversations and synchronous oral/aural exchanges explained later in the main text. *WebSpeak* is being developed by Judith Frommer, D. Bradford Marshall, Karen Chemel, and Joaquín Terrones with funds from The Consortium for Language Teaching and Learning and the Harvard University Provost's Fund for Instructional Technology. Instructors can also use commercial systems such as *Wimba* and *Divace* to provide listening practice and testing opportunities for students.
- 15 In 2004, computers selling for under \$1,000 have a fast enough processor and enough RAM to handle audio and video materials.
- 16 Some such sites, as of March 2004, are: Radio-Locator (<http://www.radio-locator.com/>) which claims to have 'links to over 10,000 radio station web pages and over 2500 audio streams from radio stations in the U.S. and around the world;' Watch Television Online (http://www.enteleky.com/compclub/world_tv.html); or Watch-Internet-Television, which claims to have 682 foreign language TV channels in its database (<http://tv4all.com/portal.htm>). Another site is <http://www.satlogo.com/tvcountry/tvcountry1.html>. However, as sites are continually appearing and disappearing from the web, teachers seeking sources of authentic audio-video will have to learn to identify and test sites before each semester.
- 17 The URLs, as of March 2004, are as follows: RFI <http://www.rfi.fr>; <http://www.funambule.org>; BBC <http://www.bbc.co.uk/education/languages/>; *Pasajero* <http://www.pasajero10542.com.ar>; *Deutsche Welle*, Spanish (*Europa se abre & Europa semanal*) <http://www.dw-world.de/spanish/0,3367,7454-184711-262016,00.html>
- 18 One such course, "Using the Web in World Language Teaching," has been offered by the Harvard University Extension since the fall of 2001.
- 19 *Hot Potatoes*, produced and maintained at the University of Victoria, can be downloaded from <http://www.halfbakedsoftware.com/index.htm?hotpot/licence.htm>

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6

Using the Web to Develop Students' In-Depth Understanding of Foreign Cultural Attitudes and Values

Sabine Levet and Shoggy Waryn

Introduction

Most language teachers also teach culture. If we define culture as attitudes, values, ways of thinking, interacting, relating to others, and looking at the world, i.e., what the anthropologist Edward Hall (1981) calls 'the silent language,' our task is very complex. How can one teach culture? What do we teach, when we teach culture? Could anyone ever know all there is to know about a culture, and is it necessary to know everything in order to teach culture? What culture does one teach? Such are questions which teachers of language and culture ask themselves. As Wright (2003) points out, mastering a language does not by itself necessarily predict 'cross-cultural adaptability.' If we want to teach language and culture and access layers of culture which are particularly difficult to access, we need the right tools.

What we will present here, with *Cultura*, is a mode of learning about another culture which is not based upon being "taught" what the other culture is and which does not reduce culture to a series of facts. *Cultura* was initially developed at the Massachusetts Institute of Technology (MIT), in the Foreign Languages and Literatures Department, under the direction of Gilberte Furstenberg, Shoggy Waryn and Sabine Levet, and funded by the National Endowment for the Humanities and the Consortium for Language Teaching and Learning. It is predicated upon an interactive pro-

cess in which students of different cultures interact online in a collective and reciprocal construction of the culture of the other. It makes full use of the inherent ability of the World Wide Web to bring together a multiplicity of documents, and to enable communication. It involves interactions with multiple materials and multiple partners—teachers, and other students. This multiplicity of voices is meant to lead users, under the guidance of a teacher, to gradually construct and refine their own understanding of the other culture, in a continuous process.

We will first briefly review the characteristics of the web, and its uses in the language class. We will then look at the context within which *Cultura* is used, the approach, classroom applications, and see how it can be adapted to different contexts. Since the authors are now teaching at Brown and Brandeis University, many examples are taken from the Brown and Brandeis fall 2002 exchanges with *Institut National des Télécommunications* in Evry, France. Recent exchanges between MIT and *Université de Paris II—Panthéon—Assas* students are posted on the *Cultura* website, in the updated *Cultura* archives.

The characteristics of the web make it a powerful tool in the language class. They are, namely: the availability of authentic material; its multimedia capabilities; its hypermedia structure; its communication ability (Chun & Plass: 2000:161; see also Brandl: 2002). The web gives access to what seems to be an infinite source of information: teachers and students alike can browse through a wide variety of websites in the target language meant for users in the target culture, where images, video, and audio documents accompany the written text. The hypermedia structure of the web makes possible a nonlinear and dynamic reading of the information: it can be reorganized, new associations between separate elements can be discovered and established. A student who reads an article in a newspaper online, can access videos to illustrate a current piece of news, see relevant images organized in photo galleries, hear audio comments, easily find related articles, and search archives.

The capabilities described above are not unique to the web. CD-ROMs also offer multimedia resources in a hypermedia structure. What sets the web apart is its communicative capabilities: through networking, teachers and students can engage in synchronous and asynchronous communication. It can take many forms: MOOs, where individual users participate in one shared imaginary world, chat rooms, where users communicate in real time, or newsgroups and discussion forums, where each participant's asynchronous contributions around a specific topic are posted and saved for every participant to read.

In the light of the many possibilities offered by the web and the Internet, we should pause a moment and ask how it can help us to do better what we do. As Dunkel (1991) warns, we need to dismiss the myth that 'the medium of the computer, in and of itself, could effect wondrous learning' (6) and eschew the practice of attempting to 'attribute learning gains to the medium itself rather than to the way in which the medium is utilized and manipulated' (22). Simply using the web will not magically enable us to meet our curricular goal. With *Cultura* the web facilitates a constructivist approach to learning about another culture. The asynchronous forums which the web provides are central to the collaborative process, but as we will see later, it is what

happens in the classroom between students and with the instructor which enables the constructivist teaching strategy to bear fruit.

The Context Within Which *Cultura* is Used

Practically, *Cultura* brings together two groups of students from two different countries who study in similar school settings (two high schools, two universities, etc.). They compare similar materials presented to them on the web and exchange viewpoints and perspectives on all those materials via an online forum. Since 1997 *Cultura* has brought together students in intermediate French classes at MIT and French students taking an English class at *Ecole Supérieure d'Aéronautique de Toulouse* (1997–1998), *Institut National des Télécommunications* (1998–2001) and *Université de Paris II—Panthéon—Assas* (since 2002). *Cultura* has been used in French at Brown University and Brandeis University (Fall 2002) in partnership with *Institut National des Télécommunications* (INT), and in Spanish and Russian at Brown (Spring 2003). So far in French it has involved approximately 400 students. There is an ongoing experiment in German at Berkeley and in Italian at the University of Pennsylvania. A high school experiment was done in the Fall 1999, between a French and an American high school, and a French class at a high school in Michigan has been adapting it for the past two years. Different smaller scale adaptations are being used at other institutions.

An Overview of the *Cultura* Website¹

Content

The curve on *Cultura*'s homepage (Figure 1) reflects a gradual process which unfolds over the course of a semester. American and French students first answer similar questionnaires, and the answers are posted side-by-side on the web. Students then analyze the collated answers individually outside of class, compare their findings in groups in class, and engage in discussions with their counterparts in web-based forums. Later they explore surveys and opinion polls (Data), films, newspapers (Newsstand), and a variety of literary, historical and sociological texts (Library); they can also consult the archives of *Cultura*, where they will find the questionnaires, answers, and forums from all past semesters. The central position of the "Forums" on the homepage graphically illustrates the central role of the forums in the learning process. As learners become familiar with progressively more complex artifacts, they are urged to broaden the scope of their inquiries as they involve themselves in a variety of discussion forums which correspond to the changing perspective of the questions being asked. To illustrate in greater detail the different stages of this process, we will look more closely at each of the elements within the website.

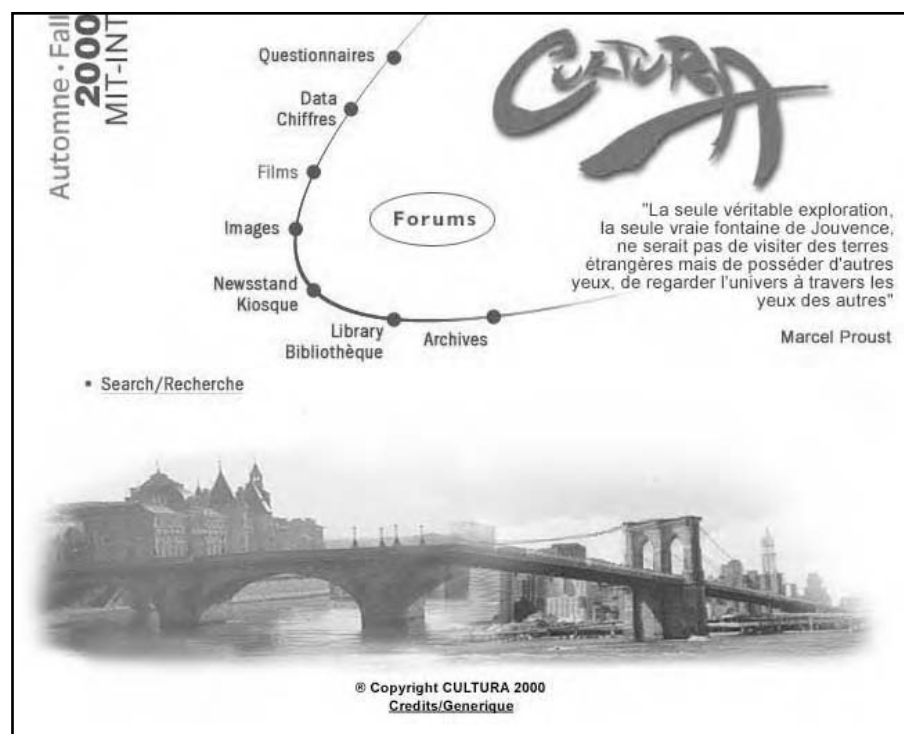


Fig. 1: The homepage of the *Cultura* website

Stage 1: Questionnaires

In the first stage, students respond anonymously in their native language to a series of identical questionnaires on the web. This allows for all cultural nuances to be fully expressed. The answers are then sorted, alphabetized and posted on the Internet. The three types of questionnaires are: a word association; sentence completion; and situations.

For the first questionnaire (Figure 2), students are asked what words they would associate with selected words. For the second questionnaire (Figure 3), students are given sentences to complete. For the third questionnaire (Figure 4), students have to say how they would react in various hypothetical situations. The initial idea of working with questionnaires stemmed from the questionnaire-based surveys used by anthropologists and sociologists. While we were and remain language teachers, and not social scientists, we recognized the potential of such questionnaires to generate a wealth of raw material for further analysis. The word-association, sentence-completion, and situation questionnaires were straightforward and very easy to understand. They never needed to be elucidated by the instructor, which was a definite advantage. Any elucidation would have carried the risk of influencing the students' answers.

The choice of the specific words, sentences and situations used in the questionnaires was established over time using a variety of sources. Some of the questions

Word associations

Instructions:

What other words do you associate with the following ones? For each word, write the first two or three free associations that come to you mind (they can be nouns, verbs, adjectives, etc.) Please separate the words by commas. If you can, try to answer the three questionnaires in one session. Do not submit partial questionnaires or resubmit the same one twice.

(NOTE: The answers to the above surveys will remain strictly anonymous.)

WORD	ASSOCIATED WORDS
School	
Police	
Money	
Neighbors	
United States	
Family	
Elite	
Responsibility	
Individualism	
Freedom	
Community	
Success	
Power	
France	
Authority	
Public Places	
Suburbs	
Work	

Fig. 2: Word association questionnaire

Sentence Completions

Instructions:

Please finish the following sentences. You may write two or three examples for each sentence if you wish, but separate them with commas.

- A good neighbor is someone who...

- A true friend is someone...

- A good parent is someone...

- A good citizen is someone...

- A good student is someone...

- A good policeman/policewoman is someone...

- A well-behaved child is someone...

- A rude person is someone...

- A good job is a job....

- A fun party is a party where...

- My greatest fears are...

- The most significant events of my life have been...

Fig. 3: Sentence completion questionnaire

Situation Reactions

Instructions:
Please respond to the following hypothetical situations, saying how you would react. State the first thing you would think/feel or do.

- You are walking down the street (in a big city). A stranger (of the opposite sex) approaches you with a big smile.

- You meet one of your neighbors on the street. He/she does not say hello

- One of your guests (the friend of a friend) goes and helps himself/herself in your fridge without asking for your permission

- You see a mother in a supermarket slap her child

- You are sitting at a table, in the non-smoking section of your favorite bar/café/ restaurant, and someone sitting at the next table lights up a cigarette

- You see a student next to you cheating on an exam

- You believe that your teacher did not give the grade you deserved on your final exam

- You are at the movies. The people sitting right behind you make loud comments about the film

- You have been waiting in line for ten minutes. Someone cuts the line in front of you.

- Your parents criticize you in front of your friends

Fig. 4: Reactions to hypothetical situation

came to the minds of the authors and their partners in France, and colleagues in the field on both sides of the Atlantic suggested other potential areas of exploration. Still other items were inspired by the InterCultural Press publications (<http://intercultural-press.com>). It is worth noting that the three MIT authors are all French natives living in the United States, whereas their partners in France were American-born instructors living in France. The specific mix of national and cultural backgrounds helped maintain a balance between French and American perspective.

We made certain that the questionnaires cover a variety of topics and that each layer of questions (words, sentences and situations) picks up some of the same themes and key words. Many describe interactions between people (parents, friends, family) and explore different spaces (public or private). For example, the word “Neighbor,” reappears as “What is a good neighbor?” in the section on sentences, and as “You meet one of your neighbors in the street” in the reactions to situations.

Since the words which constitute the basis of the *Cultura* questionnaires are put side-by-side in two languages, we had to pay special attention to how the words and

expressions we gave our students to compare translate into the other language. For instance, the French expression “*un enfant bien-élevé*” is not a direct translation of “a well-behaved child,” but the French will commonly use the expression “*un enfant bien-élevé*” rather than “*un enfant qui se tient bien*.” Similarly, an American would not commonly use the expression “a well raised child” but would rather say “a well behaved child”. Our choice was determined by common usage in each language, the task of our students being precisely to reflect on how the words we commonly use express our culture.

There might not exist a perfect choice of words. The very issue of translation and adaptation is at the heart of cross-cultural communication. The list changes occasionally, with some items eliminated over time, and others added. A close look at the archives found on *Cultura* website reveals such variations. *Cultura* is a methodology, a tool that instructors need to adapt to their specific needs.

Stage 2: Observations

The combined responses to each question appear on the Website side-by-side (Figure 5), the bilingual display of information facilitating the comparison between the answers. The task of both sets of students is to analyze—first individually, then collectively in their respective classes—the various responses. Individually, they look at the American and French answers, and compare them. More specifically, they count and circle words, find what words are used most often on each side, what words appear on one side only. They regroup words, see if they have a rather positive, neutral, negative connotation. They write down their observations and comments, ask questions, and make hypothesis (see Appendix 2 for a homework assignment and worksheet). This is done in L1 which gives students an occasion to research and practice the vocabulary they will need for the class discussions which are directly based on these observations. On their worksheets students note, for instance:

- How the same word can carry positive or negative connotations in two different cultures, as shown below in the associations to the word “individualism /*individualisme*.”

Students discover that the word “individualism” is associated on the American side with very positive notions such as personal freedom, creativity, and self-expression, while on the French side the word often connotes notion of selfishness and solitude.

- How associations are fully anchored in their respective cultures`.

For instance, “SUVs” and “sprawl” can come next to “lawn,” for “suburb/*banlieue*” on the American side, where the French will mention “*hlm*” (low cost housing) (Brandeis/INT, Fall 2002). The French will associate “*35 heures*” (“35 hours,” which is the maximum working time per week) with “work/*travail*”, “*classe préparatoire*” (preparatory class) with “elite/*élite*.” Americans will associate “911” with “police,” where the French will mention “17” (which will prompt later a French student to explain that in France 911 is 17).

individualism	individualisme
capitalism, freedom	<i>autisme, refus</i>
countryside, United States	<i>besoin</i>
creativity	<i>croissant, pervers</i>
creativity	<i>croissant, alarmant</i>
easy, boring, satisfactory	<i>égoïsme</i>
egotism, self-centeredness, risk	<i>égoïsme, intérêt personnel</i>
Faulkner, Pollock, Warhol, Degas, Matisse, Godard	<i>égoïsme, pouvoir personnel</i>
freedom, ambition, aspiration	<i>égoïsme, personnel</i>
freedom, creativity	<i>enfermement</i>
freedom, expression, art	<i>États-Unis, travail</i>
freedom, isolation	<i>honteux, égocentrisme, non-adaptation</i>
freedom, rights	<i>indépendance, solitude, asocial</i>
freedom, unique, happy	<i>indépendant, autonome, vivant</i>
freedom, uniqueness	<i>isolement, enfermement</i>
good, unique, liked	<i>liberté, indépendance, solitude</i>
important, priority, expression	<i>liberté, égoïsme</i>
leadership, confidence	<i>négatif, égoïste</i>
lonely, work	<i>occidentalisme, ennui, se faire chier</i>
myself	<i>partie de notre civilization</i>
non-conformist, art	<i>problème, inéluctable</i>
progress democracy	<i>sans avenir, peu épanouissant</i>
respect	<i>solitude, indépendance</i>
self expression, independence	<i>totalitarisme, égoïsme, liberté</i>
selfish, freedom	<i>triste, capitalisme</i>
selfish, peace, will	<i>xxième siècle, augmentation</i>
selfishness, self-assurance.	<i>à rejeter</i>
sometimes boring, sometimes necessary	<i>égocentrisme, exclusion,</i>
space, identity, expression	<i>égoïsme, anti-conformisme</i>
thought, hard	<i>égoïsme, recherche de protection</i>
unique, doing your own thing no matter what	<i>égoïsme, égo démesuré</i>
the consequences, free thinker	<i>éviter</i>
United States, globalization, selfish	
USA, selfishness, money	

Fig. 5: MIT-INT, Fall 2001: Answers to the questionnaires

- How certain associations will be pre-eminent in one culture but almost non-existent in the other.

On the American side, a good student is one who “works hard,” but to the French, a “good student” is above all someone who knows both how to study well and have fun (“*faire la fête*”). (Brandeis/INT, Fall 2002) Looking at the answers to “authority,” students discover that it is often associated on the American side with “government,” whereas on the French side it is also associated with “parents” (*autorité parentale*). “Neighbors” often brings up the term “*bruyant*” (noisy) on the French side, but “friends” on the American side.

- how the ranges and degrees of reactions to a same phenomenon may vary from one culture to the other.

In the hypothetical situation, where a person lights up a cigarette in the non-smoking area of a restaurant, both American and French students say they would be upset, but differences emerge in the way they would deal with the situation: some American students would address the person directly, many would choose to “speak to the waitress,” whereas the French more likely will address the person directly and never mention talking to the waitress. (MIT/INT, Fall 2001)

Stage 3: Exchanges and forums

Taking their cues from a word, a sentence or a situation, the students then communicate their reactions and observations to their counterparts in an open forum accessible to all participants (the teachers read and follow the forums but in no way intervene). This asynchronous communication takes place outside of class and in the students’ mother tongue (L1) to maintain the cultural and linguistic richness of the exchange. Because the communication is asynchronous, students have time to read other people’s postings thoroughly before they post their own comments. The postings are not anonymous, which enables students to react personally to one another’s comments, and engage other students directly.

At this stage, each posting is always connected to the answers to the questionnaires: there is a forum for each of the words, sentences, and situations proposed in the questionnaire. Later, when other documents are introduced to expand the scope of enquiry (as we will see with Stage 4), new forums are added, each connected to the new documents: there is for instance a data forum, where students discuss surveys and opinion polls, a film forum, where they post their comments about the films they compare, and a library forum. Because of the flexibility of this tool, we have occasionally created forums where students can focus on specific events. For instance, in the fall 2001, we opened a forum entitled “Events of September 11.”

It is important to note that participation in these forums is an integral part of the course, even though it takes place outside of class. A typical assignment will ask students to go to the forums corresponding to the questionnaires they have analyzed, post comments for each corresponding word, phrase or situation, follow their comments with questions, check their counterparts postings, react to their comments, answer their questions, print the comments they find most relevant, and be ready to comment on them in class (see Appendix 3). The task is very detailed, and gives students both a clear view of the process, and a specific time frame for participating in the forums. It ensures that exchanges are focused, students are engaged, and collaboratively progress towards the goal of cross-cultural understanding.

Here are a few examples of how student work together on the forums:

- Students formulate hypotheses based upon the observations they made either alone or in group following class discussions.

In the forum about “A good job,” a student says: ‘It seems that the French responses focused a lot more on a job being interesting while the Americans focused on a job making us happy. Is this an example of an intellectual/ emotional divide between the two countries? Do the French care more about intellectual stimulation?’ (Sophia G. I., Brandeis, Fall 2002)

- They ask questions directly of their counterpart to clarify a point or explore a certain topic in greater depth.

In the forum about “suburbs,” a student asks: ‘What does the word *dortoir* mean when used to describe the suburbs?’ (Elisabeth T., Brandeis, Fall 2002)

In the forum about “Your parents criticize you in front of your friends,” another one asks: ‘In general, French seem to use sarcasm and irony much more than Americans to get their points across. Why is irony “so French”?’ (Rokhaya A. D., Brandeis, Fall 2002)

- They answer specific questions from the other group (the examples here are direct answers to the two questions above).

Answering the question about *dortoirs*, a French student says: ‘*En France les banlieues ont la connotation de ne servir que de dortoir, d’endroit où l’on rentre pour dormir*’ (In France, the suburbs are seen as being used only as a dormitory, a place where one goes back to sleep). (Vincent P., INT, Fall 2002, suburbs/*banlieue*) Answering the question about “irony,” the same student states that: ‘*L’ironie est importante en France car savoir bien utiliser l’ironie nécessite de savoir bien maîtriser la langue française. Et la maîtrise du français et de l’ironie est une preuve d’esprit. Or comme on l’a déjà dit les Français donnent une grande importance à l’esprit (dans le sens de l’intellect). Se défendre avec l’ironie c’est donc se défendre avec preuve d’esprit et donc noblement*’ (Irony is important in France, because being able to use irony well implies that you can master the French language well. And the mastery of the French language and of irony gives a great importance to the mind (in the intellectual sense). To defend oneself with irony is thus to defend oneself and show one’s wit and is therefore noble). (Vincent P., INT, Fall 2002, “Your parents criticize you in front of your friends”)

Stage 4: Broadening the fields of exploration and the analysis

In this next stage, students are invited to analyze an ever-increasing variety of documents relating to both cultures, organized around “modules” of activities. These documents, which allow them to broaden the scope of their investigation, can be found directly on the web (official and governmental websites that have been selected by the teachers, selections of texts that have been posted, copyright permitting), or are seen or read in class. Materials include, for instance:

- a large variety of statistics, opinions polls and surveys, which students can search online through the websites of organizations such as Gallup or *Institut Français*

d'Opinion Publique, allowing students to anchor their initial remarks in a larger socio-cultural context, and to ground their observations with more objective data.

Students will check on practical data often stemming from the discussions they have with their counterparts: for instance they will check the percentage of smokers, the rate of unemployment, the rate of divorce, attitude towards work or religion. Since the polls and surveys websites offer both the most current data and archives for research, the constant evolution in mentalities can be taken into account, for instance when checking how the answers to the same set of questions have changed over a period of time.

- the analysis of French films and their American remakes (viewed in class).
The comparative analysis of such films allows some cultural traits and themes to emerge once the purely Hollywood aspects have been taken into account and set aside. These cultural aspects may refer back to some of the earlier discussions (on the questionnaires and the forums) and may serve to reinforce or contradict some of the earlier observations. This module, while extremely useful in a French/United States experiment might be more difficult to apply in other cultural contexts since fewer films were adapted/adopted by Hollywood from other cultures.
- links to various newspapers and broadcast websites featuring press articles and headlines from websites of various newspapers.
Students can test their newfound understanding of the foreign culture by reading and comparing L1 and L2 press accounts of the same event.
- passages from cross-cultural literature (not available on the web) read in class.
For example, students who read passages from *Les Français* (Wylie & Brière: 2001), revisit concepts they have met in their discussions about “individualism,” or “elite,” or the attitudes of the French regarding “family,” “work,” and “leisure.” These readings, which are done towards the end of the semester rather than at the beginning, put the students’ observations in a larger context (as seen by experts) all the while confirming the validity of their own observations. At this point in the process our students have too, in a way, become “experts,” and have acquired important skills for cross-cultural understanding: the ability to observe, make hypotheses, ask questions, revise their hypotheses, enlarge their field of observation, be ready to draw new connections between separate elements and take into account new information as it comes their way.
- a complete archive of all the past answers to the questionnaires and forums of *Cultura*, allowing students to compare their own answers and remarks with those of previous groups and different schools.
They can look at one notion and see if the answers have evolved, see if the connections they have made between different concepts are confirmed or not, if their own observations fit in the overall cultural pattern. These documents are particularly useful when students are working on a specific research topic for a final paper. Content pages from the *Cultura* archives have also been integrated in upper-level culture courses created around the

materials generated by the live experiment at MIT, Brandeis and Brown. Answers to the questionnaires have also been used as authentic materials in lower-level French courses, in particular in connection with family (good parent, well-behaved child), and space (suburbs, neighbors).

The Pedagogical Approach

Preliminary tasks

Now that we have described the tools made available on the web with *Cultura*, it is important to note that the very preliminary work on cross-cultural awareness begins in groups in the classroom before students communicate with their partners, without a computer and without access to the *Cultura* website. This preliminary work takes place immediately after the students have answered the questionnaires on the web. This series of activities aims at sensitizing students to the nature of cross-cultural encounter, and begins with *Barnga*, a card game simulation. By giving different groups of students different sets of instructions (without their knowing) on how to play a game of cards, *Barnga* illustrates what happens when one encounters a different culture (multilingual instructions sheets in English, French and Spanish can be purchased at <http://interculturalpress.com/>). Another preliminary activity in class with the entire group presents students with a series of facts about the other country, such as 'The French are the biggest consumers of medicine in the world,' and asks them to try and explain these facts. Students are not expected here to do any outside research. They come up with explanations on their own and base their answers upon their current knowledge of the culture. This pre-activity shows students that there might be complex explanations to a simple statement and aims at making them aware of their own cultural assumptions. It also trains them to come up with hypotheses in a free format and express opinions, skills that *Cultura* discussions will use fully. Additional preliminary activities can be found in the *Cultura* Teacher's Guide, at <http://web.mit.edu/french/culturaNEH>.

Working with documents on *Cultura*

How do students work, once the *Cultura* documents are brought in? Outside of class they work individually on the computer and write in their native language; in the classroom they work in group, without a computer (one workstation to check quotes is all that is needed), and in the target language. As they read authentic materials generated by their partners in the target language and try to make sense of what their partners are saying, both linguistically and culturally, their intensive reading activity progressively gets them acquainted with the vocabulary they will use in the discussions in class. They acquire a rich and current vocabulary, making lists of useful words they have just discovered. They also become aware of the different styles in which ideas are expressed: the use of objective versus subjective statements, for instance, or the use of abstract notions versus concrete notions, or the use of slang.

Work in the classroom

The classroom is the place where ideas and findings, are brought together, confronted and discussed in L2. In order to prepare for class students have to analyze a certain type of documents, but the specific choice of documents is left to them: instead of asking students to read all the answers or the forums for the same words, we ask them to check and analyze the answers to three words of their choice. When the students come to class, even though they have all worked on the same type of documents (word questionnaires, for instance) they have not necessarily all worked on the same specific words. The task in class will focus on enriching ones own observations with those of other students and finding connections or contradictions between the different concepts which the group has begun to explore and uncover.

As students discuss their findings in small groups, and put their group's observations on the blackboard, the classroom mirrors in a way what happens on the web. The fact that each interpretation appears side-by-side on the board tends to bring out unexpected relationships between the words. The associations to the word "police" might lead to the word "authority," which might in turn be related to "freedom," "individualism," and "a good parent". The multiplicity of entries into the documents ensures that many different paths can be explored according to each group's particular interests and focus. Each contribution by any member of the group thus has the potential to give the discussion a different orientation in a collaborative construction from individual to group and is, therefore, unique and essential. Classroom discussions (invariably) lead students to deeper awareness of their own diverse cultural assumptions and use of language.

In some instances, students prepare a specific topic analysis to launch the classroom discussions. For example, students (Brown, Fall 2002) noticed that the French and the Americans had very different notions regarding "suburbs", and "neighbors." One group decided to investigate further, researching the websites found in the Data/Survey module and finding data on housing distribution, the cost of housing in relation to income, and average housing density to confirm the group's initial findings based on questionnaires and the forums.

The role of the teacher in the classroom is crucial: making sure that students are given clear instructions to do their research before coming to class; dividing the classroom into small groups (there can be, for instance, groups of people who have all analyzed the same words, or groups where no two people have analyzed the same words) to discuss their findings; ensuring that the discussions are always grounded in the topics under examination by asking students to always support their analysis and hypothesis with direct quotes and examples taken from the materials they are discussing; encouraging them to record their observations on the board, look at what others have written, ask one another questions, find connections or contradictions between different items posted by the different groups on the board; warranting therefore multiple interactions between the students within the classroom. Here the teacher does not come up with answers but encourages students to investigate, to ask questions and to construct hypotheses, to develop an argument and to base each argument on a set of observations. Frequently, during the course of a class discussion, students will seek a

primary document to support their point. They will first make assumptions on what this document—an answer to one of the three questionnaires, a remark made on a forum, a survey found on a poll site—might reveal, verify their hypothesis, and revise or confirm their analysis.

Assignments and grading

Because of a combination of work outside the classroom and the many discussions in class and on the forum, no two students take the same road. For that reason they have to record their itinerary in a *carnet de bord* (see Appendix 4). In the *carnet de bord* they record the most interesting points of the in-class discussions; list the questions they have asked themselves, in class and in the forums; paste in answers they have received to their questions; note the most interesting points made on the forums, or the most confusing ones; and put contradictions side-by-side for comparison. A complete *carnet de bord* reflects both the itinerary of the individual student but also his or her whole process of reflection and analysis.

We also ask our students to write essays in which they are to construct relations between different notions, always basing their analysis on specific examples taken from the questionnaires, the forums, or the class discussions. They can incorporate materials from their *carnet de bord*, quotes taken from the discussions on the web or in the classroom, citations from readings but the emphasis is on the personal nature of the experiment.

At the end of the semester students work on a final project, for which they compare different sets of corresponding American and French documents, such as: a television newscast, advertising, newspapers, forums and chats, or French and American websites for the same international company.

All the documents mentioned above—*carnet de bord*, essays, final project—are also used to evaluate students. They are all written in L2, and should reflect both the depth of analysis and the mastery of the language. Since students are requested to provide direct quotes from the questionnaires, forums, in-class discussions and articles in their written work, their keeping up with the material and reading the postings on the forums is assured.

Students' active participation in the forums (written in L1) is also evaluated, but indirectly. The discussions on the forums are central to *Cultura*, and participation is part of the daily assignment. Even though, as mentioned earlier, instructors do not intervene in the forums at all, the frequency of each student's postings can be monitored, and students can be reminded individually if necessary of this important aspect of their work. Some course management systems make tracking students very easy, and enable the instructor to monitor for instance what parts of the site have been visited by each student, in what order, and how much time was spent at each stage. This information could be very valuable for researchers interested in evaluating students' use of *Cultura*.

Measuring the effectiveness of *Cultura*

Students' reaction to the *Cultura* program shows in their end-of-semester essay, where they often reflect on what they have learned, and in end-of-semester questionnaires, where they rank the different modules (Questionnaires, Data, Films, Newsstand, Library) and the other components (responses to the questionnaires, forums, class discussions, *carnet de bord*, essay, projects) for their usefulness.

As one student noted in her essay, she realized that 'it is impossible to conduct a cultural analysis without first doing an analysis of oneself' (Rebecca, Brown, Fall 2002). Another student noted that at first 'I doubted I could discover something as abstract as a foreign culture' (Maria Elena, Brown, Fall 2002), but she realized quickly that she asked—and found answers to—increasingly sophisticated and complex questions. Students moved from very narrow-focused questions requesting practical information or clarifications to larger analytical interrogations on the nature of culture.

Even though a large scale analysis of the evaluations remains to be done (and should be done ideally by researchers other than the authors), it appears that the students 'acquired a method for understanding a foreign culture which is what we as teachers would hope to be the pedagogical aspect of *Cultura*' (Furstenberg *et al.*, 2001; see specifically the assessment section, 94–96).

The Five Guiding Principles

Over time and after several years of experimenting with *Cultura* in various settings, we have identified five pedagogical principles which can make *Cultura* a success in and out of the classroom. An additional discussion of the pedagogical guidelines in the teacher's guide can be found at <http://web.mit.edu/french/culturaNEH>.

Principle 1

The partner schools need to be similar both in terms of level, age group and focus. A high school should work with another high school; college students need to work with students who are at approximately the same level of studies. Partners working with *Cultura* are always different from one another, since they represent two different cultures. In order for the process of juxtaposition and comparison to bear fruit within the course of a semester, it is necessary to limit the number of variables involved in the exchange. This being said, the methodology used with *Cultura* might very well be applied to reveal subcultures within a larger culture, in which case two age groups within the same culture could work together, to compare their attitudes and values.

Principle 2

The language used on the forums (and on the web in general) has to be the native language of the students (or to be more specific, the language spoken in the country where students live). It creates necessary parity between the users and generates the raw material which will become the subject of analysis. The language used outside

the web-based forum discussions (namely during class-time, for papers, conversation sessions with teaching assistants, etc.) is the target language.

Principle 3

The conversations on the forums are always asynchronous. This allows time for reflection and analysis. Instructors do not intervene in the forums and do not post messages themselves, edit or delete students' messages. Threaded discussions enable students to reply directly to a post and keep on target. Asynchronous voice chat, such as Wimba, has been used in one instance and needs to be explored further. Live video conferencing can be used to complement the forums at midpoint in the semester and again at the end of the semester, as a way for students to put a face on the names of their partners and to connect more personally. However, video conferencing does not allow the level of reflection generated by the asynchronous discussions.

Principle 4

Cultura needs to be completely integrated into the classroom to give students the necessary tools to analyze both language and culture. This has direct implications on the classroom organization: class time should be used for discussions, exposés, exchanges, and not for posting messages. Thus while *Cultura* is heavily dependent upon technology, the technology is not a key element in the classroom itself, where a single computer is enough.

Principle 5

The work needs to take place over a sufficient amount of time. We suggest a minimum of eight weeks altogether to allow for in depth exploration, even though the actual exchange period can be shorter based on the amount of modules being activated. For instance the instructor might decide to work with partners on the Questionnaires, Data, and Films modules, but use the Newsstand module only for the end-of-semester projects, without forums. Some schools are experimenting with longer projects, stretching over two semesters and integrating more grammar and language materials in between modules.

Technological Considerations

The current availability of professional management systems (Course Management systems or CMS) for the creation of classroom websites has facilitated the adoption of *Cultura* to other languages. CMS simplifies the navigation, incorporates the ability to create pages, and obviates the need for external discussion software. Templates of *Cultura*'s modules in CMS-compatible format have been developed in French, Russian, and Spanish. However, it is important to note that *Cultura* is not dependent upon a specific technology: the original project was conceived and developed in simple HTML by its creators with the help of various graduate students and computing services at MIT and was no more than a large stack of web pages. The data from the

questionnaires was collected via email and copied into the pages and discussions were carried by software available at the time.

Implementing *Cultura*

The following information will summarize the key steps (spread over a six-month period) to implement *Cultura*, with or without CMS.

Six months before starting the exchange

Select a partner school

The initial discussions between instructors should focus on the methodology, to make certain that all aspects are clearly explained, in particular adherence to the five basic principles. Both instructors need then to:

- define together the content of the questionnaires (discuss and select words sentences and situations to use);
- consult the teacher's guide and decide which modules they want to use, besides the questionnaires module (and maybe create new modules, more appropriate to their L1/L2 situation);
- select all the materials needed for each module, including specific websites to be linked to each one, and decide which materials should be posted on the web and which will be handed out in the classroom;
- agree on a timetable based on both schools schedules;
- decide which of the two schools will support the main components of the website.

Four months before the exchange

The instructor from the school supporting the website needs, with the help of a "technology" partner (within the computing support staff or the language laboratory personnel), to identify a technological solution: an HTML website or the local Course Management System, if available. Note that only one of the two schools needs to actively run the experiment on its servers; the other school will simply log into that server from outside.

If the host school is currently using a course management system

All the key ingredients are very likely already in place. The instructor needs to:

- become familiar with the CMS set-up and use;
- practice creating pages and starting discussions;
- check the set-up for foreign characters as well as the registration process for students who will need to log in from the other school;

- select a method to collect and post the questionnaires answers (CGI forms, or email);
- decide who will be in charge of collecting the data and posting the answers.

If the host school does not use a CMS

The instructor needs to:

- create a website (with the help of the computing support staff if necessary) to combine the various components, namely: the questionnaires, the discussions, the pages to post the answers, and the additional documents (we suggest following the organization found on the demonstration website <http://web.mit.edu/french/culturaNEH>) ;
- select a method for collecting and posting the answers to the questionnaires (CGI forms, or email);
- decide who will be in charge of collecting the data and posting the answers;
- find a discussion server (within the school or on the web) which enables threaded discussions;
- test the discussion software from both schools to make sure that the fonts and character sets needed are supported;
- test the website thoroughly with different types of computers at both schools to avoid character set problems.

One month before the exchange

- finalize the schedule;
- test and review the website;
- check all the links;
- preload the website by creating the structure and the discussions while not releasing them all to the students (only the data generated by the students will need to be added later);
- decide what materials will be read or seen by students offline and make copies so that both partners are ready;
- purchase copies of relevant films at both schools.

The website can also be linked directly into the MIT demo version to access the archives of past exchanges.

First three weeks

Running the questionnaires

While students do not need to fill the questionnaires on the first day of class, it is a good idea to have them start as soon as enrollment stabilizes.

- demonstrate the questionnaire part of the website for the students in class before hand, to make sure they will know how to proceed (this is the only part students can access at this stage);
- ask them to answer all three questionnaires in one session, outside of class;
- give them a few days to complete the task and close down the website at an agreed-upon time;
- sort and post the questionnaires on the website (first the words, then a week later the sentences, finally the situations);
- open the corresponding discussion forums.

Alphabetizing the results will mix them up and prevent any one from identifying who has given any specific set of answers, but all the answers from any single student must be kept on the same line. For example, student A answered ‘freedom, expression, art’ to the word “individualism.” The three words should appear on the same line.

After the first three weeks

Once the answers to the questionnaires have been collected and posted (during the first three weeks), the only task left is to:

- open the different forums, as the modules are activated.

At the end of the semester

- collect all materials on the web;
- copy all discussions in electronic form to create a local archives of materials to use in future semesters or share with other interested teachers.

Even though our final note is about the technological aspects of *Cultura*, which are important to master, with *Cultura* technology does not lead but is made to serve our curricular goal. It is a flexible tool and can evolve as it is adapted to different languages and situations and as new technologies emerge. New modules can be added. We are thinking, for instance, of developing an “Image” module, with a visual bi-cultural dictionary. We also envision an umbrella *Cultura* website, where we would gather French, Spanish, Russian, and other experiments next to one another, and where colleagues could share ideas.

Initially *Cultura* was our response to the *Standards for Foreign Language Learning* (“Communication,” “Culture,” “Connections,” “Comparisons,” and “Communities”): in our daily practice at MIT with our colleague Gilberte Furstenberg we set forth to develop an approach and a tool to teach culture to our students. We built our tool on the capabilities of the web:

- the ability to link a large number of diverse documents;
- the availability of asynchronous threaded discussions;

- the possibility to archive the discussions and make them available to all, from a multiplicity of entry points.

We based our approach on the concept of cross-cultural comparisons, to realize in our classrooms ‘constructivist objectives through collaborative technologies’ (Weasenforth: 2002:58).

Appendix One
Contents of *Cultura* website
<<http://web.mit.edu/french/culturaNEH>>

Cultura

Complete copy of the *Cultura* Project from one MIT/INT experiment and archives from previous years.

Teacher’s Guide

Pedagogical and technical guide for the implementation and classroom use of *Cultura*.

Article

Furstenberg, Levet, Maillet and English, “Giving a Virtual Voice to the Silent Language of Culture: The *Cultura* Project.” Online article published in *Language Learning & Technology*, Vol. 5, No. 1, January 2001, pp. 55–102

Classroom Examples

Picture archive with examples of classroom activities, sample essays and students journal entries.

Questionnaires, Blank Answer Forms

Copy of the Questionnaires website (with one format of CGI scripts to treat the answers).

Appendix Two:
Homework assignment and worksheet

Words questionnaire

How to work with the answers to the questionnaires

Go to the *Cultura* website, select ‘Answers’, then ‘Words’, to access the answers to the first questionnaire.

Your task: Pick three of the words that interest you the most and print the answers.

- Underline on your list all the expressions, words, nouns, references, etc. that you do not understand. Write them down. Use a dictionary, an encyclopedia, or the Web to find what they mean.
- Count the words: find what words are used most often on the American and on the French side; count them, copy them on your worksheet.
- Connect with an arrow the words or expressions which are used on both American and French side.
- Circle the words used only on one side.
- On the worksheet, next to the different groups of words, write if the connotation is rather positive or rather negative. Also: write your remarks, hypothesis, and your questions. These comments will be used for the classroom discussion and for the forums.

Word #

US Words/ answers most frequently used

French Words/ answers most frequently used

Negative, positive or neutral connotations? Write down the examples.

Negative, positive or neutral connotations? Write down the examples.

Word Associations Answers Worksheet

1. Write down the words and expressions that appear the most often in both languages.
2. Note the words that you feel have positive or negative connotations.
3. Write your comments: remarks, hypothesis, and questions. These comments will be used as starting points for classroom discussions.

Here, write down your questions and hypothesis:

Appendix Three Homework assignment, work with forums

You will start posting your first comments on the forums today.

Remember: You must always write in ENGLISH. The INT students will reply in FRENCH. To post your comments on the Forums, you must: select FORUMS (on the *CULTURA* website for our class)

Select the word you want to react to.

1. First read any previous post and hit 'reply' to post your own comment.
2. Start by the forums attached to words you chose to analyze on Wednesday and Thursday.
3. Send your comments and observations for each of those words and follow up with one or two questions to find out more details.
5. Check to see if the French students have already posted messages and questions: react to their comments and answer their questions.
6. Print the comments of the French students, highlight the most interesting passages and bring them to class to discuss them.

Appendix Four ***Carnet de bord***

Instructions: Your *carnet de bord* (daily log) enables you to keep track of your personal itinerary while using *Cultura*. In this folder, that you will build over time, you will note down on a daily basis your discoveries, your observations and remarks; it will be used for future reference.

Please make a copy of the instruction sheet attached to this document, since it will help you keep your notes in the *carnet*. Make additional copies when needed. You can also add new headings or topics when needed.

Please note:

1. You can alternate between French or English.
2. You should update your *carnet* regularly. You will need it to write essays and I will collect it from time to time.

Carnet de bord

1. What words, phrases, concepts have you explored today? Please specify the words that got you started.
2. In the classroom:
Among the many hypothesis made in class today about the words, situations or concepts, which ones seem the most interesting? Please write them down briefly.
3. In the discussions forums:
 - a. Print and attach to the back of this page:
Any message or comment that you posted on the Web today.
To what topic were they related?
Any questions that you asked of the French students.
To what topics were they related?
 - b. Did the French students reply or react to comments or questions you posted over the past few days? If so, print and attach their responses in the *car-*

- net*. Write a brief reaction to their replies. If not, maybe you should reformulate your question and post it again.
- c. Which of the messages the French students posted over the past few days appear to be the most interesting, the most surprising? Briefly summarize them here. Print and attach them to the back of this page.
4. My personal diary
Please write here your personal remarks and comments on the project, the classroom activities, the discussions and the forums, etc.
5. My dictionary
Please write here new vocabulary you found today: words, expressions, names and other references you are not familiar with. Look them up in a dictionary.

Notes

- 1 For a list of the contents of the *Cultura* website, see Appendix 1. The French archives (starting in 1997) can be consulted on line at <<http://web.mit.edu/french/culturaNEH>>. Other languages will be added in the near future as the materials generated by live experiments are archived and made available on the web.

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7

Accomplishing More with Less: An Innovative Approach to the Development of Curriculum-Based Courseware

Xueying Wang

Introduction

In this age of rapid technological development and educational reform, there is an indisputable need for multimedia software to teach foreign-language skills. Nearly all involved in foreign-language instruction worldwide are searching for suitable language-instruction courseware. However, there are few commercially available interactive multimedia courseware packages for language instruction which are pedagogically sound, curriculum-based, and easy-to-adapt. Foreign language programs would benefit greatly from such courseware, which would, ideally, integrate cultural information and the language skill areas of grammar, speaking, listening, reading, and writing, thus eliminating the need for multiple distinct computer programs which do not work in tandem and do not provide for a comprehensive, cohesive language foundation.

Problems with Existing Multimedia Programs

Thirty years ago almost all language education took place in a traditional classroom environment and was based primarily on interaction between teacher and student.

Today, people of all ages and backgrounds are seeking to enhance their language experience with multimedia tools. There is an enormous demand for new technology that can blend with traditional teaching methods in order to create an exciting, versatile language-learning environment. The burden is on educators to develop effective courseware that is both pedagogically sound and technologically sophisticated.

Despite the significant demand there is still a marked shortage of high quality, curriculum-based multimedia courseware available to foreign language educators. Moreover, there has been much criticism of the Computer-Assisted Language Learning (CALL) materials that have been produced (c.f. Levy: 1997; Davies: 2000; see also Levy, this volume, for a list of concerns when selecting courseware). Most programs are limited in scope and structure, making them less than ideal as supplements to language curricula. These programs are plagued by a number of problems, in particular a general lack of program reusability, adaptability, and compatibility. For all but the most technically proficient language instructor, CALL programs that cannot be readily integrated into the syllabi of language courses are of very little use.

The Need for Curriculum-Based Technology

The demand for technology in the classroom has certainly generated a wide variety of CALL programs. The University of Hawaii Foreign Language Multimedia website (www.nflrc.hawaii.edu/aboutus/ithompson/flmedia) lists over 700 CD-ROM-based foreign language programs in forty-five languages as well as 453 commercial and freeware web-based programs on the Internet. Yet a quick survey reveals that most of these programs are limited in scope, with only a few hours of instruction—often consisting of simple vocabulary games, electronic flashcards, picture dictionaries, simple grammar drills, and survival-level tourist phrases. The problem is a simple issue of supply and demand. As Robert Ariew stated in the early 1990s, because commercial programs are so expensive to develop, publishers tend to target the largest market: the beginning language learners. Therefore, most available programs do not offer extensive and sequenced materials to facilitate language learning at higher levels (1991:33).

In addition to a lack of advanced materials, many of the existing programs deal with only a narrow spectrum of skills. They tend to focus on isolated elements of language learning, often neglecting the wider range of skills necessary to become proficient in a language. For example, of the seventy-nine German programs listed on the University of Hawaii website, only a small percentage address the full scope of language skills. For some languages even isolated elements of language learning would be appreciated; there are languages for which courseware does not even exist, particularly in the less commonly taught languages (LCTL). Where LCTL programs do exist, they are generally beginner-level Japanese, Russian, and Chinese, and there are almost no programs which are useful to intermediate or advanced learners in maintaining their language proficiency.

Although many teachers are enthusiastic about using multimedia programs, they usually find themselves restricted by what is currently available on the market. Because such programs are often limited and cannot be adapted to meet the faculty's needs, they are ultimately ineffective in a classroom setting (even though they may have looked good on paper). In order to benefit fully from today's technology, teachers need to be able to adapt CALL programs to meet their individual curricular needs, and not vice versa.

Lack of Compatibility

Since computers were first introduced into educational facilities, foreign language educators have been faced with the problem of integrating high-tech multimedia techniques into a traditional text-based curriculum. As studies of language teaching have pointed out, 'Language teaching tends in practice to be eclectic.... There are not only exceptionally many paths and educational means for arriving at a given educational goal, but there are also very many types of educational materials which can be used to achieve that goal' (Ahmad, *et al.*: 1985). For language educators who are trying to incorporate technology into their curricula, the choices seem endless.

Yet the quantity, as well as the limitations, of available computer programs does not guarantee that these programs can be successfully integrated into a curriculum. In common practice, the opposite tends to be true. Many existing language programs only cover specific areas of language learning, such as reading or grammar, without addressing the full scope of language learning skills. Moreover, every program on the market makes certain assumptions regarding the skill level of its users, the best teaching style, and the elements of language that are most important to learn. Though these programs all stress necessary aspects of language learning, trying to arrange them into a meaningful, comprehensive curriculum often creates confusion and redundancy. Because of the lack of compatibility between individual language programs, it is often difficult to incorporate such programs into a complete language-learning experience.

The more serious issue of technical incompatibility is no less severe than content problems. Too often, CALL programs designed for one computer platform may not be compatible with others, rendering the program useless for potential users who lack the correct hardware. For example, many CALL materials that are designed for Macintosh computers are not compatible with Windows-based PC's, and vice versa. In an article from the early 1990s which is still pertinent today, Pusack indicates that many of these compatibility issues arise when software developers try to take advantage of the full capabilities of the platform they happen to be using—incorporating graphics, sound, and video—yet neglect to make the program compatible with other hardware platforms (Pusack: 1991:73). Advances in technology may also cause programs to become incompatible with the computer for which they were intended.

Lack of Reusability

In 1997, Michael Levy stated that the production of computer-assisted multimedia materials had several recurring problems. Among the problems noted in the case of educational software applications, one of the most pressing was that programs and modules are generally not reused within applications and that there was a lack of shared teaching knowledge between applications (Levy: 1997). A year later Jona reemphasized this concern:

A serious problem exists in the current methodology of developing educational software. Each application is developed independently, and teaching knowledge is hard-coded into individual applications. There is little re-use of teaching code or teaching knowledge between applications because we lack a standard language for representing the knowledge, a standard interface to allow applications to access the knowledge, and a set of tools to allow designers to manipulate the knowledge. (Jona: 1998:285)

A potential solution to most, if not all, of the problems with CALL programs recounted thus far is in template-based courseware which allows developers to reuse/update what has been developed before. But many developers overlook the possibilities that templates offer. They approach multimedia design in such a way that they receive minimal gain for maximal work, producing widespread redundancy in available courseware programs. Without access to templates, which facilitate page and application adaptation and replication, developers are left to create each page of a program from scratch. With templates, on the other hand, developers have a plethora of possibilities, each achievable more easily than ever before.

Using templates solves the problem of compatibility because it gives instructors the freedom to adapt a piece of courseware to the specific needs of their own curricula. In addition, the development of easily adaptable and reusable multimedia programs ensures that a developer's time and efforts are well spent and that his or her language program will not be left behind as technology advances or curricula change (Bangs & Davies: 2000 for a discussion of authoring systems and templates; for a particularly insightful discussion of the use of templates, see Gimeno-Sanz & Davies:1999)

The Problems with Multimedia Development

Sometimes ambitious faculty members try to obtain funding from their educational institutions, state and federal funding agencies, or private institutions for the purpose of developing their own multimedia software. Yet while multimedia programs offer a powerful alternative to print media, the time investment needed to achieve the necessary proficiency to produce effective, advanced, and comprehensive lessons is generally more than an individual faculty member can handle. In order to develop multi-

media lessons, instructors must learn to use the appropriate authoring system as well as work on generating courseware content. They need knowledge in graphic design, instructional design, and computer hardware and software. In many cases, instructors willing to learn the computer skills necessary to develop multimedia programs just cannot find the time required to master the complex authoring programs (see Bancheri, this volume, for a parallel discussion of partnership between instructors and technical staff in developing courseware).

Due to a lack of technical support, learning how to develop multimedia materials can be a frustrating and even discouraging task. Although technology has been widely adopted and supported in educational systems for over a decade, there are many schools that lack the resources to support CALL development.

Beyond these initial difficulties, many larger issues compound the problems associated with independent multimedia development. Because there is so little shared knowledge in the field of courseware development, faculty who produce multimedia materials usually start the development process from scratch, building all necessary coding, scripting, and digitizing and editing audio-visual materials on their own. Yet many institutions are unwilling to support such endeavors, especially on an individual level. As Stephen Ehrmann (2003) notes, courseware development requires just as much investment by the school system as it does by the individual teacher. Changing a course, especially to integrate technology, involves shifts to unfamiliar materials, the creation of new types of assignments, and the invention of new ways of assessing student learning. Such a shift poses a great risk to an institution.

The steep learning curve, time requirements, and availability of funding dictate the development of courseware, and as a result, projects almost always remain small-scale and are rarely developed into full curricula. In addition, the quickening pace of technology makes software development a risky game; it takes so long to develop a comprehensive multimedia program that software often becomes obsolete before it has been fully integrated into curricula.

To further exacerbate the problem, small-scale projects are often only suitable to the needs of the faculty developer and are difficult or impossible to adapt even by other faculty members at the same institution. Because expected foreign language skill levels differ from student to student, class to class, and university to university, development of a one-size-fits-all courseware is a misguided and impossible project. Adaptability is key. Without it, programs are unsuitable for extended use. Because of their limitations, most computer language-learning materials are never seen beyond the confines of the campus where they were created.

Innovative Strategy for Curriculum-Based Courseware Development

In an attempt to address the above problems, a project team at the Johns Hopkins University (JHU) has developed a series of easily adaptable, integrated multimedia templates within an effective and powerful multimedia courseware package for use in language programs nationwide. Thanks to these multimedia templates, JHU has cre-

ated sophisticated Chinese courseware materials which cover all facets of language learning. Through its unique partnership with Blue Shoe Technologies, the project team has further improved the courseware to best fit the needs of teachers and students (c.f. http://www.instructlab.com/products_blueglas.html).

Gateway to China: A Brief Overview

With funding from Funds for the Improvement of Post Secondary Education (FIPSE), of the United States Department of Education, Johns Hopkins University has developed a comprehensive courseware package for beginner, intermediate, and advanced-intermediate levels of Chinese language learning. This function-based courseware package, entitled *Gateway to China*, is based on a series of easily adaptable multimedia templates and features exercises in all four areas of language learning (listening, speaking, reading and writing), as well as grammar and culture sections. The courseware package includes the *Learner Management System*, a unique assessment tool that allows instructors and students themselves to easily assess learning progress. *Gateway to China* spans three years of language learning, progressively challenging students as their language skills increase. By incorporating the full range of language learning skills, the program may function as a supplement to in-class instruction or as an independent tool for teaching Chinese language.

Each level focuses on a particular aspect of Chinese culture, which provides the basis for the content of the lessons. A sample lesson might proceed as follows:

The topic of the lesson is Chinese food and the typical restaurant experience in China. A restaurant dialogue, which a student can listen to and read at the same time, introduces the topic. The student is then provided with a list of relevant vocabulary and can practice this vocabulary in the grammar section. The courseware includes a section on stroke practice; it draws each stroke of the Chinese character on the screen and invites the student to copy the example. Each lesson features exercises in listening, speaking, reading, and writing, each of which focuses on the cultural theme introduced at the beginning of the lessons. In this case, the student might be invited to role-play a conversation with a waiter and be asked to respond to a prompt verbally or in writing.

Figure 1 is a flowchart of the templates from a sample lesson of *Gateway to China*. The figure is intended to give a general feel for how the navigation of a lesson would be organized. Following the first figure are sample images from a selected lesson from the third level. Bear in mind that since the program is template-based, the content of lessons can be easily adapted to meet the needs of any curriculum. Task and lesson content varies from level to level and lesson to lesson (even within the same level). For example, a task in the same position in two lessons from the same level may vary in content or layout. The sample images don't attempt to illustrate every-



Fig. 1: Flowchart of a series of templates for one sample lesson

thing the courseware and templates have produced but simply to give a general idea of the structure of the courseware.

Lesson elements

All of a lesson's pages—from course objectives through grammar—allow access to the other lessons on a given CD, as well as navigation between the selected lesson's



Fig. 2

video, text, vocabulary grammar, and exercises. Each segment also features a link to the instructor's requirements for the lesson as well as access to a tutorial on the courseware for new users.

Opening video

Every CD features a culturally appropriate audio-visual opening sequence. While the opening should satisfy any user's needs, it is possible to change it upon request or to train the faculty user to do so.

Main menu

This template provides previewing information about each of the lessons on that CD.

Course objectives

Allows faculty to provide information on his or her general lesson objectives (Figure 2).

Video

Allows faculty users to input video related to the lessons. Students can watch the videos before they start working on the lessons, in order to learn about culturally appropriate behaviors for a given situation related to a particular lesson (Figure 3).



Fig. 3

Text

Faculty can input lesson text and audio, to allow students both to read and to listen to lesson material. A special function allows students to view definitions, parts of

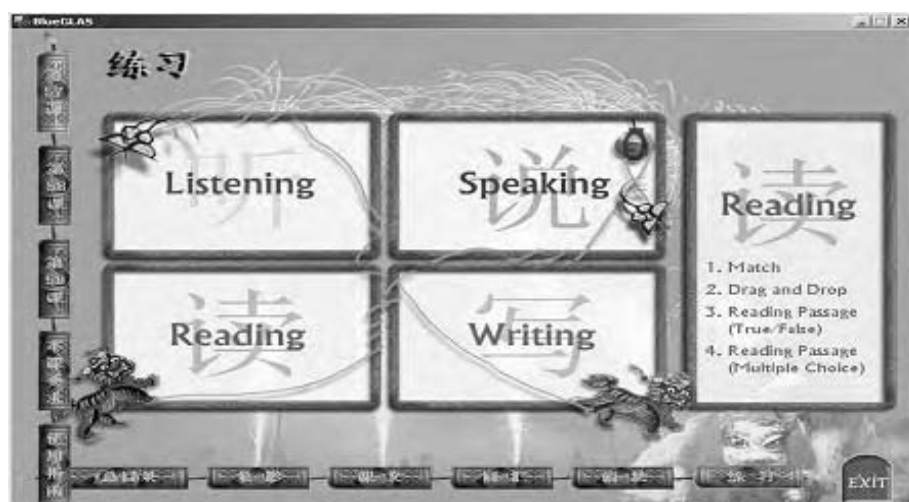


Fig. 4



Fig. 5

speech, sample sentences, and pictures illustrating individual words within the text. There is an audio option, so that the student can use a microphone to record him- or herself reading aloud.

Vocabulary

Allows faculty to input vocabulary for students to learn, along with parts of speech, definitions, and the vocabulary used in a sample sentence. Every word provides an animated video illustrating stroke formation along with the option for audio.

Grammar

Here, as the name implies, faculty can input pages of grammar instruction. Tabs on the grammar box allow the students to move between grammar pages.

The Skill Options

Figure 4 presents the page which provides access to the four exercise options: Listening, Speaking, Reading, and Writing. It also lists the contents of each exercise. Fig-



Fig. 6

ure 5 shows, the Listening, Speaking, Reading, and Writing main pages. Each include brief descriptions of the section's four tasks.

Listening Tasks (Figure 6)

All the listening exercise templates allow faculty to input the text of audio segments along with grammar, vocabulary, explanations, scores, and exercise timing information. Listening tasks may include:

Bingo

Allows faculty to input audio phrases or sentences into a bingo game, as well as relevant grammar and background information. Students can practice their knowledge while playing the game.



Fig. 7

Sentences

Faculty input audio sentences, plus questions addressing the sentences. After listening to the audio segments, students select one of two possible answers to each question.

Dialogue

Allows faculty to input audio dialogue as well as written text, so that students can listen and then respond to a series of true/false questions about the dialogue.

Monologue

Allows faculty to input an audio monologue here, so that students can listen to and then answer a series of multiple choice questions based on the monologue.

Speaking Tasks

All the speaking exercise templates include grammar, vocabulary, explanations, scores, and exercise timing information that can be supplemented by faculty. Speaking tasks may include:

Sentence drills

Allows faculty to input audio and text files. Students can listen to sentences, record themselves repeating those sentences, and compare the two recordings. After they are



Fig. 8

familiar with the original sentences, they can substitute additional phrases that are provided for practice. In earlier lessons, pronunciation drills may replace this task.

Role play

Allows faculty to input dialogue audio and text files. Students can listen to native speakers having a dialogue, choose to be one or both of the speakers, and then record themselves speaking the roles. Then they can review the recording and compare it to the computer's dialogue. When they are satisfied with the recording, it can be submitted to the faculty. In the third level of lessons, the "Role Play" becomes a "Summarize task, where students listen to a dialogue and then give a summary of it.

Picture description

Allows faculty to input picture files. Students view the pictures and describe them in the target language, then submit the descriptions to faculty for review.

Free response

Allows faculty to input a topic and guidelines for scenarios. Students can input audio recordings of their scenario descriptions. They can listen to and re-record their audio files before submitting them.



Fig. 9

Reading Tasks (Figure 7)

All the reading exercise templates include grammar, vocabulary, explanations, scores, and exercise timing information that can be supplemented by faculty. Reading tasks may include:

Match

Faculty can input pairs of related sentences or words. Students view these and match them.

Drag and drop

Here, faculty can input the text of sentences and select words to be removed from these sentences. Students select and reposition these words to complete the sentences.

Reading passage

Allows faculty to input text. Students read this text and then select answers for each question about the passage.

Writing tasks (Figure 8)

All the writing exercise templates include grammar, vocabulary, explanations, scores,

and exercise timing information that can be supplemented by faculty. Writing tasks may include:

Sentence completion/transformation

Faculty can input sentences in the target language. Students complete and/or reconstruct the sentences based on sentence structures they learned in the lesson.

Paraphrase

Here, faculty can input English sentences, and students must translate them into the target language. Faculty input sample answers to assist students.

Question & answer

Faculty can input a series of text questions. Students read these questions and input answers.

Composition

Allows faculty to input a topic assignment. Students read the topic and address it by inputting original written work.

Score report (Figure 9)

Records students' progress throughout the lesson. Student can choose to have their scores visible or invisible on this page and to print and submit the scores. Upon student submission of their exercises, faculty can also access this information through the course server. (Thanks to template use, faculty can choose to change lesson content based on how well their students do.)

Ending video

Similar to the opening, every lesson features a culturally appropriate audio-visual ending sequence. Faculty can easily change this video and audio after quick training.

Credits

A set sequence of credits.

Innovative Attempts at Courseware Development

Since the issues that face foreign language instructors cannot be solved by programs that are currently on the market, JHU's unique alternative is this comprehensive template-based courseware package which allows for adaptation and revision based on the individual needs of any given curriculum. *Gateway to China* puts courseware development into the hands of individual faculty members by allowing instructors to choose what material that goes into each lesson. The *Gateway to China* courseware package has the following key strengths:

Multimedia templates

The idea of using templates to facilitate multimedia development has been floating around the field of language instruction for a long time. Templates, however, face many of the same compatibility issues as full-blown courseware development programs. Although various templates have been developed in the past decade, no comprehensive set of templates is available that incorporates all of the basic language skills. The existing templates are specific to one skill or sub-skill. For example, the programs Gemini and Guided Reading consist primarily of templates for reading. Libra was mainly designed to teach listening skills. Oral Testing Software provides testing templates for listening and speaking skills. Such programs may be good for their own single purpose but do little to help teachers develop comprehensive curriculum-based materials.

JHU's courseware, on the other hand, offers a series of technically sophisticated multimedia templates that incorporate all the basic language skills in a dynamic multimedia environment. Unlike previously existing courseware, these templates use only one program (Global Language Authoring System), but cover the full scope of language skills (grammar, speaking, listening, reading, and writing), thus providing instructors with a tool to create compatible, curriculum-based interactive courseware. Template-based courseware puts development into the hands of teachers and students, who, as end users of the courseware, know how to best adapt the courseware to meet the needs of their own foreign language curricula.

By using templates instead of developing lessons from scratch, faculty members can systematically develop extensive curriculum-based materials appropriate for their entire courses without making the large investments of time needed to learn difficult scripting and authoring techniques. If they lack the time to develop extensive curriculum-based materials, they may simply tailor the content of this courseware by adding or changing existing multimedia exercises or replacing them with their own pre-developed exercises or lessons, as suits their needs. Our user-friendly interface makes these templates easily accessible to instructors, regardless of technical expertise, and allows them to spend their time on pedagogy and content rather than on mastering technically difficult authoring features. This template-based approach gives teachers a degree of control they have never had over courseware development in the past.

Although these templates are currently being piloted in the Chinese language program at Hopkins, the JHU project team intends to replicate this potentially powerful multimedia development approach with other languages. As of Spring 2004, we have completed a few Arabic lessons as well as some French and Italian templates.

The beauty of the template system is that the process can be replicated in any language by simply revising the content of the courseware. Audio, video, image, text, and music files can easily be replaced with context-appropriate files for the desired language and culture. The contents of the exercises, the vocabulary lists, and so on can be rewritten without the necessity of reprogramming the software itself. Due to the differences between various languages and culture, some features of the program's presentation and exercises may need to be altered between languages, but the core structure of the program can remain intact. Furthermore, the program's templates

are easily adaptable and can be upgraded as technology advances. The use of multimedia templates will significantly augment the efforts to develop and upgrade sophisticated, high-quality, curriculum-based interactive multimedia materials in a manner that is less costly as well as more effective and efficient.

Curriculum-based courseware

In order to make the development of a multimedia language-learning program worthwhile, the program's creator should certainly allow for more than a few hours worth of instruction. A program should at least cover one or two years worth of material, and ideally would allow for more. It is true that creating quality multimedia programs is a time-consuming, costly process. This is exactly why the template-based approach is ideal, as it allows for maximum development and adaptation within a comprehensive, curricular-based framework.

Gateway to China currently includes three years worth of instruction, from beginning to intermediate to upper intermediate/advanced levels, and contains sophisticated multimedia exercises in grammar and the four basic language skills – listening, speaking, reading, and writing—plus an additional grammar component. *Gateway to China* allows teachers to adapt the content to meet the needs of their individual students, while gradually increasing the level of difficulty in order to challenge students as their language skills develop. Each level focuses on a different cultural aspect of China, enriching the student's understanding of the country as they develop their language skills. This courseware provides an innovative and exciting dimension to the traditional mode of instruction by enabling students to participate in a variety of situations that allow them to practice skills introduced in their textbooks. Sophisticated multimedia materials provide an accurate portrayal of life and language to prepare students who plan to travel abroad. For those who are unable to leave the country, the program serves to enhance students' language ability and increase cultural awareness.

Learner Management System

According to Dawson, accountability is the key to any successful language program. 'Evaluation of student work and progress is what allows teachers to provide individual assistance and encouragement. Without evaluation and objective accountability, educational software is meaningless' (Dawson: 2003). Collecting learning activity data gives instructors crucial feedback on the performance of their students and allows them to critique their own teaching methods in order to develop a program best suited to the needs of the students. Yet the availability of tracking programs is often even more limited than the availability of quality courseware. *SocratEase* and *Click2Learn*, for example, keep students' scores only on multiple choice, true/false, and fill-in-the-blank exercises. In order to successfully progress in a language program, students need to have thorough feedback on their strengths and weaknesses in a range of language skills.

To respond to these problems, the JHU project team has developed the *Learner Management System*, a companion to the templates, in order to evaluate the progress of students who use JHU's *Gateway to China* courseware. This program, which is

unique to *Gateway to China*, provides a sophisticated tool for tracking and assessing student progress. The completed courseware will create individual student profiles, recording and storing all data related to students based on their exercise results. Using this program, instructors will be able to view student records, including information on learning activities, lesson usage, and progress (e.g., what exercises students use, how long they use them, and how well they complete them). The information will be available on the course server, which faculty can access from school or home.

The purpose of the *Learner Management System* is to help instructors best adapt their teaching plans to the needs of their students by providing valuable information on students' strengths and weaknesses. This program is also a valuable tool for students, as it allows them to quickly and efficiently track their own progress through a series of exercises. The *Learner Management System* provides students with a built-in record-keeping system, which allows them to conduct self-evaluation at any point in the program. They can also print out their scores and other information, such as time duration for exercise completion or total number of exercises completed. Using this information, students and faculty can work together to develop a program that accommodates the needs of the students while still providing a challenging learning environment. In addition to its pedagogical advantages, the *Learner Management System* also helps minimize the amount of time instructors spend on lengthy tasks such as grading, compilation of results, and record keeping.

Sophisticated multimedia interface

One of the unique characteristics of *Gateway to China* is its use of sophisticated template technology to create dynamic multimedia courseware. Easy navigation, attractive layout, beautiful music, and interesting sounds make the courseware appealing. A range of powerful multimedia options – images, video, audio, and text – can be easily manipulated to best facilitate student needs. For example, the program allows students to adjust the speed of dialogue based on their individual skill levels. Students are able to engage in dialogue with the computer, which will then analyze their speaking abilities, comparing the student's voice, accent, and intonation to that of a native speaker. The program also offers a step-by-step demonstration of stroke order and stroke creation, made possible by advanced animation capabilities. In all of its exercises, *Gateway to China* is designed to provide feedback along with immediate relevant explanation to students in order to further improve their language skills.

Partnership with a software company

In many cases, faculty developers are only end users of software, and as such they are restricted to features in the latest commercial version of any authoring program they have purchased. This project, however, has the advantage of working as a project team partner with Blue Shoe Technologies, creator of the *Global Language Authoring System (GLAS)*. Working closely with Blue Shoe allows the JHU project team an extended degree of control, because the project team can inform the software company of any specific authoring system features that may be unique to and necessary for language learning courseware development. Blue Shoe has revised *GLAS* in order to

meet project needs and address technical problems or concerns. The project owes much of the credit for its successful project to this partnership.

Methods of Evaluation

Throughout the course of the project, the JHU team has queried students and faculty with questionnaires and interviews to find out about what they would like to see in their language courseware. The analysis of their responses also produced such data as the number of faculty and students who would use these materials, the average number of hours students spend using multimedia materials, and the frequency of their usage.

In addition, the following formative and summative methods of evaluation have been and are being utilized to ensure the quality of the project team's work:

Ongoing evaluation during development

As each template, lesson, or exercise is developed, the project development team conducts performance tests to ensure that all functions work properly. A small group of students is invited to provide additional feedback through usability testing.

End-of-semester evaluation

At the end of each semester, students at the appropriate level pilot new multimedia materials developed during the semester. Peer faculty reviews are conducted to solicit input. All feedback is used to improve templates and courseware lessons. The accuracy of the features and functions of the *Learner Management System* can be assessed by comparing data tabulated by the program with the data of a select number of program users who keep a record of their learning activities. Most importantly, data on student learning outcome is collected, compiled, and analyzed by the *Learner Management System* to assess how well the students are progressing.

Final evaluation

The purpose of the final evaluation is to make sure that products are free from all noticeable bugs and are ready for dissemination. This evaluation is conducted through student and faculty field tests.

Feedback from other universities and governmental institutions

The project team conducts workshops to solicit feedback on the products from other universities, especially those close to JHU, on the East Coast. National conferences are also valuable sources for gathering feedback on the project. Responses to these workshops constitute a significant source of outside evaluation.

Lessons Learned

The JHU team has learned many valuable lessons during the past few years of multimedia courseware development. Some of what was learned reinforced what was

expected to work, while at other times errors forced the team to retrace its steps and try again. Here are some tips for aspiring courseware developers, based on the team's experiences.

A system for naming program files

One of the major snags we ran into was simply keeping track of all of our files once they had been created. While this may seem to be insignificant, once development begins on multiple lessons with multiple exercises, a nightmare scenario can develop if everyone names files in his or her own way and/or does not keep a record of the files.

In our case, we were working with at least four staff members and a large pool of students, but we had no standardized system of naming files. We were developing many different kinds of files: audio, video, image, and text. Within each of these types, we had basic templates for lessons, listening, speaking, reading, and writing, with sixty-four lesson files in each category. This quickly became confusing, especially since we had many people working independently on different aspects of the project at once. It became even worse when we started doing revisions and had multiple copies of lessons floating around. We spent a lot of time finding the files that we needed, and then trying to organize the system so we would be able to find them in the future.

The more people working on a project and the larger the project, the more crucial an organized system becomes. It is not uncommon for program developers to forget how they named their files, or which file is the most recent one. As courseware progresses, it is inevitable that many improvements will become necessary following project reviews, recommendations, and the results of student beta-testing sessions. Revisions can be extensive and often require the re-entry of large amounts of data. Establishing a comprehensive file-naming system will allow easy access to them months or even years later. Names should be meaningful and systematic. For example: 01list_ex1a1 (lesson1, listening exercise1, item A – first 1 component) or 02spk-ex2b1 (lesson2, speaking exercise2, item B, first component). While it may seem insignificant, being organized from the start cuts down on later confusion and waste of time.

Template creation

Why are templates the best choice? Three words: efficiency, efficiency, efficiency. One of the major problems in courseware development today is the fact that rather than creating a system of templates, many developers start every lesson from scratch, a process that is inordinately time consuming and usually makes it impossible to adapt or upgrade the courseware. Because we hoped to develop courseware for many different languages, we decided to use templates. This not only gave us the flexibility to adapt and upgrade, but also allowed us to make any necessary changes to features of the program to meet the needs of students and curriculum.

Because the templates have many similarities, we tried to make them as visually appealing as possible, to keep students from getting bored. We also made them user-

friendly to allow for easy navigation. Ideally, every page should have easy and quick access to previous pages and lessons. No one wants to relearn how to navigate a program on every new page. We consulted with a professional graphic designer on the design of our pages, which saved us much time and energy in the long run. In general, catering to the user should be a top priority. Developers should consider reworking any page structure that could lend itself to a muddled exercise or unclear organization.

We developed templates for each main lesson component (text, vocabulary, grammar, listening, speaking, reading, and writing) as well as separate templates for related exercises and tasks within each component. The key to successful template creation is to make sure that all functional features are included in a given template before incorporating it into all of the lessons. Once templates are in the lessons, with script complete, it is time-consuming to make one change to the model template, because every page in every lesson must be changed separately. It is an extremely frustrating task to go back to each one and pick through a multitude of data to correct a simple error in the template.

Graphics/images selection

When we started developing the first year's worth of Chinese courseware, we chose images primarily based on the content of the image, rather than the size of the picture. However, we quickly discovered that this was not entirely practical. Once we had completed the courseware, it was very obvious to see which pictures were not the correct size; many of the images were pixilated or obviously stretched, and the overall image looked poorer because of it. As a result, we had to go back and find new pictures, and then replace the bad images in all sixty-four lessons. Therefore, we recommend that when picking graphics, it is useful to search for an image that is already the desired size, since altering image size, format, and resolution can lead to problems.

As in the case of file naming, we ran into major problems due the fact that we had a number of people searching for graphics and the files were not recorded in any kind of organized manner. As a result, we are still trying to track down some of our pictures from the original courseware and get permission to use them. Keeping track of your sources is a major part of a successful project; you do not want to waste days or even weeks trying to track down a picture, or have to take an image out of every file because you could not get permission for it.

Therefore, developers should keep close record of any picture that may end up being used for the project. As soon as the decision is made to use an image, the team should contact its source to obtain permission for its use. Generally, all you have to do is ask and the source will give you permission, but is good to do this as early as possible. Again, those in charge of this portion of the program development should bear in mind that if the team loses track of the pictures or cannot find the original source information later, it may become necessary to look for the image again, a process that can be costly in time and effort and may not even result in the picture being located.

There are some websites that charge a small fee for limited-time usage of any of their images. One of these is www.arttoday.com. There are also some sites such as www.gettyimages.com that contain rights-managed and royalty-free photos, images, and movie clips. Developers who may publish their courseware in the future are advised to use royalty-free images.

Color coordination

Because our project consists of three levels of Chinese instructional courseware, with different sections for each lesson, we found it extremely helpful to distinguish the sections and levels by their color. We have sixty-four lessons in all, and the templates for all three levels are very similar. It can be very confusing to determine which section or level is which, and colors and images helped us to navigate between levels and easily discern which lesson we were working on. In addition to making distinctions between sections and levels, color also makes the overall design more attractive.

We found that color coordination is also helpful to students, who have to navigate in much the same way. For example, in *Gateway to China*, the characters from the program's main section were in one color, including those characters used in lesson text, grammar, and vocabulary; in contrast, each of the listening, speaking, reading, and writing exercises were in another color. After a lesson or two, when students become familiar with the color scheme and know which colors represent which sections, they are less likely to get lost or confused when navigating through the multimedia program. It can also be a good idea to change colors with each new level of instruction, so as to keep program users from getting bored with color repetition.

Selecting sounds and music

When we first designed the courseware, we included clips of classical Chinese music between sections. Our project consultant was originally against this, thinking it would be overwhelming, but after testing out the software, she found that it was relaxing. Surveys have shown that students also like the music, as well as other sound effects that we included. We also tried to make sure that our sounds were appropriate and that they did not distract from the content of the courseware.

Before you include sound, however, you should keep some things in mind. Sound and music selection need to be age- and culture- appropriate. Interesting sounds will help attract and maintain students' attention, but loud or poorly placed sounds may annoy and distract users from the learning process. Sound should be used to indicate priorities; content-related audio files should be louder than the sound used to invite student feedback. Balance is important. Students should not need to turn their computer volume up and down while they use the program, so audio segment volumes must be consistent.

It is difficult to find a piece of music that everyone loves, but as long as the selection is culturally appropriate or well known, students will probably accept it. As with images, the music permissions process should begin as soon as a given piece of music is selected for use in the courseware. Permission is unnecessary for music pieces published before 1972.

Selecting compression format for audio/video/images

Selection of compression format is a decision that requires developers to think carefully about compatibility with the software/authoring systems they plan to use. Using the wrong compression format can create a massive program development slowdown.

Video

- WMV: Small. Compatible with Windows Media Player. Works well with the Windows operating system, but is also available for Mac OS. Streamable.
- AVI: Large. Compatible with Windows Media Player. Not cross-platform. Not streamable.
- Quick Time Movies: Variable size. Incompatible with Windows Media Player. Cross-platform. Streamable.
- MPEG: Medium size. High quality. Not cross-platform. Not streamable.
- Real: Small. Cross-platform. Streamable.

Audio

- WMA: Small. Works well with the Windows operating system. Lower quality than Quick Time Audio. Available for Mac OS. Streamable.
- MP3: Medium size. Good quality. Compatible with Windows Media Player. Not cross-platform. Streamable.
- Quick Time Audio: Variable size. High quality. Not compatible with Windows Media Player. Cross-platform.
- Pure Voice: Tiny. Lower quality (often used for voice messages). Not compatible with Windows Media Player. Cross-platform. Streamable.
- Real Audio: Small. Cross-platform. Streamable.

Images

When deciding which format is appropriate, the developer should consider the requirements of the authoring software and the authoring system you are using. JHU used WMA and WMV because the project's authoring system required Windows Media Player, and WMV and WMA are most compatible with Windows Media Player. Using the latest, updated version of Windows Media Player helps prevent problems.

- Jpeg: Small files. Mainly for compression of pictures with lots of color.
- Gif: Small. High quality. Works well with graphic images with flat colors.
- Bitmap: Large files. High quality. Not compressed.

Flash

When we first decided to include movie clips for the opening and closing sequences of *Gateway to China*, we were unsure about which software to use. There are so many programs available for making movies, and many of them have nearly identical fea-

tures. After consulting with BlueGlas, we decided to use *Flash*, because it was the most compatible with our authoring system. *Flash* files are small, streamable, and can be easily manipulated based on need. When considering how many lessons can fit on a single CD, it is important to take into account the size of the files being used. The JHU team planned for four lessons per CD. Any change in audio, video, and image file size can potentially affect the feasibility of this decision.

Text fonts

Decisions about text fonts may seem trivial at the beginning of courseware development because there are so many other decisions to be made about content, layout, etc. Yet if developers overlook text font decisions at the start, they will waste a considerable amount of time later on. When we first started development, we chose text fonts based on the appearance of the font. However, we quickly realized that many sources charge you to use their fonts. We switched to Microsoft Word but soon found out that we had to obtain permission to use the fonts outside of a Microsoft Word application. Eventually we found a web source that provided free fonts, but not until after we had wasted a huge amount of time on the other sources. Every time we switched fonts, we had to replace the text in every individual lesson, which is a lengthy and time-consuming process. For example, a font change for all Chinese characters in the courseware can require going separately through every text box on every page in every lesson. Font style should be examined when lessons are first in-put; the same is true for consideration of font size. Fonts often need to be enlarged to maximize ease of reading, which is something to consider during work on template layouts; changes in font size and style might alter layout needs.

Again, in order to maximize your time and effort, it is important to pay attention to font copyright issues from the start. Some of the fonts are free for public use and others need permission from the company. Before you begin your project, you should decide whether you want to pay for fonts and where you can obtain them. Getting applications that contain the fonts does not mean that you have permission to use them in your multimedia project. Think carefully about what kind of fonts you want and plan early, because getting permission or licenses can be costly and time-consuming.

Audio recording

Because we were developing lessons for student use, we were constantly under pressure to finish the courseware for upcoming classes. We rushed through the recording process; as soon as the text had been written, we would immediately record, compress, and link the audio to the software. As a result, we rarely discovered errors in the text until after the audio recording process was complete. However, every time we revised the text, we had to re-record the audio segment that went with it. Audio file revision is much more troublesome than revision of text files. Every time an audio file is recorded, it needs to be compressed and linked to the corresponding text. Discovering errors in file content, especially after many lessons are completed, can be discouraging and time-consuming to resolve. When we began audio recording, we

ran into many compatibility issues that slowed the overall process. At first we used *Quick Time Audio*, but later found out that it was not compatible with our software, so we changed to WMA. Again, we could have saved ourselves much time and effort if we had given some thought to which program we were going to use before we started.

Based on student recommendations, we decided that it would be helpful to include a companion audio CD with the multimedia CD. This makes it possible for students with limited or no access to computers to still hear the program audio. Audio CDs need raw files, so it's best to create the CDs as soon as the files are recorded. Uncompressing already compressed files is not only slow and tedious, but will also affect the quality of the sound.

For the beginning levels, it may be useful to slow down audio speed to meet the needs of some students. With this in mind, after audio files are compressed, it is a good idea to store all of the raw audio files. Otherwise, when students request slower speed audio files, it will be necessary to re-record the materials at slower speeds. If developers have anticipated that slower speed files may become necessary and saved the raw audio files, they can use software such as *Peak* to slow files by approximately thirty percent without sound distortion.

Another timesaver is to write and revise all audio file content before recording begins. The initial JHU courseware development project began recording during its first year of development. However, during the project's second year, one of the speakers left with only one third of the recordings complete. In order to maintain consistency of recorded voices, the team had to re-record and recompress audio materials with a new speaker. (This goes back to an earlier point, that re-linking and replaying files would have been even more difficult in this case without an organized file naming system.)

Video recording

In light of the minor crisis we encountered during the audio recording stage, the JHU project team delayed all of the video filming until the end of the project. Earlier creation of sample video files for one lesson at each of the three levels was sufficient for the team to determine the effects of placing video segments within the courseware. Re-filming movies is significantly more expensive and time-consuming than rerecording audio files. It is a good idea to get student input on the sample video recordings before full video recording is done. For example, student review of the sample video segments revealed that some students disliked the filming style of panning used in the segments, so the project team eliminated it in later recordings. We also ran into problems deciding which video platform to use. At first we used MPEG, because it was compatible with our software. However, we later found out that the MPEG files were too big. We changed to AVI, but later discovered that AVI files aren't streamable, so we finally decided to use Windows Media videos. Every software switch requires the files to be recompressed, which means that you must find the original video files. If we couldn't find these files, we had to re-record the video, which took

even more time and money. In order to avoid this problem, it is best to decide which video format is compatible with your software before you start taping.

Understanding the amount of work involved in a multimedia project

A high-quality product demands that the highest level of attention be paid to the meticulous task of inputting data for the courseware. Multimedia projects require a tremendous amount of work. For example, the JHU project team used the program *After Effects* to create video files demonstrating specific sequences of keystrokes of the Chinese characters. For this, sentences were linked to audio clips, and portions of exercises were connected to various video, audio, and text links. Every item—including the new vocabulary in each lesson—had to be entered individually, while thousands of links, hot spots, mouse-overs, and other functions needed unique, manually defined inputs. Every lesson was linked to numerous corresponding audio/video files, each with its own specific set of keystrokes. The project team drastically underestimated the volume and complexity of these tasks, and as a result, these changes are just now being retrofitted onto parts of the courseware that should already have been completed. This huge volume of additional work required more personnel and hours of labor than allowed for in the original budget.

Anyone with project experience knows that funding comes with a limit but that changes for potential improvement of a product can seem unlimited. The more you do, the more you feel that you need to do. As there is always more revision that can be done, there is no true “final version” of this courseware. We always assumed that we would eventually have a final version, but we are still working on changes and revisions. It is important to know where to stop and how to secure adequate funding and staff for project work. Multimedia projects have a tendency to be the ever-expanding bubble, which, unfortunately, does not go hand-in-hand with ever-expanding funds. The key element of success in any project is formulating an overall plan, with a clear idea of your beginning, middle, and end. After determining how much work would be required for a program revision, developers can go back to the funding agency to request supplemental funding.

Unique structure of the project development team

JHU found it most effective to have a project team incorporating multiple unique perspectives:

- Faculty developers who know the language curriculum and understand how to use the instructional materials to best meet their students' needs.
- A language instruction design expert who is proficient in multimedia instructional design and language pedagogy.
- A computer specialist who is knowledgeable about current available technology and is able to troubleshoot technical difficulties.
- Students, as the end users, who can provide invaluable critical input, which is being taken into consideration as the materials are developed.

- Senior Project Consultants and National Advisory Board members, including many experts in the field of language learning, who serve as advisors to the JHU project team.

Final Recommendations for Multimedia Project Development

There are a variety of language instruction programs on the market. Potential developers should first examine the strengths and weaknesses of these products before they start on their own. Effort will be wasted if a program is created that mimics another too closely. Courseware should either provide a unique perspective or supplement an existing product in a meaningful way.

Although it is certainly valid and can be important to create programs that are tailored specifically to one language class, program, or specific population of students, that has not been the focus of this article or of the JHU project team's work. These recommendations are particularly intended for those who are interested in creating large-scale curriculum-based courseware.

Before beginning courseware design, developers should establish their goals and objectives, including how many levels they want to create, what language skills will be covered, and who the intended users will be. It is important to determine the scale of courseware and ensure funds, staff, and time for the project before work begins. Using and adapting existing templates or creating new templates (since no one set of templates can meet the needs of all program developers) can save time for developers who plan to create more than one lesson.

It is effective to design one lesson for each level and then have it thoroughly reviewed by faculty and students. Rushing forward before everyone involved gets to evaluate the courseware's design can lead to extensive revision in the end. Most importantly, logical thinking is key. Courseware should be clear, comprehensive, and completely organized, with carefully indicated goals. In this way, language instruction can best serve its desired audience.

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8

Language Online: Principles of Design and Methods of Assessment

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Introduction

Language Online (LOL) is a project of the Department of Modern Languages at Carnegie Mellon University which was funded by the Andrew W. Mellon Foundation. Over a three-year period, Elementary and Intermediate French and Spanish courses have been produced for students who need a more flexible approach to language learning than that offered in a standard classroom course. These courses (eight in total) are now complete and part of the regular offerings of the Department. All materials are Web-based with extensive use of Internet technologies for research, writing and communication. Content consists of tutorial and practice materials created in HTML and Javascript for the LOL project, plus guides for conversation and writing practice using Internet and other resources. For on-campus students, rotating weekly face-to-face meetings are scheduled with a language assistant (language major or native speaker), and the instructor. The course work plan is adaptable, allowing individual teachers flexibility in implementing these courses. The assessment of the LOL courses has used qualitative and quantitative methods to understand the experience from both the teachers' and learners' perspectives. By all measures we can conclude that the courses are working, though we continue to modify them. This chapter delineates the principles behind the design and production of LOL courses, as well as the

research methods employed in evaluating student learning and satisfaction. We will also comment on the training and technical support required for success in this type of instruction.

The Educational Problem at the Base of the Initiative

There were at least two major factors which led to our decision to pursue the development of Language Online at Carnegie Mellon. First, here, and indeed at many other similar institutions of higher education, an increasing number of students face the prospect of demanding schedules which necessitate a substantial commitment of time to lengthy laboratory or performance studio classes. For many students, scheduling constraints virtually preclude their participation in elementary or intermediate language classes which typically meet four or five days per week (and which effectively require a commitment across two class cycles for just one course—that is blocking a time both for Monday/Wednesday/Friday as well as for Tuesday/Thursday classes). Many potential students from the sciences, engineering and the fine arts have frequently told us that they lamented the fact that the lack of flexibility in their schedule prevented them from beginning the study of an additional language or from continuing the study of one which they had recently begun in secondary school. In addition, technological innovations and developments in the early 1990s had opened the way for providing students with access to exceptionally rich authentic communicative interactions in their target languages together with the opportunity to allow students to engage material at their own pace and using their own preferred styles and strategies. Against this backdrop, we began our work with several guiding assumptions—namely that we would need to attend to reduced face-to-face contact while simultaneously undertaking the preparation of new tutorial and practice materials to be delivered in a web-based environment. We next turn briefly to each of these issues.

Enhancing Communicative Contact

The need to attend to four skills—speaking, listening, reading and writing—in language instruction is a given. Of the four, speaking is the one which immediately demands attention in a context with reduced face-to-face contact. Issues in the other areas relate less to the problems of supplying sufficient materials or opportunity, than to affective and motivational aspects of a learning environment which may be perceived as dehumanized.

Communication deficit

The issue of a potential deficit in terms of opportunities for communication in an online context was the first to be discussed in the design process. This perceived inherent problem had in fact previously dampened our enthusiasm for online instruction. To overcome the problem we looked at several potential solutions.

Intensive vs. extensive communicative contact

We first took a look at what actually happens in the average language classroom, especially in terms of speaking opportunities. Assuming a class of eighteen to twenty students meeting four times a week for fifty minutes, we estimated that most students actually produced target-language speech no more than four minutes per class, or sixteen minutes per week. This is, in fact, an optimistic number, given that the straight math of $1/20$ (1 student) \times 50 (class period length) \times 4 (number of classes) is actually equal to 10 minutes a week, assuming no teacher-talk whatsoever and an equal distribution of student speech opportunities. Group- and paired-work might influence this total, but not exponentially, so we took our twenty-minute figure to be of defensible length. The LOL hybrid course structure involving one instructor-led class meeting, one twenty-minute meeting with a peer tutor (language assistant) or the instructor, and multiple opportunities for electronic communication grew out of these preliminary calculations, with the hope that communicative development among our students would not be substantially less than for students in traditional classroom-based instruction. There is, of course, a discussion relating to the adequacy of such limited production opportunities in either classroom or hybrid contexts that would be relevant here, but given our goals—equaling the opportunity for language acquisition offered in the classroom—we left that discussion for another occasion.

The nature of classroom oral production, or “talk,” has been the subject of extensive research. As Van Lier suggests, whatever the quantity, such talk can most often be classified as the language appropriate to those ‘engaged in the official business of language learning’ (1998:160–161) and not as authentic or even unstructured learner communication. It is likely that the type of talk generated in structured peer-tutoring interactions and in one-on-one instructor-learner meetings would also fall roughly into this category of speech. All such speech is not equal, however. Walsh delineates the way teachers with a communicative emphasis can either encourage or obstruct the use of communicative language by students through the varying use of methodologies such as scaffolding, correction and feedback styles, and even wait-time (2002:8–14).

Chat

A number of researchers are now affirming that the use of chat can supply significant communicative opportunities for second- and foreign-language learners (c.f. Blake: 2000; or Toyoda & Harrison: 2002) with particular emphasis on negotiated meaning, which is being recognized as a critical component of learner practice. LOL students are all required to participate in weekly chat sessions, scheduled in small groups according to student preference in the evening hours and moderated by a student language assistant. There is no single design for these sessions. Input from instructors and students has led to sessions which vary from free-form conversation, to discussions of assigned topics or course materials, to information-gap activities.

Preparation of new materials

A basic decision was made early on to prepare new materials explicitly for these courses rather than to re-purpose existing materials.

Tutorial and practice materials

All basic materials for LOL classes are presented via the Web, including presentation of communicative, grammar and cultural materials. These pages are media-rich, including photos, illustrations, extensive audio and some video as well as roll-over translations and external links to additional resources. Most pages of content contain links to drill, comprehension, or expansion exercises. The assumption is that students can study and immediately check their understanding/mastery of the subject matter, with correction and feedback.

The integrated offering of all components of a language method (what might now be any combination of a textbook, workbook, CD-ROM, audiotape or CD, website, videotape) has definite advantages, especially in the immediacy of the learning support (glossings, audio), the direct links and the instant feedback of the exercises.

Core materials newly written

The basic texts of all LOL modules consist of materials newly written by LOL authors. We knew that a common failing of web-based courses was excessive reliance on external URLs, which degrade at a rate approaching fifty percent annually. We were also cognizant of the fact that a course which essentially consisted of links collections would be inappropriate to the reasonably adequate financing granted to us by the A.W. Mellon Foundation for this project.

The idea of basing our courses on existing commercial textbooks was also rejected by our course designers, who wanted to take advantage of this opportunity to design a course which would reflect quite precisely the pedagogical orientations of our faculty. We were also aware that a commercial text would not be under our control and could be substantially rewritten or withdrawn from the market without any recourse on our part.

Simultaneous presentation of language and culture

Language and culture (both small and capital C) are integrated from the first day. Advanced cultural content is presented in English for the first semester of the French course, with the entire course in French thereafter. The Spanish course includes authentic texts from the first day, retaining grammar explanations in English throughout the four-semester sequence.

Secure testing and administration environment

Finally, we were forced to deal with the issue of "security." Certain aspects of class management in a hybrid or online environment require secure log-ins and stable testing, administration and communication components. The commercial course management systems were making inroads into higher education as we began our project,

and after research we chose WebCT as the more powerful testing environment with adequate administration and communication utilities.

The continuing use of WebCT has since become problematic with the adoption of Blackboard as the university-supported course management system, coupled with skyrocketing prices and predatory acquisition and marketing practices by all vendors in this sector. The spotty support of language other than English has also been a problem, though this may disappear as these companies mature. As this chapter is being written, both WebCT and Blackboard are announcing multi-language support for their latest versions.

Course Production Overview

The production of the LOL courses was predicted to be complete in a three-year period, and this goal was achieved. Approximately fifty people participated in roughly similar proportions for French and Spanish. We had funding of approximately \$450,000 for the project from the Andrew W. Mellon Foundation. To put this amount in context, Thalia Dorwick of McGraw-Hill recently characterized the cost of preparing a new (single-year) language textbook for commercial distribution as having risen to approximately \$800,000, excluding salaries.

Each language year was separately designed by a team of faculty, then content writing tasks were distributed to a combination of faculty and instructors resident in the region. As content pages were completed, they were proofed, adapted for web presentation, then given to student page-builders, who did a first HTML version, including roll-over translations and media links. At the same time recordings were being undertaken, digitized and placed on the server and picture research was occurring based on author request. We also had a student illustrator who executed and colored drawings for situational images which were difficult to find in photographic format. A web designer did graphic and navigational design for both French and Spanish, while a programmer executed the basic page interactivity and work plan editor in JavaScript. Other student workers transformed exercise content into *Hot Potatoes* format. Faculty and graduate students prepared exams in WebCT.

The last component of the production is now (summer of 2002) occurring, which is an intensive period of evaluation and modification of the completed courses, involving a team of faculty, staff and graduate students.

Description of Curriculum

As mentioned above, the LOL courses are an example of hybrid, rather than purely online instruction, given the fact that time for face-to-face contacts has been preserved, even if for a reduced period of time. All student online work is based on the LOL web materials and the instructor-prepared work plan. Testing occurs in WebCT as does class communication via email, b-boards and chat. Figure 1 is a partial

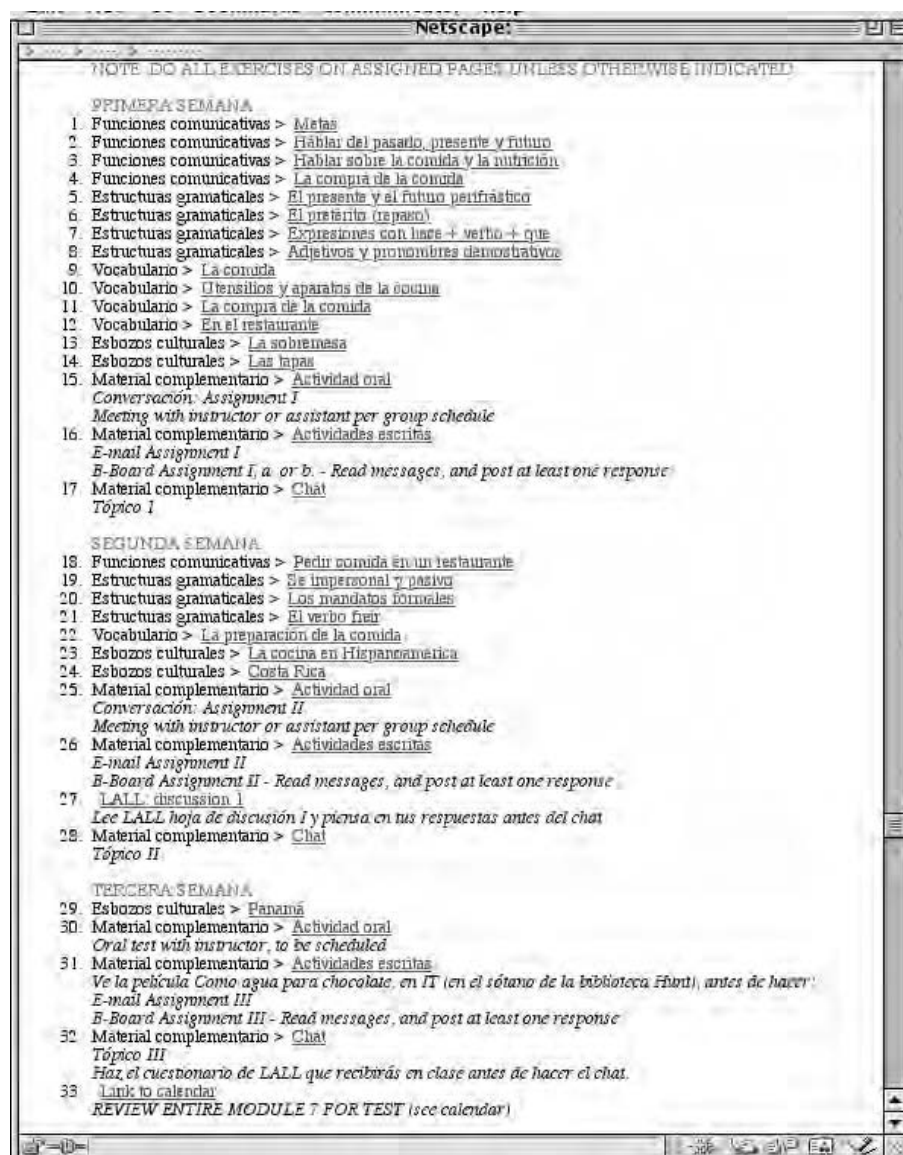


Fig. 1: Module work plan (Elementary Spanish 2 Online)

example of a module work plan, the instructor-designed work sequence, in Elementary Spanish 1 Online. Figure 2 shows a page in the browse navigational environment for Elementary French 2 Online.

Time usage

During the design phase, we attempted to predict the changes in time commitment for

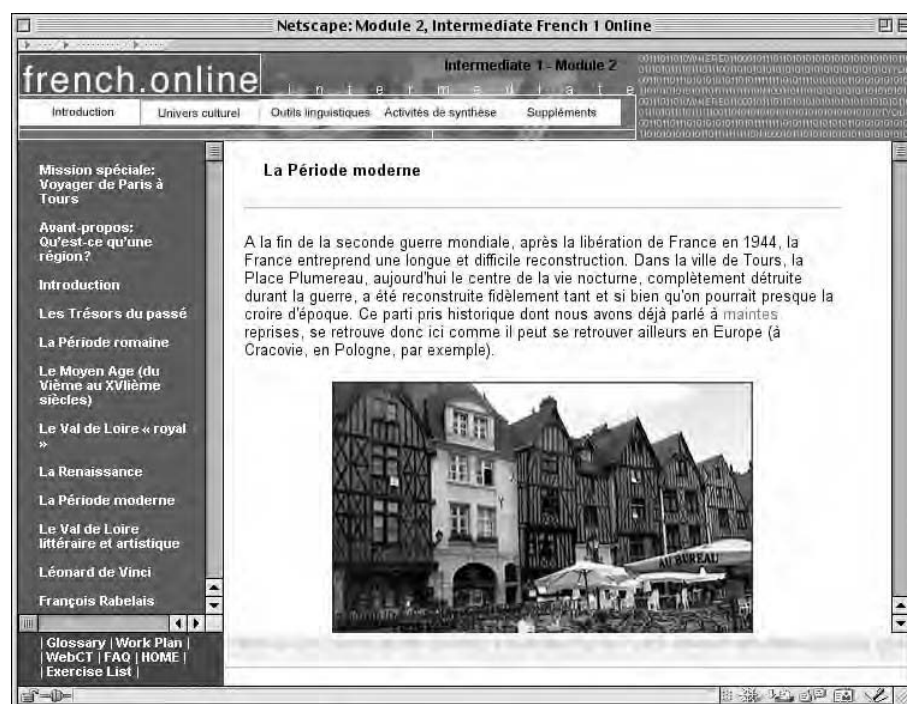


Fig. 2: Online interface (Intermediate French 1 Online).

both students and instructors that the new class structure would imply. The table in Figure 3 displays those predictions. As many of the teachers have been heavily involved in the design and development process, we have not been able as yet to determine the accuracy of these predictions for the use of the instructor's time because it is difficult for them to separate the time they spend on the courses as materials developers/editors and as teachers. Additionally, in the first semester they offer a course online, instructors tend to spend more time familiarizing themselves with the course and technology than they do in subsequent semesters. Students generally have indicated that these allocations are reasonably accurate averages.

Future directions

Sharing of LOL courses beyond the confines of Carnegie Mellon University is a major goal of the project team, and not without its complications. In spite of our best efforts, there are copyright issues which need to be addressed before wholesale sharing occurs.

The other remaining issue is the need for log-in, tracking and testing of individual students. Ideally LOL would be in control of such processes and not dependent on one of the major course management systems (WebCT, Blackboard, for example) which by definition exclude the users of competing systems. Currently there is no tracking within the tutorial and practice areas of LOL courses. This is a practical solu-

Activities	Courses	
Instructor activities	Current	LOL
Class meeting time	4	1
Office hours	1	5
Preparation	4	1
Grading	2	3
Total instructor time	11	10
Student activities	Current	LOL
Class meeting time	4	1
Meeting with instructor	NA	.5
Preparation	4	6
Peer tutor assistance, online communication	.5	1
Total student time	8.5	8.5

Fig. 3: Predicted time usage in LOL courses and current classroom-based courses

tion, in that other institutions could essentially employ whatever course management system they chose (or their institution supported), with the LOL materials functioning as an interactive textbook. This under-utilizes the potential of the technologies available, but may be necessary, given that the resources available are insufficient to create and sustain a proprietary management system.

There is some hope that in the intermediate future the IMS (Instructional Management System) conventions will allow for the easy exporting of both content and test data from one course management system to another, but this is not a viable solution in the near term.

Evaluation Design

Evaluation of the LOL courses has been carried out concurrently with curriculum development and implementation. We have used qualitative and quantitative methods to understand the experience from both the teachers' and students' perspectives and to compare student learning in the LOL hybrid courses with student learning in the existing offline courses which meet face-to-face four days each week. The evaluation has been a cooperative effort between Modern Language faculty and researchers in the university's Center for Innovation in Learning. Several graduate and undergraduate students have been involved in data collection and analysis.

Because we could not randomly assign students to online or offline courses as would happen in an experimental study, we collected background information (demographic, language learning experiences, and technology use) on each student. At the beginning of each semester (week five for Elementary I and week three for the other

courses), we also conducted oral interviews/role plays to use as a baseline of language ability. In addition, for the elementary students, we also obtained their placement scores on the computer adaptive placement exams (CAPE) in French and Spanish developed at Brigham Young University. These data provided a profile of students in the LOL and offline courses and helped us to rule out other factors that might account for any differences in student learning and satisfaction.

Measuring student learning

To compare learning in the LOL courses with learning in the offline courses, we used student performance on common sections of the final exams and on the oral interviews/role-play tasks which were conducted near the beginning and at the end of each semester.

The teachers of the online and offline courses at each level worked together to develop the common sections of the final exams. They were asked to develop tests that would demonstrate their students' capabilities at the end of the course. Although learning about the culture associated with the target language was an integral part of the courses, the aspects of culture that students were exposed to in the courses differed widely, and thus student learning could not be meaningfully compared. For the other components of the courses (listening comprehension, reading comprehension, writing, and grammar knowledge), teachers have been able to develop meaningful measures. In using tests developed on site by the teachers involved, we have instruments which reflect our materials and in which the teachers have confidence.

Students took the final exams (which included parts unique to their section, which were not used for our purposes) at the end of each semester. Although the examinations were initially assessed by the teachers who used the results in the calculations of the final grade for the respective courses, the evaluation team collected all of the exams and re-evaluated the common sections to ensure that the same criteria were consistently used for both the online and offline exams. The short essays written for the final exam were evaluated by independent raters who were not aware of which course (online or offline) the students were in. We used teacher feedback to identify the dimensions along which to rate the essays: topical relevance, overall development, organization/ordering principle, the use of transitions/cohesive devices, vocabulary, syntactic complexity/variety, grammatical accuracy, mechanics (spelling, punctuation, accents and capitalization), and length.

The oral interviews/role-play tasks were also developed by the teachers and researchers. Typically, students worked in pairs and were given two tasks: one in which they were to describe a picture and the other a more open-ended role-play situation. The pairs were tape-recorded while doing the tasks and the tapes were evaluated by independent raters who were not aware of which course (online or offline) the student was in. We used the evaluation scale developed by Payne and Whitney (2002) to rate student performance along five dimensions: comprehensibility, fluency, vocabulary usage, syntax and grammar, and pronunciation.

Measuring student and teacher satisfaction

To learn more about student and teacher experiences in the courses and to help us gauge level of satisfaction, we conducted focus groups (Patton: 1990) periodically throughout the project. Initially we talked with the students, teachers, and language assistants at around mid-term and again at the end of the semester, but later, as courses proliferated and as some of the initial kinks were resolved, we conducted these sessions only at the end of each semester. We asked questions about the different components of the course (e.g., chat, quizzes, b-board assignments) as well as study habits, difficulties students experienced, the aspects of the courses students enjoyed the most and the least.

The official university faculty course evaluations (FCEs) and the department's supplementary faculty course evaluations provided additional information about student perceptions of the courses. In particular, we paid attention to the question on the FCE that asked students to evaluate the course, independent of the teacher. On the department's supplemental FCEs, we used students' responses to the question "would you recommend this course to a friend?" as an indirect measure of satisfaction.

Evaluation Results

We have gathered information about thirty-four sections (thirteen online and twenty-one offline), spread out over five semesters and involving eleven teachers and 354 students. We have gained a much better understanding of the experience from the students' and teachers' perspectives. Overall, we have found that the courses are working, though we have identified some areas where we can continue to modify to make the courses more effective and more satisfying for both the teachers and the students.

Profile of the students

The students in both the online and offline courses share similar characteristics: they tend to be undergraduates, around twenty years old. About half (fifty-three percent) of the students in the offline classes are female; in the online classes, forty-one percent are female. Most (seventy-eight percent of the 216 students responding to the questionnaire) of the students speak English as an L1; but half of the students (fifty-one percent) report some proficiency in at least two languages; indeed most of them (sixty-seven percent) selected "because I like learning languages" as a reason for enrolling in the class. The other most commonly selected reasons were "to go abroad" (forty-one percent); "to fill a requirement" (thirty-seven percent); and "for my career" (thirty percent).

Most (seventy-three percent) of the online students chose to take the online section because of scheduling constraints, but they also report that they enjoy using computers (fifty-one percent) and want to try a new way of learning a language (forty-seven percent). About a quarter of them (twenty-three percent) have had experience learning in a non-traditional format (such as correspondence courses, or other web-based classes) before beginning their LOL course. In contrast, the offline students

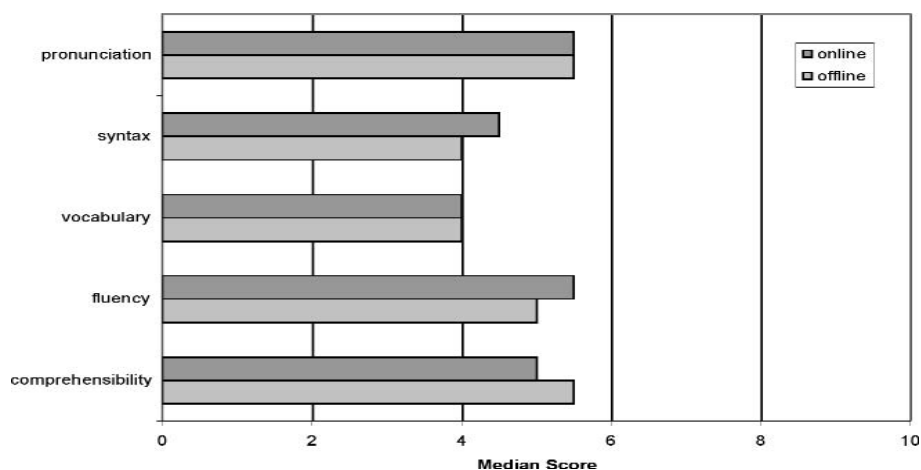


Fig. 4: Oral production profile (Elementary Spanish II, Spring 2001)

want classes that meet four times a week, in part because they think they will get more guidance from their teachers (sixty-eight percent) and because they like interacting with people in class (fifty-six percent). Almost all of the students (ninety-nine percent) are comfortable using a computer: offline students typically report using computers three to four hours per day, while the online students report using them five to six hours per day.

Student learning outcomes

To date, we have compared students' learning in the courses offered in the first three semesters of the project and comparisons for the final two semesters are well under-

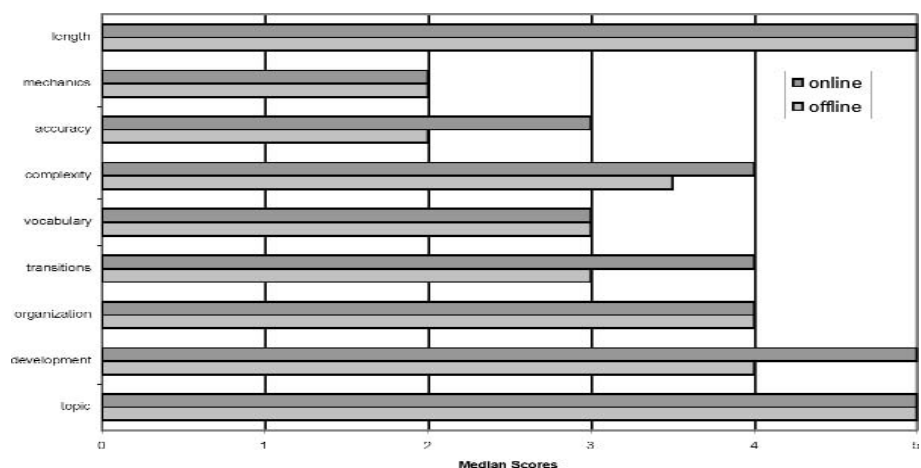


Fig. 5: Written production profile (Elementary French I, Spring 2000)

way. That is, we have compared student learning in two iterations of Elementary French I, and in the first iterations of Elementary French II, and Elementary Spanish I and II. The French and Spanish courses were designed with many of the same considerations in mind; however, the design teams and the content writing groups were made up of different people, and the resulting courses and websites are quite distinct. Nevertheless, student learning in the online and offline French courses and in the online and offline Spanish courses appears to be similar, at least for the areas they were tested on.

Oral production

To date, comparisons of student performance on the role play/interview tasks have not revealed any statistically significant differences. Figure 4 provides a sample of the ratings, in this case from Elementary Spanish II. The median score for the offline course was 25.0, compared to 24.5 for the online group. The slight difference in the overall ratings is driven by the offline students' higher scores on comprehensibility and the online students' higher scores on fluency and syntax. However, if we combine all of the ratings for all of the courses and do one comparison between online students and offline students, there is not a statistically significant difference; indeed, what is striking is the similarity of student performance on these tasks. Both groups of students rate the highest in comprehensibility and pronunciation, followed by fluency, with the weakest ratings in vocabulary usage and syntactic complexity. Remembering that these are, after all, Elementary I and II students, these results are perhaps not surprising.

Written production

In the five comparisons of essays written by students in the online and offline courses, only one, that of students in the first iteration of Elementary French I (reported in Chenoweth & Murday: 2003) revealed statistically significant differences by Mann Whitney U ($p < .05$). The median score for the online students was 34.5 compared to the median score for the offline students of 31.5. When the total score is broken down (Figure 5), the difference can be attributed to higher ratings in development, use of transitions, accuracy, and to a lesser extent, complexity. However, if we combine all of the ratings and do one comparison between online students and offline students, there is not a statistically significant difference; the online students have higher ratings than the offline students in development, organization, use of transitions, vocabulary, syntactic complexity and variety, and length, but these differences are slight. Instead, a more accurate description of the results is that both groups of students rate the highest in staying on topic, length, and to a lesser extent, organization. They are weakest in the use of transitions and development.

Other areas

We also compared scores on other common sections of the final exams: listening comprehension, grammar knowledge, and reading comprehension. Again, the gener-

al picture which emerges is one of similarity: of the five paired comparisons of online and offline courses, few statistically significant differences emerge.

Although students had similar ratings on the oral production tasks, in Elementary Spanish I, the offline students scored slightly higher than their online counterparts on the listening comprehension section of the final exam. Listening comprehension was measured by asking students to listen to a recorded dialogue and then answer true/false and short answer questions. In Elementary Spanish I, the mean score (out of a possible 14) for the offline students was 11.909 ($s = 1.151$), and it was 9.833 ($s = 2.317$) for the online students, a difference that is statistically significant ($t = 3.109$, $df = 26$, $p < .0045$). There were no other statistically significant differences in student learning on the listening comprehension sections.

Grammar knowledge was generally measured by discrete point, sentence-level items, which in the Elementary I courses, for example, included such items as verb conjugations, negation and question formation. There were no statistically significant differences in student learning on the grammar knowledge sections.

In measuring reading comprehension, the only statistically significant differences were found in the comparisons of Elementary French I (offered in Fall 2000, that is, the second iteration of the course) and Elementary Spanish II. In Elementary Spanish II, students were asked to read a short selection on global warming and answer true/false and short answer questions. The mean score (out of a possible 20) for the online students was 7.4 ($s = 1.557$), and the mean score for the offline students was 8.543 ($s = .601$), a difference that is statistically significant ($t = 2.812$, $df = 26$, $p < .003$). However, it should be noted that the scores for all students were low on this section, suggesting that the task was too difficult. In Elementary French I, reading comprehension was measured by whether student's answers to written questions were on topic or not. The offline students did better on this task than did the online students: the mean for the offline students was 10.92 ($s = .277$) compared to 9.13 ($s = 2$) for the online students ($t = -3.093$, $df = 19$, $p < .006$).

The picture which emerges from these comparisons of student learning is one of similarity; that is, that the language acquisition for both online and offline students appears to be equal, which may indicate that our design and implementation of the online courses was successful. However, because the class sizes are small (the average online class has eight students; the average offline class has twelve), because the students were not randomly assigned to the online and offline courses, and because the number of paired courses (online and offline) is only five, the results of the comparisons of student learning should be interpreted cautiously. As noted above, comparisons for the final two semesters of the LOL project (comparisons of eight more courses) are well underway; when these are completed we will have a more complete picture of student learning. Another important aspect to consider when evaluating the success of the LOL courses is teacher and student satisfaction to which we now turn.

Student satisfaction

One way we measured student satisfaction with the courses was to examine their responses to the question on the official university course evaluations asking them to

rate the course on a five-point scale. The mean course rating for the online courses is 4.28; for the offline courses it is 4.611, a difference that is statistically significant ($t = 2.727$, $df = 22$, $p < .01$). Both of these mean course ratings are higher than the average course rating of all university classes offered during the time this study was carried out, which was 4.1.

The indirect measure of student satisfaction with the course (obtained by analyzing the responses to the question “Would you recommend this course to a friend?”) also reflected overall student satisfaction. Of the fifty-three online students who answered this question, eighty-nine percent said “yes.”

These responses indicate that students think the courses are good; although there are ways that they can be improved. The data from the focus groups provide insights on factors affecting their satisfaction.

Factors affecting student satisfaction

The online students consistently report that what allowed them to take the course was the way that the courses were scheduled, with one weekly face-to-face class meeting, the weekly chat session scheduled at a time convenient for them (typically late evenings), and the twenty-minute weekly meetings with their teacher or language assistant, also timed to fit their schedules. Students in all sections also commented favorably on the self-paced nature of the course, as in the following quote from an Elementary French I student:

I like, unlike a regular class, being able to repeat exactly what the word is over and over again, so if there's a word I can't pronounce, I can go back and keep going over it. And you can spend more time on the stuff you have difficulties with. I like that aspect of it, being able to pace yourself—especially in a class like Elementary I at a college, where a lot of people have taken French before in high school, and they have more of a knowledge [of French] than someone who's never had French. At least they can skip ahead, and they don't have to spend as much time, and we can spend the extra time that we need—as opposed to in a class, where if the students are learning fast, then the teacher will go fast too, or else they'll be bored. (103 midterm fall 00)

Teachers, too, had a big impact on student satisfaction, as they were able to create a positive learning environment and were more flexible with deadlines than teachers in offline courses are.

In all of the elementary classes, in particular, students also were very satisfied with the twenty-minute one-on-one sessions with their teacher or language assistant. During these individualized sessions, students were able to ask clarification questions on whatever they didn't understand and were able to practice what they had been learning via the website and in class. This comment, from a student in Elementary French I, indicates typical reasons for their satisfaction:

I was going to say that one of my favorite parts of the class was having the one-on-one time with [the teacher and language assistant] because that was great. You're speaking with someone who is fluent in French and they're asking you questions. You know you can kinda struggle as you get the answer out and they can help you along. And I just love that! I felt by the end I was able to express myself. (103 end of term fall 01)

Several groups of elementary students also noted how beneficial the sound files are, as they were able to listen until they felt confident with the language, pronunciation, or comprehension; they said they would be too embarrassed to keep asking a person to repeat.

However, students had to adjust to the new learning environments which the LOL courses offered. Some of the biggest adjustments involved the shift from traditional textbooks to electronic hypertext; and the shift from meeting face-to-face as a class three or four times per week to meeting once per week.

Students perceived the website as relatively unstructured compared with a textbook. Because the way textbooks are laid out, there is an inherent organization, so that students are most likely to begin with whatever is presented first. The following comments from students in Elementary Spanish I reflect their initial problems engaging with the online course materials:

I didn't really know what to do first, so I started with vocabulary and then went on to the grammar. It took me a while to realize that it's better to start with the grammar and just use the vocabulary list as a reference. (143 midterm fall 00)

Yeah, a textbook would be organized; but hypertext is unstructured. It's difficult to know where to start. (143 end of term fall 00)

For some students a textbook is generally easier to use, as it has a comprehensive index, is easy to flip through, and it's not necessary to wait for pages to load; however, other students thought the website easier to access than a textbook.

Most students found it necessary to print out a large part of the course materials so that they could refer back to them more easily, highlight important sections, and so that they could study outside, on the bus, or other places where computers were not available. They requested printer-friendly versions of the materials for these reasons, even though they would lose some of the learning support (glossings and interactive exercises) in printing out the materials.

Although students commented favorably on the reduced seat-time and the self-paced aspects of the courses, these features were in some cases liabilities as well. Students often reported that the most difficult aspect of the course was actually sitting down to the website and beginning to study. They noted that students in offline classes would get daily practice just by showing up to class; also with the LOL classes it was easier to procrastinate because the class didn't meet as often, as this comment from an intermediate Spanish student indicates:

You have to be organized and self-motivated, because it is really easy to slack off.... In a classroom there's a guilt that you feel when you go into a classroom everyday or three times a week and you see that teacher and you know you're not giving that teacher any homework. But when you see [your teacher] once a week, or twice a week on alternating weeks, it's easier to shelve that guilt and say, "I have to do other homework." And so in some ways like in self-paced courses I assume has a high failure rate and a lot of people drop it, this kind of course has the same danger. (243 end of term Fall 01)

Another issue that came up as a result of infrequent class meetings was that students needed more help from their teachers and website to be able to figure out what was due when. In a class that meets three or four times a week, there would be frequent reminders from teachers about assignments, but because of fewer contact hours, this was not always the case with the LOL courses (although some teachers did post messages to the class b-boards or send reminder email to students). Early in the development of the courses, the work plans tended to be general, with assignments listed per content module or by the week. Students wanted, and needed a much more specific work plan with specific due dates, both to guide them in their study of the materials and to help them keep up a certain pace so that they would regularly engage with the course and not fall behind or need to resort to cramming to prepare for an exam.

Students also commented that they wanted more interaction; this was especially true in the elementary levels. They had class, their twenty-minute individual session, and chat; some students were also encouraged to go to a weekly language table held in a student coffee shop. The chat sessions were perceived as an opportunity to practice the language, but one that would not help to improve spoken language ability (cf. Payne & Whitney: 2002). Students were often frustrated by the uneven pace of the chat conversations: at times they were painfully slow when they didn't have the language resources for what they wanted to say or when they didn't like the topics; and when they did find a topic that they all wanted to talk about, then there was the usual confusion that occurs in synchronous communication when people are contributing all at once. It should be noted, however, that several of the offline focus groups commented that they didn't have enough interaction in their classes either, so a perceived lack of interaction is not necessarily a problem peculiar to the LOL courses.

Teacher satisfaction

To date, six instructors have taught the online courses; all but two of them have taught the online courses two or more times. They generally note that the second time through, they feel more comfortable with the online course (even if they teach different levels).

Some of the benefits of teaching the LOL courses which teachers have identified include getting to know the students in a different way, being better able to monitor student progress; enjoying the one-on-one time with students; having the opportunity to participate with colleagues in the department to create something new; having a chance to think through some pedagogical issues; becoming more comfortable with

WebCT; and liking the convenience and flexibility of working at different times and locations.

The teachers, like the students, have had to adjust to new learning and teaching environments. Although they are all gaining familiarity with WebCT, those who were the most familiar with it when they began their first LOL course generally were better able to handle technological problems which arose and were better able to answer students' questions themselves without having to ask the course developers or the tech-resource person in the Modern Languages Resource Center for help. They also tended to feel more in control, because they were, for example, able to alter the formulas in the WebCT grade book to make some assignments optional or for extra credit. Teachers who weren't as technologically adept were not able to introduce similar flexibility as easily.

Pedagogically, diverse issues have come up, such as how to best structure the chat sessions, whether to provide corrective feedback on chat session transcripts, and how best to use the weekly class meeting (for review, to present new material not found on the website, as practice sessions, or to introduce the next content coming up on the website). One positive outcome of the evaluation research design was that we learned to hold online-teacher focus groups rather than interviewing them individually; they have been learning more from each other's experiences since we began doing that.

One problem for the teachers has been students' perception of the class as more self-paced than it was actually designed to be. Some of this perception undoubtedly stemmed from the fact that the LOL courses replaced the self-paced courses and because the language used initially to publicize the courses emphasized that students would be able to study when it was convenient for them. So there was a mismatch between what students expected in the early offerings of the online courses and what the teachers and course designers had in mind. Many of the students consistently turn in work late, and the teachers, in part because the problem is so pervasive, feel they have to accept late work. One teacher sees the problem in part as a reflection of her own class management techniques:

And they are late turning in things, but on the other hand I wonder sometimes if it's not me, being more lenient online than I am in a day class. In a day class, if you don't bring your thing on the day that it's due, I get upset, I do certain things. Online I am barely ahead of them every time and so I let it wait, and so now at the end I will have this much coming in, so maybe I am wondering if the attitude they have is not coming from my attitude. (FR fall 2001)

Another teacher linked the problem of perpetually late work with students' lack of effective study strategies:

Yeah, I think that really if we can deal with these ...study habits, then it's going to be easier, anything else is going to be easier. The first thing we have to make sure we do at the beginning of the semester, is highlight the skills they will need for this course, and tell them, prepare them, what are the things that are common.

You know like, in this course, it's not like an offline regular course: we do this and this and this, so you are expected to do this and this and this. I didn't do this with my students this semester, I really was naïve, or I didn't have any experience. But I think next semester I will say these things, like I am expecting all of these things, things not related to their performance, it's like student habits, that's what I want to focus on. Say, "You are in an online course, so, you are expected to read a lot."
(SR fall 2001)

Clearly, the hybrid learning environment poses new problems for both teachers and students, and requires flexibility with traditional teaching and learning strategies in order to adapt and develop more effective and appropriate strategies. As teachers gain experience teaching language in hybrid courses and researchers help elucidate that experience using multiple methods of inquiry and analysis, we will be in a better position to facilitate and support interaction and learning.

Outstanding Issues

Despite our rather positive experiences with the development and implementation of Language Online, there remain a number of issues which will likely affect the broader implementation of pedagogical initiatives that involve the creative use of emerging computer-mediated teaching and learning. Four such issues seem paramount: access to technology, training opportunities for language educators, resistance on the part of some students or teachers who prefer more traditional systems of instructional delivery, and the recurring costs associated with maintenance, updates and general support.

Access and training

The issues of "access" and of "training" are exceedingly complex and disturbing since social inequities seem to correlate with access to innovative technology in the service of educational innovation. An early report by the federal Office of Technology Assessment (Roberts: 1988) decries the limited access which blacks and Latinos have to Technology Enhanced Learning. And the situation noted by Roberts in the 1980s appears not to have improved significantly in the intervening years. With disturbing regularity, yet another article appears in the *New York Times*, the *Washington Post*, *The Atlantic Monthly* or *Education Week* calling attention to the differential access to technologies on the part of majority students vs. minority students (cf. Honan; 1999; Mathews: 1999; Skinner: 2002; Walton: 1999). The disturbing pattern which we see in many areas is that the so-called newer technologies are more likely to be available to (upper) middle-class students than to working-class students; they are more likely available to white students than to African American or Latino students; and they are more likely to be used in rote or other "mechanistic" ways for repetitive drill and practice exercises by African American students than by white students, who more frequently use them for simulations and other exciting real-life

applications. It also appears to be the case that the teachers who work with “majority” students are much more likely to have received training in the uses of technologies than the teachers who work with minority students. Of course, there are exceptions to these general observations, perhaps many exceptions. But nonetheless, many of us worry about perpetuating, or even worse about enlarging, the social inequalities which now exist in our schools.

In a review “Technology and its Continual Rise and Fall” (*Education Week*, May 19, 1999), it was noted:

But for one reason or another—after a decade or so in the sun—most of the technological innovations drifted into the margins of school practice, to be used only occasionally or for peripheral activities by a few gung-ho teachers. Most didn’t disappear but they failed to achieve the impact for which they had seemed destined. (30–31)

At least two of the reasons often cited for this limited impact are the differential access to technologies as well as the differential training opportunities for teachers.

Resistance to technology

It is also the case that there still appears to be some residual resistance to the use of computer-mediated learning on the part of some students or teachers, who seem to prefer the more traditional systems of delivery. It strikes us that this may well be a “generational” phenomenon. Doherty (2002) explores various aspects of the reactions of students and teachers to the uses of educational technology in the recent special issue of *Education Week*. She notes, for example, that many students (seventy-two percent of those interviewed) report that they encounter technical difficulties which affect their ability to complete their work in a timely fashion; others report that there are too many distractions in the home (e.g., easy access to television); others that they ‘need more structure.’ Many students (sixty-one percent) describe communication with their online classmates as only fair to poor. Doubtless as e-learning opportunities become more numerous and more easily available, attention will be devoted to enhancing socialization among students, current technical or infrastructure challenges will be reduced, and satisfaction will increase.

Cost of support and maintenance

Finally, of course, there is the issue of the recurring costs associated with general support, maintenance and technological updates. Some educational service providers report that they find themselves in a never-ending spiral of needing to upgrade or replace their existing hardware and software. As the budget pressures faced by school districts and institutions of higher education continue to mount, the issue of the recurring costs necessary to maintain existing programs will likely grow more acute. To take one example from Pennsylvania, according to Gewertz ‘the state’s economic realities forced some hard choices. The education technology budget for fiscal 2002, about \$40 million, would be cut nearly in half by Gov. Mark S. Schweiker’s proposed

fiscal 2003 budget' (2002:90). Similar stories are told in numerous states foreshadowing a looming problem for educational administrators and policy makers.

Conclusion

As we review our work with Language Online over the past several years, three observations emerge as important ones for us. First, French Online and Spanish Online are fully operational and provide students with the opportunity to complete up to four semesters of language study. They are not ancillary modules or "add-ons" to existing offerings; they are full-fledged courses. Second, the Language Online courses, with which students in general appear satisfied, appear to provide viable options permitting students with scheduling conflicts or time constraints to begin, or to continue, their language study with success. Third, we note, however, that the delivery of Language Online courses necessitates that participating instructors be well versed in and comfortable with the technologies which underpin the courses. Our experience to date has been a positive one although we anticipate continuing to collect formative information about course refinements and implementation for the next several iterations.

Language educators contemplating similar projects might take several lessons from our experience. While we consider the CALL underpinnings of the courses to offer distinct advantages (communication opportunities, exercises with instant feedback, extensive multimedia, ubiquitous access), there is an argument that the essential components that have led to our success derive more from our attention to quite traditional pedagogical concerns than the technology-driven aspects. Thus the attention to a structured curriculum with communication opportunities and guidance from both peer tutors and instructors could be seen as the point of departure, with the content and technological contributions coming from—in our case—a carefully structured design and production process, but certainly available elsewhere from both commercial and public domain sources. We would hope that Language Online seen in this light would be considered as part of a continuum of good teaching practice, rather than a radical break with what has gone before.

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9

Language Education and Networked Online Environments (MOOs)

Markus Kötter

Introduction

Today Internet users can choose between thousands of electronic editions of newspapers, online dictionaries, quizzes, gap-fill exercises and other forms of self-study material which educators have put on the web to share the fruits of their labour with other users.¹ Many of these tools and programs are tremendous aids to language teaching and learning if they are exploited appropriately, and several chapters in this book present excellent suggestions in this respect. However, a treatment of the Internet which is limited to these rather static resources fails to appreciate the web's capacity to act also as a conduit for dynamic interpersonal communication.

It is true that the potential of video- and audio-conferencing is still largely untapped because bandwidth problems and the high cost of the necessary equipment have so far prevented many users of the net from exploring the possibility of exchanging larger amounts of (learner) data in this sphere. Nonetheless, research conducted at the British Open University (Hampel & Hauck: 2004; Hauck & Haezwindt: 1999; Kötter 2001; Kötter, Shield, & Stevens: 1999) as well as elsewhere (e.g. Marsh *et al.*: 1997; Skowronek & Kind: 1997; Zähler, Fauverge & Wong: 2000) suggests that learners and teachers ought to continue to explore the potential of

voice-over-Internet, audio-graphics and video-conferencing technologies to support their attempts at teaching or learning a foreign language in collaboration with others.

The present chapter will focus on the educational potential of a more “low-tech” option, namely an online database which allows people to exchange written messages with each other in real time over a computer network, irrespective of their physical and virtual whereabouts. A MOO (or **M**ultiple-**U**ser **O**bject-**O**riented Domain) is quite similar in several respects to environments such as chat rooms or talkers. Unlike a chat facility, however, the places or rooms which people can visit in a MOO are stored permanently on the server which hosts the MOO. The objects and descriptions which registered visitors can create themselves can also be stored on the MOO server.

One notable effect of the unique database design of MOOs is that they tend to engender a much stronger sense of space in their users than competing text-based online environments. Equally important, however, is that MOO visitors can manipulate the spaces in which they meet and can choose from a much wider range of options to express and present themselves and their output. Turbee (1996), one of the earliest proponents of the use of MOOs in language education, summarised the effects of this constellation as follows:

It is thinking, in writing and in the target language, but in response to another human being. The greatest appeal of MOO is the endless variety of human response and the social nature of the learning experiences.

The discussion which follows introduces and reviews some of the factors and features which have encouraged an ever-increasing number of people from around the globe to use the MOO in language education. It begins with a few words about the basic functionality of this virtual world and a discussion of the likely effects of the MOO’s design on the production and reception of language in this particular environment. Section two provides an overview of past and present uses of MOOs in educational settings, while the third section reviews some important pedagogical principles for the effective integration of MOOs into the language curriculum. The final section offers some concrete practical hints for readers who may have been motivated to plan and realise their own MOO projects.

MOO Basics

Accessing and manipulating the database

Communication in the MOO takes place via the exchange of messages which people type on their computer keyboards and then share with others by pressing the <Enter> key. In this respect, MOOs are very similar to chat facilities and talkers such as *Internet Relay Chat* (IRC), the Daedalus Group’s *InterChange*® program or AOL’s *Instant Messenger*®. Unlike these programs, however, MOOs are permanent spaces. There are already full-fledged text-based equivalents of a town, university, or even a

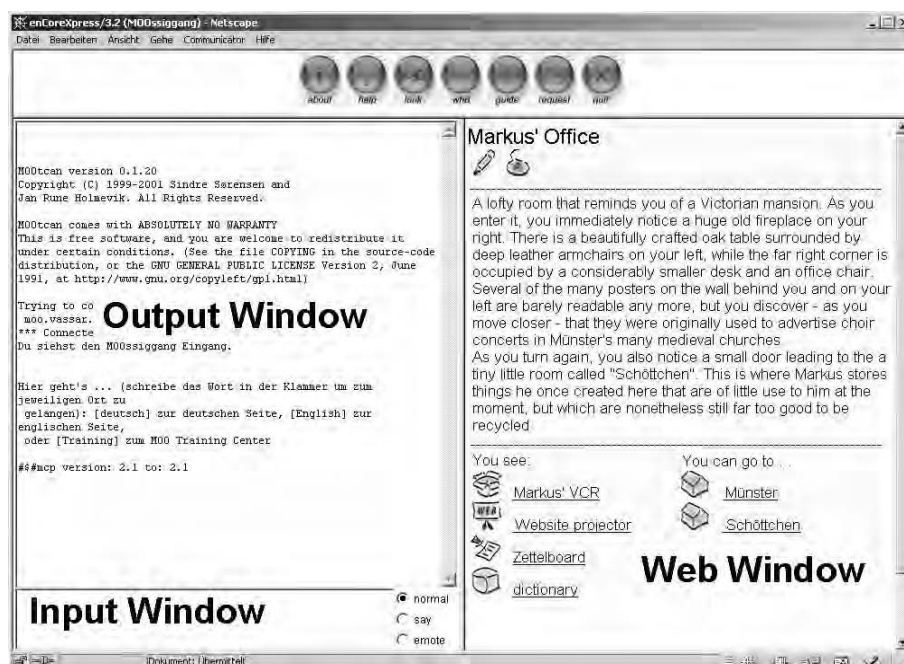


Fig. 1: A “room” in the MOO as it would appear on a visitor’s screen

country when people first connect to the environment,² and all registered users can easily add new areas or objects to the database.³ They can create rooms and furniture, they can adapt text-based equivalents of classroom tools such as projectors, cameras, tapes, VCRs, and TV sets (Schweller: 1998:97–98) to their needs, and they can even devise and store permanent profiles of their online personae on the computer which hosts the MOO.⁴

The area on the right of the screenshot shown in Figure 1, the so-called web window, shows the current description and the contents of my own virtual office in MOOssiggang MOO, the environment where I usually take my students. Messages I want to share with others can be typed into the little space in the bottom left corner of the screen. Commands to prompt the database can also be entered there. The output of the database, that is, “turns” which users address to others in the room, status messages, and other information about what is going on in the MOO are displayed in the output window above the input window.

Sanchez (1996:146) noted a few years ago that a MOO is ‘simply a database running on a server.’ Technically speaking, this is certainly correct. However, visitors to a MOO can choose from a much wider range of options to evoke and (re-)create an impression of proximity and even intimacy than people in chat rooms. As a result, they experience a stronger sense of permanence and community than visitors to competing environments. Indeed, we shall see below that the unique combination of the evocation of space, presence, and proximity between interlocutors in the MOO can

have quite remarkable effects on people's online behaviour as well as the ways in which they perceive their partners. The result of all this is that people often feel that their online meetings are truly (inter-)personal encounters.

MOO users can "say" things, address people directly by prefacing a turn with the respective person's name, and they are able to "whisper" messages to someone else so that only the sender and the recipient of the information can observe the text. They can hold up a "big sign" to make a message stand out from the other text on the screens and they can express themselves and their mood via so-called "emotes," that is, through the narration of actual or imagined actions such as Mike nods, Kate is happy today, Chris stares out of the window, or Steven pours a bucket of water over Caren. Several of these options are illustrated in Figure 2, which cites an edited passage from an online discussion between some of my students in the MOO which would usually appear in the area in the top left corner of the screen shown in Figure 1.

```
Silja says, "Ole, do you think we should present our stuff
in a lecture?"
Silja says, "or should we present it in different rooms?"
Ole [ to Silja ] : "yes, four or five rooms would be excellent."
Ole says, "Rona, what do you think?"
Ole says, "Rona???"
Silja sticks her head out of her screen to look for Rona;-)

Ole holds up a BIG sign: | Rona, where are you?? |
                        | Rona, where are you?? |
                        | Rona, where are you?? |
Rona says, "Sorry, I searched for some articles in the N.Y.
Times."
Silja says, "find anything good?"
Rona says, "No, the whole articles costs money."
Ole says, "perhaps you can try a different newspaper ;-)"
Ole smiles
Silja says, "one that is strictly an online paper."
Rona says, "ok, ok, I'll do that later today ."
Ole [ to Rona ] : so, what do you think? Should we present what
we've got in rooms or in a lecture?
Rona [ to Ole ] : rooms, definitely!!! Then we can integrate the
graphics I've found.
Rona [ to both of you ] : how much time have we left?
Silja says, "three weeks, I think . "
Ole says, "WHAT???"
```

Fig. 2: Learner interaction in the MOO

Unlike in a chat room, people in a MOO can even communicate with each other if they are in *different* virtual locales or rooms. With the help of <page> messages,

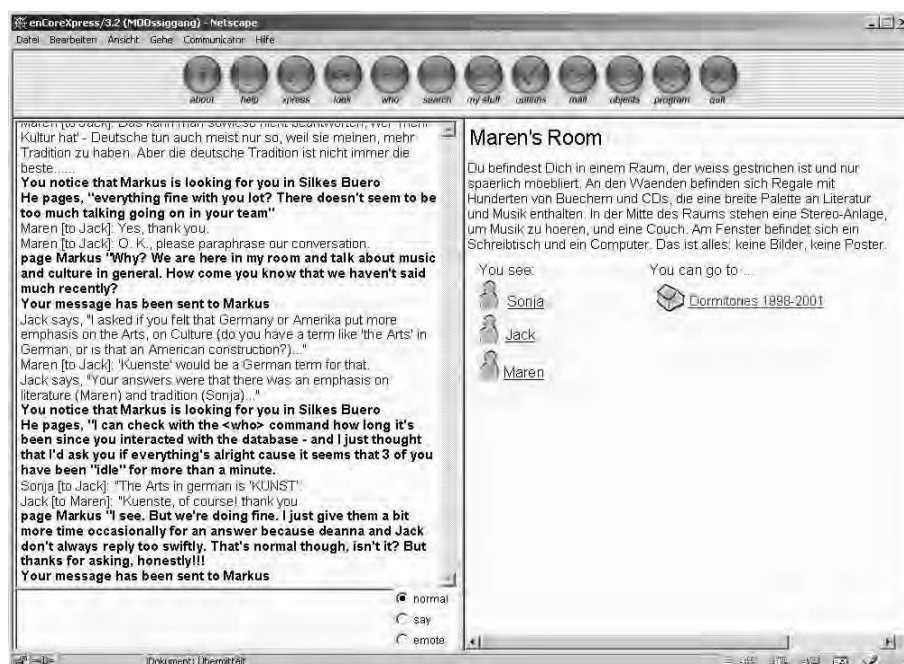


Fig. 3: An exchange of page messages⁵

learners can call for assistance from anywhere in the environment, and teachers can respond to individual students on a private channel without disturbing the other learners in the same virtual locale, as <page> messages only appear on the screens of those who are exchanging pages.

In the passage shown in Figure 3, for example, I have used a page message to ask one of my students if her team required any assistance because the learners were not exchanging much information with each other at the time. Prompted by my question, the learner who received the message then used the command <page Markus> to notify me that everything was fine, while I went on to explain why I had contacted the student in the first place.

People who access a MOO for the first time are usually “dropped” into a welcome room, where they will find details about how to join its community, that is, how to apply for a permanent “character,” and how they can explore the online world. If they use a client program such as *Pueblo* (for Windows computers) or *MUDDweller* (for Macintosh machines) to connect to the MOO, this information appears in the considerably larger window at the top of their screens, while the lower part of their screen shows a smaller window which allows them to key in their own input to the database. Those who visit a MOO which has been fitted with the *EnCore* interface (Haynes & Holmevik: 2000), on the other hand, are provided with a tripartite screen such as the one shown in Figure 1.

Figure 4 further illustrates how the *EnCore* interface enhances output from the MOO database with the addition of graphical information. Icons help learners to

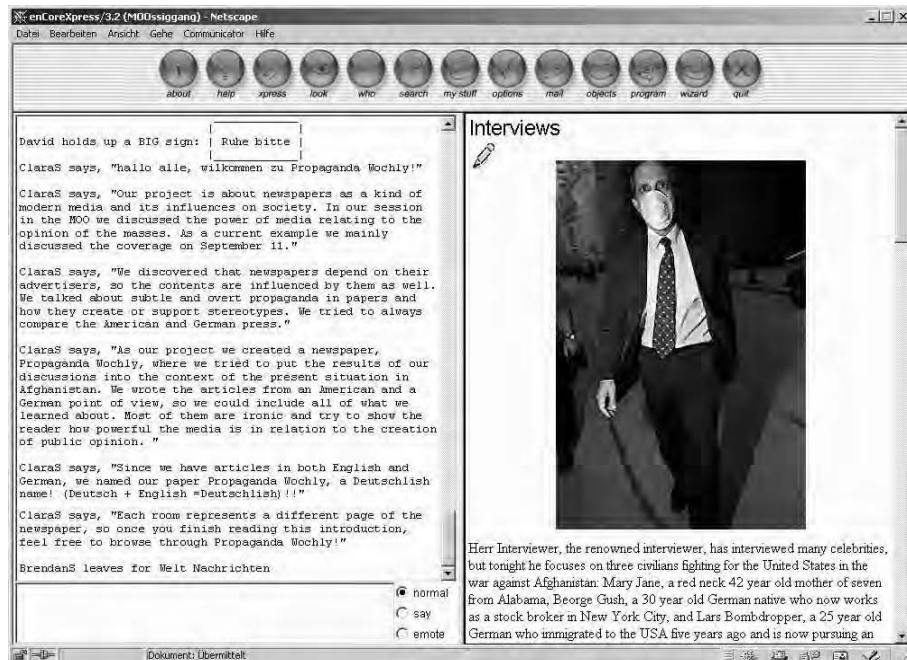


Fig. 4: A lecture in the MOO viewed with the *EnCore* client

move about or to manipulate particular items. As we have already seen, the web window lists the “contents” of the virtual location in which a user is currently dwelling. It cites the description which the owner of the room has composed to let others know what they are expected to “see,” and it also shows hyperlinked icons which represent exits, people and objects, but which are sometimes not mentioned in the room’s description, because some users or items may reside only temporarily in a particular virtual space.⁶ The input window allows MOO users to compose and revise messages they want to exchange with others before they send them off to the database, while the output window shows them what is happening in the environment. Here they can verify that the system has processed their input correctly, observe what others may have replied to them, or check whether a new person has arrived in the room.

Finally, there is a menu bar at the top of each *EnCore* screen which offers shortcuts to many of the most frequently used MOO routines. There is a <who> button, which can be used to call up a list of the current users of the environment, their virtual whereabouts and their current “idle times” (Figure 3), and there is a <look> button, which can be clicked to refresh the contents of the web window. The <help> button opens an FAQ list, the <mail> icon enables people to compose MOOmail or check their mail box, and the <objects> button can be used, among other things, to edit or revise a lecture that someone is planning to give in the MOO. Figure 4 shows a student who is in the process of delivering such a lecture, that is, the database delivers a series of messages which the learner called ClaraS has composed and archived

on the server in such a way that it appears as if she is producing this presentation spontaneously.

MOOs are derivatives of MUDs, that is, of text-based worlds where people often had to collect specific items, fight dragons, and rise to other challenges to achieve the ultimate goal of these computerised versions of *Dungeons and Dragons* board games, namely to become a “wizard.” Initially, this piece of history may seem trivial or even irrelevant in an introduction to the educational potential of MOOs. Nonetheless, it is important to appreciate this fact for at least two reasons. First, many administrators continue to use some of the metaphors which were established in the heyday of the MUD. They are, for example, still referred to as wizards, while registered users are known as players. Second, regular visitors of a MOO often regard themselves even today as participants in a role-playing situation rather than as mere “users” of the environment.⁷

It is also crucial to bear in mind that MOOs can accommodate dozens of people at once and that “rooms” can become very crowded. Some researchers therefore recommend that there should never be more than five learners in any single virtual locale to make it easier for learners to cope with the amount of text which is scrolling across their screens. Even discussions among a small number of people can be tricky to manage because the lack of visual support and the absence of paralinguistic information in text-based computer-mediated communication (CMC) puts pressure on learners to make themselves “heard”.

Some MOO visitors use block capitals and enclose important parts of their messages in asterisks to compensate for the differences between verbal discourse and CMC. Moreover, research has shown that synchronous and asynchronous CMC are replete with reduplicate letters and punctuation marks which people employ to imitate pitch (Maynor; 1994; Werry: 1996). Graphical representations of facial expressions, such as “smileys,” can take the sting out of ironic remarks or communicate empathy, and the narration of (alleged) actions via emotes can likewise help to reintroduce at least a crude sense of place and physical interaction into an online conversation.

Still, each event in a MOO, whether a simple remark, an expression of emotion, or a virtual physical gesture, requires deliberate and premeditated action. Individuals engaged in face-to-face conversation usually employ pitch, smiles, laughter, and other paralinguistic cues unintentionally. Participants in written CMC, on the other hand, must not only put the message they want to convey into words, but they must also “flag up” in which mood they want others to interpret their ideas and actions. Marvin has illustrated this difference between spoken discourse and real-time CMC as follows:

In private something flowing across the computer screen might cause a participant to spontaneously smile, but a conscious choice must be made to type it out; a participant might frown at the keyboard ...but strategically decide to type a strategic smile. (Marvin: 1995)

Implications of the MOO's design principles for language learning activities

What implications do the specific design features of the MOO have for its potential to promote (second) language acquisition? How do learners respond to the blending of virtuality and authenticity in the MOO, and where can we really expect improvements in learners' skills when we take them to the MOO? This section offers an initial set of tentative answers to these and a few related questions about text-based CMC.

MOO visitors have to process a substantial amount of native- or foreign-language input (or both) over a short period of time, and the wealth of information can stretch an inexperienced user's ability to distinguish those contributions which are relevant to him or her from the other text in the output window. It is also important to note that all contributions remain visible to the learner for several seconds before they are pushed off the screens by subsequent turns. Moreover, learners can always scroll back to re-read earlier threads of discourse, and room descriptions stay in the web window until a user refreshes the information by clicking on the <look> button.

The abundance of information appearing on a screen in the MOO coupled with the ability to review previous segments of an exchange can have at least two beneficial effects on the development of students' language skills. MOOs can provide an excellent basis for the development of skimming and scanning skills. Moreover, they may provide a favourable context for (incidental) vocabulary acquisition, as the learners usually not only process the messages they receive from others but also other text they encounter in the MOO. Turner notes: 'Where a book invites the reader to turn the pages, ...text-based virtual reality invites the reader to explore exits—entrances to [a] new "room" or described spaces' (2001:168).

Participation in MOO-based interactions can also affect a learner's productive skills. Unlike those who exchange email messages, which seem to be the result of spontaneous acts of writing but which are usually re-read and revised at least once before they are sent off to others, participants in synchronous CMC have only seconds to reflect on the wording of their contributions. The large amount of textual input with which a user must cope can intimidate weak learners with little or no confidence in their (target) language skills. It can also encourage (second) language learners to take risks and to 'consciously recognise some of their linguistic problems' (Swain: 1995:129). Indeed, if Hatch's famous quote that '[l]anguage learning evolves out of learning how to carry on conversations' (1978:404) is correct, then it seems that the pressure on learners to produce a quick response *and* to monitor their output with regard to the interplay between linguistic and paralinguistic information can prompt them to exploit *all* available resources to avoid a breakdown in the conversation and to use this experience to improve their language skills (c.f. Levy and Blake, this volume, for more on the effect of synchronous and asynchronous environment on fluency and accuracy).

MOOs provide learners not only with a more complex, but also with a more stimulating context for language learning than chat rooms or four-walled classrooms as they can—and even have to—re-invent themselves through their online personality. One of the first things new members of a MOO community usually do after they have

obtained their “character” is to compose and save a profile of themselves in the database, so that others can see with whom they are dealing. These profiles frequently contain factual information such as a person’s age, height, hobbies, or the colour of the individual’s hair and eyes (Figure 5, which cites a selection of the profiles my students composed of themselves in the MOO).

a green-haired student of History and English who is fond of music, candles, ultimate and books.

a nice guy, apparently the only one WITHOUT glasses, who thinks that there might be better ways to communicate (but who is certainly willing to try his best here)

I’m 23 years old, have brown eyes and brown hair and I don’t wear glasses but contact lenses. My hobbies are playing the piano, singing, going out with friends. Many people say that my laugh is very loud and infectious. Besides laughing I love travelling. I study English and Catholic Theology in Muenster and I become teacher.

Nina is a young, red-haired woman who studies English, Spanish and German. She loves Spain, sunshine, music, and a lot more.

Fig. 5: A selection of students’ self-descriptions in the MOO

But the virtual nature of the online world and the fact that there are typically only a few people who can verify what someone has written about him- or herself also stimulates many people to toy with the absence of visual cues and mix fact and fiction in their profiles. Indeed, the opportunity to style themselves and their surroundings according to their own tastes and preferences provides learners with a perfect opportunity to use language creatively or, in the words of Holmevik & Haynes (2000:80), to pick up the ‘textual paint buckets ...and start decorating and describing’ themselves and their virtual belongings in the MOO.

Engagement in MOO-based interactions tends to absorb learners and create in their minds the illusion of immersion in a world with tangible objects and a “real” sense of space and proximity to their interlocutors. It also forces them, however, to identify a framework for conceptualising what they are doing, and the fact that MOO discourse is replete with block capitals, reduplications of letters and punctuation marks (e.g. Sheeeeelagh, that was meant to be a JOKE !!!!), smileys and emotes suggests that the concept which most of them emulate is that of verbal face-to-face discourse rather than traditional forms of writing. Yet if this is really so, that is, if people by and large conceptualise their online interactions as quasi-equivalents of “classic” verbal interaction, then there is also much reason to speculate that learners may perceive the feedback they receive and ultimately their entire encounters as just as authentic as face-to-face interactions.

Finally, it should be noted that MOO visitors can archive their online interactions as electronic texts by clicking on the <Xpress> button and by choosing the option “Start logging” (Figure 6). One advantage of this opportunity to log sessions is that

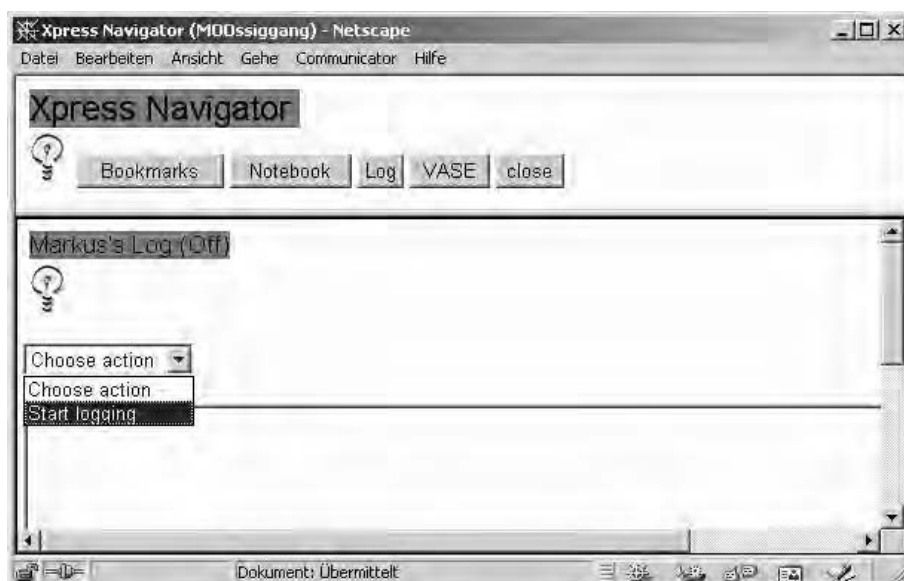


Fig. 6: Starting the MOO's logging facility

the transcripts of online, MOO-based encounters can be printed out to enable learners and their teachers to re-read what has happened in a particular session. Electronic logs can also be used for data-driven learning such as the identification of salient or recurrent patterns with the help of a concordancer (Tribble & Jones: 1990; Eck, Legenhausen & Wolff: 1994; see also Levy, this volume, on logs), that is, with a program which allows for the identification of keywords or recurrent linguistic patterns in any collection of electronically available texts. All learners could thus be asked for example to review their interactions with regard to their own or their partners' use of specific lexical items or grammatical structures, or the students might use a concordancer to search through the logs they have accumulated in the course of a whole semester to find information or contributions they can cite in a presentation or term paper.

Past and Present Uses of MOOs in Language Education

The first educational MOOs opened their virtual gates in the midst of a hot debate about whether environments which owe their existence to "hack and slay" games (Turkle: 1995:181) can really promote "serious" work, or whether their use is simply a waste of time. Indeed, many individuals and teams of practitioners who set up their own virtual worlds in the mid-1990s faced an uphill struggle. They often not only found that there was no funding available for their endeavours; some university officials even tried to close environments down. In a paper with the telling title, "The

dragon ate my homework,” Kelly and Rheingold (1993) report that the educators in Australia were so ‘alarmed’ that they banned all MUDs from their machines.

This additional digression into the history of MOOs probably helps to explain why evidence about their use in language education is still fairly hard to come by. Although the world-wide availability of the virtual worlds *MundoHispano* and *SchMOOze* was announced immediately upon their founding almost a decade ago (Falsetti & Schweitzer: 1995; Turbee: 1995; Turner: 1995; Pinto: 1996), even today there are barely a dozen reports which provide more than anecdotal evidence about the strengths—and weaknesses—of MOO-based language teaching, and it is to these that we will now turn our attention.

Immersion in a ‘virtual’ target language community

Probably the most enthusiastic—and also the most widely quoted—early paper about the educational potential of MOOs is a document by Turbee, in which she presents the following observations and hypotheses:

Even novice level users report coming away from a MOO experience thinking in the target language. ...The types of activities that can be created for a MOO are limited only by the imaginations of the teachers and learners. One can hardly imagine a classroom or homework activity which cannot have a parallel MOO activity designed around it. ...While textbooks do the important job of providing lists of vocabulary and outlines of grammar, MOO sessions help learners to internalise language structure within the broader contexts of dialogue and culture (1996).

Similar comments can also be found in Sanchez’ paper about the MOO. Both authors agree, for example, that even a single classroom session in a monolingual environment may suffice to immerse learners at least temporarily in a virtual target language community. Moreover, both Turner and Sanchez emphasise that MOOs engage learners in human-to-human conversations (as opposed to human-computer interaction in traditional CALL contexts), and that students therefore receive spontaneously generated authentic feedback to their input rather than pre-fabricated replies which someone composed in anticipation of their potential output.

Online environments restrict teacher control, and some practitioners, including Pinto, have emphasized that they felt rather uneasy about the fact that they were not able ‘to adequately observe the students interacting on the MOO’ (1996: 166). Yet that fact only confirms that the use of online environments requires careful planning and a solid framework which defines what learners are expected to do. Indeed, teachers who take the risk, do the planning, and delegate some of the responsibilities for teaching and learning to their students in the MOO may well find that they are rewarded with a situation in which ‘it is the native speakers who do the teaching on MOO and learners who are in control of what they learn’ (Turbee 1996; see also the discussion of the concept of learner autonomy in the current chapter).

MOOs as ‘theatrical environments’

The most comprehensive volume about the MOO continues to be a book by Haynes and Holmevik (1998), for which the editors collected a total of fourteen papers which deal with numerous different aspects of this online environment. The book features Curtis’ personal reflections on the evolution of *LambdaMOO* (1998), the environment which became a model for all subsequent virtual worlds, and it contains articles about the educational tools which learners can draw on in the MOO (Schweller: 1998) and about the poetics of textual descriptions in these online databases (Joyce: 2000). There are also several reports which deal with practical uses of text-based virtual reality (TBVR) in language education, including a fascinating chapter by Burk on MOOs as ‘theatrical environments’ (1998a:235).

Burk’s central claim is that ‘the separation of the virtual body from the physical body allows for incredible fluidity of identity on the cyberstage’ (237). To prove this point, Burk created her own world, *ATHEMOO*, where her students prepare and act out existing plays as well as develop new ones which they perform in public in the MOO on dates announced on the MOO’s website and on various mailing lists. This use of the MOO, which combines the advantages of the multi-layered, object-oriented nature of the environment with authentic online interactions and observer-involvement, clearly represents one of the most promising and innovative approaches to the use of TBVR in language education. Burk explains:

The nature of MOO interaction extends the notion of communication between performer and audience, student and teacher. In MOO environments, a player’s presence is made known by the action of typing to communicate. In the classroom, a students’ [*sic*] presence is made known by the fact of their [*sic*] physical body in attendance. MOO spectators and students can log in and be completely passive during a performance or class there, simply reading what appears on their screens, or use the emote command to laugh or clap. This experience is analogous to that of attending a film or traditional theatre performance. But MOO provides a performance environment in which the separation of actors and audience is sharply reduced.... Thus, in the traditional sense of an audience shaping each performance by their reactions, MOO creates a new venue for collaboration between actors and spectators, teachers and students that directly effects and often enhances the experience (1998b).

Albeit probably by coincidence, Burk’s reflections lend further support to Turbee’s contention that ‘MOO sessions help learners to internalize language structure within the broader contexts of dialogue and culture.’ They illustrate how a suitable pedagogical framework can stimulate learners to exploit the virtuality of their surroundings by toying with the connotations of individual words and phrases, and they additionally demonstrate that it is really possible to do “serious” work in the MOO in spite of—or perhaps even because of—its game-related heritage.

Intercontinental and intercultural communication in the MOO

MOOs can provide a suitable environment for the development and presentation of theatrical plays, role-plays and even for a *simulation globale* (Shield & Hassan: 2002). In fact, the list of events which have been “staged” in these worlds even includes online defences of a master’s thesis and a doctoral dissertation (Grigar & Barber: 1998). Some teachers have also turned to the MOO because it allowed them to bring students from different physical locations together in cyberspace for the discussion of literary works or other texts they had to prepare for a certain seminar (see Pobega’s website for his *Sophie’s World Discussion Group*, where students met once a week via email and through a series of online sessions to discuss issues related to Gaarder’s book, the logs of which Pobega subsequently put on the web).⁸

Both Crump (1998) and English (1998) took their classes to the MOO with a view to ‘incorporating online and offline reflection into the writing process,’ as English put it in the subtitle of his paper, and both authors emphasise that it was especially the opportunity to archive electronic transcripts of online discourse—in addition to the features already mentioned above—which made the MOO so attractive to them. Similarly, Schneider and von der Emde (2000) combined MOO-based and classroom activities in their language classes. Unlike the former authors, however, they did so to encourage their students to compare the evocation of space in written narratives with those in an online environment.

Schneider and von der Emde asked their learners to read a selection of German-language texts ‘in which space figures prominently’ (2000:19) and discuss them in small groups in the MOO. The students were then invited to translate their ideas about space into practice by constructing their own MOO locations. This activity, which was designed to ‘foreground the students’ own positionality vis-à-vis the cultural documents they [were] studying’ (23). This first activity was then completed with another collaborative task in which learners had to leave feedback in writing in the room of at least two of their peers after they had visited them in pairs to see how others had completed their second task.

Although Schneider and von der Emde acknowledge that their students were undergraduate foreign-language learners who had not yet mastered all aspects of their target language, they claim that their learners made substantial intellectual and linguistic progress over a fairly short period of time because ‘the MOO restructures language-learning dynamics ...by promoting meaningful communication between students through content-based activities’ (19). They also point out that ‘the virtual authenticity of MOO rooms, objects, and identities raises the stakes of target language use to the level of cultural production’ (23).

The opportunity to create and reflect upon cultural artifacts features even more prominently in von der Emde and Schneider’s latest research (2003), an article in which the authors describe how they tried to prompt their students to reflect critically on both their native culture and their target culture in order to increase their capacity to reflect not only on language but also on metalinguistic aspects of language in use. Drawing on similar tasks as those they asked their learners to complete in the previous study, they now also take into account what they call ‘collaborative reading,’

an undertaking ‘in which the very act of reading—of actualizing the text—is the result of team work and dialogic engagement with the text’ (123).

Like Turner (2001), Schneider & von der Emde (2000) maintain that ‘the motivation of students to learn vocabulary increases when the stakes of conveying ideas are high,’ (127) and that MOO-based work accordingly provides them with a highly suitable context for incidental vocabulary acquisition. They also suggest that Joyce’s verdict that ‘[t]he room is what you read and where you write [sometimes writing what you read and where you write the next time]’ (Joyce: 2000:42) may apply not only to room descriptions, but that online worlds even blend synchronous and asynchronous writing to such an extent that it becomes practically impossible to differentiate conceptually between the two (Schneider & von der Emde: 2000:128). Hence, reading and writing may occur in a parallel fashion to the same degree as speaking and writing do in a spoken conversation.

Tandem learning in the MOO

A number of educators have attempted to harness the potential of MOOs to act as a venue for encounters between speakers of different native and target languages, where each learner acts as a native-speaking expert for his or her partner’s target language. This adaptation of tandem learning, a concept which has already been practised in face-to-face settings and correspondence-based exchanges for centuries, was first piloted in the MOO in 1997 (Donaldson & Kötter: 1999), when research into email tandems revealed that many learners enjoyed their exchanges, but that they were rather unhappy about their inability to request and obtain immediate feedback on their output.⁹

Donaldson and Kötter’s study confirms that online tandems are superior to offline exchanges in this respect. Learners frequently asked their partner for help or instant feedback on their own output. In fact, the learners, who met with each other once a week for about two hours over a period of almost three months, worked so well with each other that they actually came to resent being visited by their teachers. The study also revealed, however, that the learners might have collaborated even more successfully if they had met more often over shorter periods of time, and if they had been obliged to review and comment on the progress they had made more frequently. None of the teams in this project was able, for example, to summarise the outcome of their discussions well enough to present them to their peers, although it must be added that especially the German learners had only infrequent or even no access to a computer in between individual weekly meetings. Moreover, the learners worked with a two-window client rather than the tripartite *EnCore* screen and the German learners were recruited from an adult evening class rather than a more formal context, such as a school or university course.

There can be little doubt that the social nature of tandem interactions and the principle of reciprocity in tandem learning make it easier for individuals to experiment with their target language than would be the case in “normal” interactions between native- and non-native speakers.¹⁰ It is also fair to say, however, that the MOO with its unique blending of virtual surroundings and authentic discourse requirements

often has a similarly positive effect on learners' qualms about making mistakes and about appealing for help or challenging their partners' views. Indeed, more recent research into MOO-based tandem work (Kötter: 2002) reveals that students do indeed cooperate more successfully if they meet twice a week, if they are obliged to present the outcomes of their team work in the MOO, and if they meet in groups of four rather than in pairs, as this constellation increases the chances that at least one of the partners will be available even if the other has to miss an online meeting.

Further support for the assumption that tandem learning in the MOO "works," even if there are considerable differences between students' respective L2 proficiencies, is available from research conducted by Schwienhorst. His data from exchanges between Irish and German ICT students indicate that these learners 'worked towards finding the most effective strategies for their highly different levels of proficiency, adapting to each other's needs and capabilities' (Schwienhorst: 2002:144), and he reports in a different paper that the feedback he received from his tandem learners about the MOO additionally confirms its suitability as a venue for language learning enterprises (Schwienhorst: 2000b; see Blake's discussion, this volume, on interaction between heritage speakers and non-native speakers in CMC).

Perhaps most importantly, however, Schwienhorst was able to demonstrate through a comparison of students' self-assessments with their actual online behaviour that the weaker learners in his sample preferred—and received—translations rather than paraphrases when they prompted their partners for a clarification, while those learners with more advanced L2 skills did not receive as many paraphrases as they had hoped for (2002:144). Furthermore, he discovered that almost all students requested clarifications from their partners primarily when they were in the "learner role" rather than the "teacher role," that is, when they conversed in their target language. This finding substantiates the claim made here that there is little need for learners to feign understanding and to refrain from asking a partner for assistance. Yet it is equally worth noting that Schwienhorst's tandem learners benefited considerably from keeping a diary about their experience (2000a), as doing so apparently provided them with an additional stimulus to reflect on their individual strengths and weaknesses.

A Framework for the Effective Use of MOOs in Language Education

Virtually all approaches to language teaching and learning which have become popular in recent years underline the contribution which teachers and capable peers can make to the progress of less proficient learners. The linking of individual tasks so that learners can learn from each other as well as the regular engagement in negotiation of meaning can have a positive impact on the development of a learner's interlanguages. At the same time, there is a steadily growing number of educators who insist that these processes must be accompanied by the promotion of a learner's ability to make informed decisions about his or her needs, to set and achieve individual targets, and to reflect upon the progress made, thereby developing learner autonomy.

MOOs lend themselves well to the actualisation of both learner collaboration and learner autonomy. MOOs are, of course, available world-wide, and their stable format makes them an almost perfect venue for the facilitation of learner collaboration because they more or less force learners to contribute to a discussion. Yet the written mode on which MOO-discourse is based, and the fact that the activities of reading and writing require more processing time than speaking and listening, leave learners just a bit more time to do so than in face-to-face discourse. Shy learners and students with relatively weak productive skills can “rehearse” and modify their contributions in the input window before they share them with others, while the availability of the output window means that students may also be able to ‘better discriminate between the target and non-target-like forms’ in online interactions (Pellettieri: 2000:81), since they basically have them right in front of their eyes.

Much of the current thinking on the development of learner autonomy, also labeled learning-how-to-learn, learner independence, or self-access learning, is based on ideas originally mapped out by Holec (1981) in the context of life-long learning for adult learners. Despite differences in nomenclature across the many adaptations and refinements of Holec’s ideas, most proponents of learner autonomy agree that it is neither ‘something teachers do to their learners’ (Little: 1991:3), nor a concept where teachers simply tell their learners to ‘jump in the water and learn to swim.’ On the contrary, the development and implementation of learner autonomy is an ‘experience-based learning process for teachers and learners alike’ (Dam: 1995:6) which requires fairly substantial changes to the established roles of teacher and learner. Teachers must be prepared to entrust some of their responsibilities to their learners, while the latter must learn to monitor and reflect upon their actions as well as to justify and even correct their decisions if they realise that they have chosen an unsuitable strategy to improve their skills.

Changes to the teacher role

Educators who teach in a four-walled classroom can usually observe at a glance what their learners are doing, even if they are working in small groups and sitting at different tables spread across the room. Teachers of MOO classes, on the other hand, have literally no means of checking what their learners are doing once they have branched out into different rooms. Instructors can, of course, “drop in” on individual groups. In addition, they can “bug” learners by leaving “microphones” in the virtual rooms used by the students. Those microphones could then be connected to the MOO’s Intercom device allowing an instructor to read everything which is “said” in all wired locations on a single screen. However, the limitations of such an approach soon become obvious. A learner simply has to change rooms to defeat the system of microphones. The problems related to a virtual visit to a learning space by a teacher are enumerated at some length by Donaldson and Kötter (1999).

Not only do teacher visits interrupt students in their work, but the written mode in which they have to occur in the MOO also means that they take up significantly more of the learner’s time than their equivalents in spoken interactions. These circumstances, plus the fact that learners can—and will—only become “autonomous” if they

have enough time and space to experiment with their own ideas and concepts, practically dictate that the moderators of MOO classes must learn to wait for their students to invite them to their rooms when they think that this is necessary rather than to take proactive steps.

Many teachers find that the modifications to their traditional role required to foster learner autonomy in a MOO can be quite taxing. Moreover, the task is made more difficult by the fact that novice MOO-users, in particular, initially tend to react to the newness of the MOO environment with a fair amount of silliness. Tallis and Harnack (1997) report that the first few sessions of their MOO classes were always replete with 'giggles, laughter, ... and witticisms that accompany a newly-found freedom of expression.' They are quick to add, however, that their students usually adjusted to the new learning environment after the first few sessions when they had managed to find their own voice in the online world.

An instructor needs also to remember that the MOO only relegates teachers to a more or less passive role for a limited period of time, namely during an ongoing session. Once a meeting is over, they can and must provide their students with the same support and advice which moderators of traditional as well as "autonomous" face-to-face classes need to offer their learners. Yet, unlike the teachers of these classes, they have an extremely useful aid for doing so in the shape of the logs which their learners have created of their meetings. Not only do the logs allow teachers to study the progress which each of their learners has made, but they also enable teachers to provide learners with detailed personal feedback and hence to raise learners' awareness of language and communicative processes in a considerably more individualised fashion than would be possible in alternative settings.

Negotiation of meaning, awareness-raising, and discourse management

MOO-based discourse 'blends work and play' (Fanderclai: 1995), and we have already seen that many interactions contain an element of silliness. However, it also provides opportunities for the negotiation of meaning and intercultural learning beyond those which naturally arise from gaps in learners' interlanguages. MOO-users co-construct social realities, and it is fairly obvious that doing so will occasionally lead to clashes between their own expectations and value system and that of their interlocutors. Similarly, conflicts can arise from silly or ironic remarks which someone has misinterpreted in the absence of visual context information.

There can be little doubt that the absence of visual and aural cues in the MOO sensitises learners to what can—and what cannot—be expressed through linguistic means. Indeed, the feedback obtained from participants in various MOO-based projects is full of comments such as the following remark: 'I found that I had to be very careful with what I said and how I said it so as not to be misunderstood. Especially when it came to sarcasm and joking around.' (Kötter: 2002:112). But there is also evidence in actual online discourses to suggest that participation in network-based conversations may increase a learner's awareness of his or her own communicative behaviour. Corinna, the learner who made the comment just cited, applied her insights

in the exchange quoted in Figure 7 to ensure that the situation did not get out of hand.¹¹

Lee says, "You would need to save your picture as: Corinna.JPG"
 Corinna says, "I'm too old for this. What does JPG snad [sic] for?"
 Karina says, "Jelly Picture Good."
 Corinna says, "a-ha"
 Lee says, "oder...gif"
 Corinna says, "You'll get the picture anyway."
 Karina says, "it's just when you scan a picture in, it can be in jpg or gif format"
 Corinna says, "Okay, excuse my lack of common knowledge..."
 Karina says, "not excused"
 Corinna sulks, sits in a corner and doesn't look at anyone any more
 Karina does the same thing *auf Deutsch*.
 Lee babysits
 Corinna says, "Nachaeffer"
 Lee says, "aeffer?"
 Corinna says, "Aeffer comes from 'Affe'=monkey... it means imitating someone in a silly way"
 Karina says, "Oh yeah...that was in chapter one freshman year. It's the first german [sic] word we learned, "¹²

Fig. 7: Conflict management in the MOO

The passage shows a situation in which two American learners, Karina and Lee, teased their German partner about her lack of familiarity with computers. Corinna initially responded to this challenge with good-hearted and actually quite witty remarks. She mocked her own incompetence ('I'm too old for this'), played with the inherent ambiguity of the phrase 'get the picture,' and she tried to defuse the clash which threatened to arise from Karina's 'not excused' by switching to emoting and by appealing to her partners for comfort.

And yet, Karina's alleged imitation of Corinna's behaviour and Lee's "babysitting" did nothing to defuse the situation, and it was only the German student's switching to her L1 in this tandem encounter (see also below) which appears to have appeased Lee, as she suddenly had to admit to her ignorance in a different field of discourse, namely her target language. All three students continued to discuss their presentation amicably after this incident, although none of the students apologised for her behaviour. In addition, it is worth noting at least in passing that this episode, which started out with a potential conflict, ultimately enabled Karina and Lee to expand their vocabulary.

Yet it is not just the avoidance and the solution of potential conflicts which prompts learners to notice gaps in their communicative skills and reflect upon the lin-

guistic arsenal they have at their disposal. Interlocutors in the MOO are forced to contribute regularly to a discussion, and we have already seen that the fact that they have to do so fairly quickly frequently provides them with a vital stimulus to 'outperform their competence' (Swain: 1995: 137). Unlike asynchronous CMC, however, in a MOO learners can immediately request a clarification, explanation or paraphrase if they have not understood their partner, and the option of sending <page> messages (a private message of which only the recipient is aware) additionally gives them an opportunity to clarify things without having to expose their own flaws or those of others in public.

The quality and frequency of negotiation of meaning in the MOO obviously depends on various factors, including the first or second language proficiency of the participants and their familiarity with the MOO environment itself. Moreover, the learning preferences and experience of the participants, the tasks they are asked to complete, the size of the groups in which they are working, and the typing skills of each individual are bound to have an effect on the length and frequency of a learner's contributions. Yet there is also mounting evidence to suggest that the specifics of the learning environment and the unique conditions which learners find in the MOO make a significant contribution to their willingness to prompt others to clarify their utterances and to engage themselves in negotiations of meaning.

MOOs facilitate peer tutoring because the reduced danger of loss of face in the absence of eye contact and visual status cues make it easier for language learners to appeal for assistance than in a face-to-face situation. Pica and Doughty found in their analysis of spoken interactions between native and non-native students that clarification requests, confirmation checks, and comprehension checks accounted for eight percent of all turns in their sample (1985: 240). My analysis of data from a one-semester MOO-based exchange revealed, on the other hand, that almost fourteen percent of student turns could be classified as instances of such repair moves (Kötter: 2002:174). In addition, I could establish that another sixteen and a half percent of learner contributions to online exchanges were direct indications of understanding or (non)-agreement (Kötter: 2002). In fact, figures from the study in question indicate that almost a third of the utterances learners produced were related to the negotiation of meaning.

The passage following in Figure 8 illustrates how participants in MOO-based tandem work can help each other improve their target language vocabularies. It reveals how more capable partners can provide support for the tasks of less-capable learners and thus serve as a "scaffold" for the work of their peers. The extract thus also demonstrates how well the MOO lends itself to approaches based on sociocultural theory and constructivist perspectives (Bruner: 1986; Schwienhorst: 1998).

Maren says, "*Kunst und Wissenschaft, Forschung und Lehre sind frei. Die Freiheit der Lehre entbindet nicht von der Treue zur Verfassung.*"

Sonja [to Joanne/Jack]: "Do understand the first part?"

Jack says, "Art and Science, ??? and teaching are free. The freedom of teaching is not bound from the truth of the constitution???"

Jack says, "help!"
 Maren [to Jack]: "Yes"
 Sonja says, "It says that tha Arts ans Sciences are free"
 [sic]
 Jack says, "what is forschung"
 Maren [to Jack]: "Forschung is what you should do at univer-
 sity"
 Jack says, "study?"
 Sonja [to Jack]: "Forschung is a kind of investigations."
 Deanna says, "Hmmm... this is interesting. So the document
 does not say that people MUST support the Arts?"
 Jack says, "Research=Forschung?"
 Sonja nods.
 Maren says, "Rather research than study"
 Jack says, "okay. and the second part... let me try."

Fig. 8: The negotiation of meaning in MOO-based discourse

Planning a MOO-based project or activity

Like any successful learning activity, the effective use of MOOs in language education requires careful planning and the selection of tasks and an overall framework which is suitable for a given group of learners. Non-native students who visit the MOO to improve their target language skills—and especially those who meet with native speakers of their L2—should have at least a low-intermediate command of that language. Likewise learners in a MOO ought to have at least modest typing skills so that gaps in a conversation can be kept to a minimum. Moreover, it is indispensable that learners have access to a computer during a lesson and at least occasionally between online sessions since it is only then that they can exchange emails with their partners, update their MOO data, draft material they plan to use later on, and process the electronic transcripts of their meetings in the ways mentioned above.

The tripartite design of the *EnCore* screen with its input, output and web windows as well as hyperlinks and task buttons makes navigating and manipulating the MOO environment so easy that neither students nor instructors need be computer experts to use the environment successfully and effectively. In fact, more than ninety percent of the things which learners will ever want to do in the MOO can usually be easily achieved with the few commands listed below and the various editors provided by the *EnCore* interface. Many of the templates for classroom tools and other artefacts come with "built-in" user manuals, and the availability of the <page> command offers an additional safeguard that learners can quickly obtain help if they run into difficulties or get lost in the environment.

Educators who plan to integrate the MOO into their teaching should bear in mind that the environment usually belongs to someone else and that it has probably been designed for quite specific purposes. Hence, it is crucial that an instructor visit several MOOs to be able to make an informed decision about where to best take learners. The instructor shopping for a MOO should also ask the administrators of the environ-

ment under consideration whether additional learners are welcome, who else might be online during the time the instructor's learners will be visiting the MOO, and what rights the instructor and his or her learners will have with regard to extending the online database.

There are often policy statements which map out what types of activities and behaviour are accepted or encouraged in a specific online world, and it goes without saying that the owners of a MOO expect teachers to discuss proper decorum with their learners before going online. It is useful to remember that the administrators of educational MOOs have in all likelihood already collected worthwhile experience with visiting students and that they may be able to provide additional practical advice on how to plan specific activities.

MOOs can be used for single sessions and for composition exercises which may not even require learners to create and describe their online personality and build objects other than the editable note(s) they use to draft their texts. Nonetheless, I hope to have shown that their true potential unfolds only if learners can exploit the environment for several weeks or even months, as it is only then that they develop a true sense of the specific dynamics of "virtual" online interactions, of the ways in which they can compensate for the absence of visual and aural cues, and of ownership of the artefacts they have added to their learning environment.

Any teacher who plans to use the MOO beyond its capacity to provide a platform for chatting and/or collaborative writing exercises must prepare his or her students for the online experience and he or she must take into account that learners initially respond in rather different ways to the online environment. The organisers of international projects also need to remember that their subjects might live in different time zones, follow different syllabi, and that they may command quite diverse levels of ability in their target languages. Taken together, these factors may necessitate that teachers who expect their learners to collaborate with the members of other language classes begin to negotiate months in advance to determine what their learners ought to achieve, when and how often they will meet, and where they will do so. In addition, it is important that instructors agree on how they will provide students with feedback, that they need to make contingency plans for the eventuality that a student or even a group of learners has to miss a session or decides to drop out, and what to do if the MOO should be temporarily unavailable due to a server breakdown.

Conclusion

The discussion in this chapter has demonstrated that the use of MOOs in language education is more than just 'an attempt to inject simple novelty into old pedagogical techniques' (Fanderclai: 1995). I have also shown how the use of a MOO can affect the development of a student's language skills and general cognitive abilities, even if the jury is still out as to what effect engagement in written online interactions has on the student's verbal (target) language proficiency. Warschauer (1998) cautioned his readers in his research review that 'any claim that [written fluency] transfers to oral

communication is at this stage purely speculative.’ Kenning and Kenning (1990:34), on the other hand, claimed in their analysis of pre-CMC CALL environments that ‘exercises designed to improve written performance will also benefit oral performance.’ Beauvois (1992:463) likewise reasoned that there could be ‘some transfer of skills from [a] reading-writing-thinking exercise to improved oral language.’

MOOs have their own reality, and the environment is clearly ‘not a substitute for the physical classroom space and the real/actual activities that take place during class time’ (Haynes: 1998:173). However, there is plenty of evidence to suggest that the “virtual authenticity” of the MOO makes it a highly suitable alternative to face-to-face interactions if learners are not able to meet in person, and that a number of classroom activities can be transferred effectively to the MOO, even if Turbee (1996) was probably overly optimistic when she noted that ‘[o]ne can hardly imagine a classroom or homework activity that cannot have a parallel MOO activity designed around it.’

Notes

- 1 There are, of course, several differences between the original *Internet* and the *World Wide Web* (*WWW*). These differences are, however, irrelevant here, and the terms “*Internet*,” “*net*,” “*WWW*” and “*web*” will therefore be used interchangeably in this chapter.
- 2 Compare, for example, the names of popular MOOs such as *Dreistadt*, *College Town*, *schMOOze University*, *Diversity University*, *Little Italy* or *MundoHispano*.
- 3 See the end of this chapter for a list of some of the most frequently used MOO commands and examples of how to work with them.
- 4 Virtually all educational MOOs provide templates for these tools which can be quickly adapted to suit learners’ individual tastes and needs.
- 5 The commands which Sonja used to prompt the database to convert her input into *page* messages plus the texts which accompanied this process and my replies are printed in bold face here; they would, however, normally appear in ordinary print on a user’s screen.
- 6 A mouse click on such an icon either prompts the program to open an additional window with more information about the person or object represented by the icon, or it ‘teleports’ a user to the room whose name appears next to the icon.
- 7 Readers who are interested in additional information about the early days of the MOO should read Curtis’ fascinating and highly revealing account of the genesis and evolution of his own *LambdaMOO*, the first publicly accessible MOO on the Internet.
- 8 Pobega has apparently not exploited the potential of the MOO beyond its capacity to provide a platform for the exchange of textual messages in real time. However, refer to Shield & Weininger (1999) and Shield, Davies, & Weininger (2000) for additional suggestions about how to use MOOs plus a supporting website to facilitate task-oriented work.
- 9 Refer to Brammerts’ (1996:15) comment that ‘[o]ccasional meetings between partners in a MOO are obviously helpful [as] they can quickly answer questions, sort out problems and build on the relationships they have made.’
- 10 This tandem concept dictates that learners use their respective native and target languages for roughly the same amount of time, that learners draw on the expert knowledge of their partner about the linguistic and cultural community which the partner represents, and that everyone is able to test his or her hypotheses about the L2 in a non-threatening environment where partners can provide assistance when learners encounter linguistic problems.
- 11 This is a slightly edited and abbreviated version of data also cited in Kötter (2002:288).
- 12 The logs produced in a typical MOO are simple ASCII-text files. Anything a user enters from the keyboard and sends is enclosed within quotation marks. The typefont of the

excerpts in figures 7 and 8 has been altered to conform to the typography of the rest of the volume. Non-English text has been italicized as well in conformance with the practice throughout the volume (editors).

Resources

Both the *Pueblo* client and *MUDDweller* can be downloaded free of charge from <http://moo.hawaii.edu/Clients.html>

A selection of EnCore-supported MOOs

ATHEMOO: <http://moo.hawaii.edu:7000/>

Dreistadt: <http://cmc.uib.no:7001/>

Lingua MOO: <http://lingua.utdallas.edu:7000/>

MOOlin Rouge: <http://cmc.uib.no:9000/>

MOOssiggang MOO: <http://moo.vassar.edu:7000/>

SchMOOze University: <http://schmooze.hunter.cuny.edu:9000/>

Web pages of other MOOs

College Town: <http://www.bvu.edu/ctown/>

Diversity University: <http://moo.dumain.du.org:8000/>

GrassRoots MOO: <http://www.enabling.org/grassroots/>

MOO Francais: <http://www.umsl.edu/~moosproj/moofrancais.html>

MundoHispano: <http://www.umsl.edu/~moosproj/mundo.html>

Some frequently used MOO commands

MOO command	Example	Comments
say TEXT or ("TEXT")	say hello! ("hello!")	a standard command for the exchange of 'spoken' messages
emote ACTION or (:ACTION)	emote laughs (:laughs)	the MOO-specific option to narrate imaginary or real actions and to express emotions
page NAME TEXT	page Nina Come over!	the standard way of exchanging messages between people in different MOO locales
whisper "TEXT" to NAME-OF-PLAYER	whisper "Are you ok?" to Janet	whispering is very similar to paging, but it only works if people are in the same room
look or (look NAME)	look (look Rory)	look shows the contents of a room (or a person's description)
@examine NAME-OF-OBJECT	@examine noticeboard	shows the description and contents of an object and commands that can be used to manipulate it
@join NAME	@join Jim	a command which allows people to join others by teleporting to their room

@knock NAME	@knock Brian	netiquette requires that people knock before they enter someone else's room
@who	@who	provides a list of all current users of the MOO plus information about their virtual whereabouts
@create	@create	opens a menu which shows objects people can create and step-by-step information about how to do so
@quit	@quit	command used to disconnect from the environment

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10

Learning by Heart: Memory, MOOs, and Morphology

Cynthia Haynes

Introduction

In the summer of 1968, I visited Europe as a young girl from Texas.¹ It was a transformative journey in which I caught a seductive glimpse of what it means to have traveled. When I recall that trip, I see images, I hear sounds, I remember words, experiences, smells, and textures—many languages with which to communicate what I learned. Sensing (and fearing) that memories fade, I came home that summer determined to return, and so I studied German in high school, after which I earned a Bachelor's degree in German at a university near my home in Texas. I wanted to acquire a language to keep my memories alive and to form the conditions of possibility for my return. I wanted a language to speak me into being there, into being, again.

We have a saying that when you memorize something, you 'learn it by heart.' Today I have only the memory of a language I once learned by heart. And therein lies the problem and the promise of education. How is it possible to learn a language outside the native environment of the language, even (and especially) when one wants to so badly, when one's memories and desires depend on committing a language to heart? How do we inscribe language as indelibly as runes on ancient stones? How do we learn by heart?

The difficulty in answering this question is partly because it is a mystery. One could argue that the mystery can be partially ameliorated through rote routine, repetition, and re/cognition. But other factors accompany the process: confusion, frustration, insight, desperation, and other raw emotions. The range of elements that pressurize the language learning process is vast, not unlike the range of possible human languages, according to theorists of 'network morphology' (Surrey Morphology Group). Those who study this range claim that '[u]nderstanding the range of possible human languages enables us to understand our own, for theoretical and practical (computational) purposes.' Network morphology is a formal method of contrasting 'languages which have morphology [word-structure] at opposite ends of the spectrum of possibilities.' I profess no training in teaching formal methods of language study, yet find the terminology instructive, if not heuristic, as a means of transforming language learning pedagogy, or more accurately, of infusing pedagogy with the classic sense of transformation: metamorphosis. Simply put, the question of how we learn by heart involves a mysterious transformation within a vast network of meanings and emotions. And for this reason, I am unable to separate the question of learning language from the question of transforming one's heart. It is a tightly bound mesh, or network, woven of meaning, possibility, and metamorphosis.

Not coincidentally, what I have just described also aptly resembles a MOO (Multi-user domain, Object-Oriented), a real-time online learning environment.² As co-administrator of Lingua MOO, and co-designer of the *enCore* educational MOO core database (both with Jan Rune Holmevik, principle programmer of *enCore*), I can attest to the value of using an educational MOO for many purposes, most especially for language learning.³ But as a teacher of rhetoric, I know full well the need to establish my ethos to this audience. I teach in the School of Arts, & Humanities at the University of Texas at Dallas, where I am fortunate to situate my research within a number of disciplines. I am also Director of Rhetoric and Writing, responsible for the training and supervision of graduate teaching assistants and for establishing our rhetoric curriculum. In 1994, when I was invited to interview for this position, I was so certain of the power of MOO technology that I included a demonstration during my presentation to the faculty and search committee. In fact, Holmevik assisted in the demonstration by logging in to Media MOO (established for media researchers) from his home in Norway, and together we convinced my colleagues that the Rhetoric program at UT-Dallas should integrate the use of MOO into our rhetoric and writing pedagogy. Within six months, we created and launched Lingua MOO. But we did not want to restrict its use to the teaching of rhetoric, so from the beginning Lingua MOO was open to the education community worldwide. And some of our most frequent and enthusiastic users were language learning teachers. During the first two years of developing and improving Lingua MOO, Holmevik and I began work on creating a publicly available free educational MOO core database so that other teachers, researchers, and administrators could also create and customize their own educational MOO. We called it *enCore* (available from <http://lingua.utdallas.edu/encore/>) and released the first version in 1998. Without realizing it, however, Holmevik and I were unwitting advocates for the use of MOOs in language learning. The fact that our col-

laboration involved the distance between Norway and Texas was, perhaps, reason enough to support the efficacy of Internet-based technologies in pedagogical research. And the fact that we had no language barrier since Jan spoke English is, probably, not the most sound evidence that MOOs help facilitate language learning. Nonetheless, we noticed that Holmevik's fluency in English, and the speed with which he wrote while online in real time, increased exponentially because of our interactions in the MOO; and, coincidentally I began to learn Norwegian.

These co-incidences lie at the heart of a transformative collaboration born in a transformative environment—the MOO. My aim in this essay is to render this heart in the language of learning by heart so that (as in network morphology) understanding the spectrum of possibilities for language learning in MOOs is no rhetorical exercise—it is rhetorical through and through. The efficacy of calling upon rhetoric has ample historical precedence and covers equally the twin territories of language and technology. Roland Barthes goes so far as to claim that '[r]hetoric . . . has been the only practice (with grammar, born subsequently) through which our society has recognized language's sovereignty' (1988:15). According to Barthes, as rhetoric flourished via the Jesuit model of education in sixteenth-century France, its power installed 'a discipline of language' complete with academic prizes for rhetoric, for translation, and for memory' (1988:44). Today we bring all three into proximity once again with MOO technology, keeping in mind the features most productive for language learning.

But perhaps keeping productive features in mind is not enough; we need optimal features. Thus, in order to pin practical markers on our rhetorical MOO-o-logical map, I am enlisting Catherine Doughty and Michael Long's essay on "Optimal Psycholinguistic Environments for Distance Foreign Language Learning." Grounded in 'Task-Based Language Teaching (TBLT),' and the primacy of 'learner needs,' Doughty and Long's model provides a necessary practical counterpart to the rhetorical perspectives herein. So, as the map of our route unfolds, we will travel through three conceptual ports: memory, MOOs, and morphology. And because we travel (and live) always in "time," our perspective is necessarily time-bound, though not bound *to* time. While critic Paul Virilio terms real-time an 'inflation of the present' (1997:135), it will be necessary to suspend our traditional notions of movement, real-time, and language, and to remember what it means to have traveled, what it means to have a trajectory. As Virilio points out, '[b]etween the subjective and objective it seems we have no room for the "trajectory," that being of movement from here to there, from one to the other, without which we will never achieve a profound understanding of the various regimes of perception of the world that have succeeded each other throughout the ages' (1997:24). In short, he laments the 'loss of the traveler's tale' (25), he longs for the 'essence of the path, the journey' (23). This is the task of rhetoric, to restore the path; and this is the optimal path to learning language, to restore learning by heart.

MOOs as Optimal Environments

It is still necessary, some ten years following the emergence of educational MOOs, to make the case that MOO is more than a technology, more than a tool, and especially more than a space for chat. Until we embrace the scope of possibilities for understanding MOO, we may never understand the practical, technological, or pedagogical nexus into which we send our students. The MOO is no utopia, nor do I advocate such definitions. We can, however, advocate MOO technology (with more assurances) as an optimal environment for language learning by looking at how it measures up to the ten 'Methodological Principles for Task-Based Language Teaching' (TBLT) outlined in Doughty and Long. Their focus 'is on the role of the methodological principles (MPs) in the design of psycholinguistically optimal L2 learning environments, with special attention to the use of technology to realize the MPs' (2003:50). While they do not specifically cover MOO technology in their analysis, it is my aim to rectify this oversight alongside my tangential goal of sketching possibilities with a rhetorical eye. Key to why they find their way into my analysis is their focus on teaching, as noted in this disclaimer: 'TBLT is rooted in cognitive and interactionist SLA [second language acquisition] theory and research findings ... [and] is an embryonic theory of language teaching, *not* a theory of SLA' (emphasis mine; 51). For now, we should specify Doughty and Long's ten methodological principles for TBLT in distance learning of LCTLs (less commonly taught languages):

- Use task, not text, as the unit of analysis.bbb
- Promote learning by doing.
- Elaborate input.
- Provide rich input.
- Encourage inductive ("chunk") learning.
- Focus on form.
- Provide negative feedback.
- Respect developmental processes and 'Learner Syllabuses.'
- Promote co-operative/collaborative learning.
- Individualize instruction.

Before we move directly onto a rhetorical path beginning with Memory, it is important to note that following the three key sections of this essay (memory, MOOs, and morphology), I illustrate the integration of all these elements by adapting, and modifying, Doughty and Long's language teaching methodological principles for CALL chart (2003:52) in the Appendix at the end of this chapter.

Memory

We must agree that the narrative of memory is quite powerful. To have the alibi of history is no small thing. But old affiliations are often unfaithful to the memory of

their conception—and to the conception of memory itself. Take, for example, the tradition in language learning that relies on memorization. Such a pedagogy forgets the ‘essence of the path,’ the history, the journey, the contexts of meaning. Language frozen into discrete packets of information, memorized by artificial means, risks separation from its kind, its kin, its calling.

Some may think that computer-assisted language learning, especially in MOOs, simply displaces memorization, that it is not a more radical and effective pedagogy, much less that it evokes a redefinition of memory. So let us distinguish between natural and artificial memory. How can we teach language in such a way that we most closely approximate a natural language acquisition? In other words, how can we learn a language by heart? Learning by heart is not, I would argue, born of an artificial memory, that is, one trained carefully to remember. Learning by heart is a child of sustained real-time contextual interactivity, the instantiation of which requires that we first must re/member and re/conceive memory.

Memory as invention

Contrary to commonplace notions of memory, our memory is not a storage facility; it is a powerful system of invention. As one of the five classical canons of rhetoric (invention, arrangement, style, memory, and delivery), memory was linked to invention by the anonymous author of the *Rhetorica ad Herennium*, sometimes attributed to Cicero. ‘The *Ad Herennium* author calls memory the “treasury of things invented,” thus linking Memory with the first canon of rhetoric, Invention. This alludes to the practice of storing up commonplaces or other material arrived at through the topics of invention for use as called for in a given occasion’ (*Silva Rhetoricae*). While on the surface memory and invention may seem mere conventions (norms) in language learning, it is difficult to situate ourselves outside a literate mindset in order to understand the significance of memory to the learning theories and practices of ancient oral cultures. ‘Talking’ in real time in a MOO can be likened to a kind of “secondary orality” (cf. Ong: 1982) in that participants most often engage in unscripted conversation, albeit conducted solely in writing, so it retains vestiges of both oral “evanescent” language and the more permanent language of writing. Thus, to consider the correlation of spontaneous discourse in MOOs to language learning, it is helpful to recall classical rhetorical devices with which language and expressions were deemed most effectively displayed. ‘The canon of Memory also suggests that one consider the psychological aspects of preparing to communicate and the performance of communicating itself, especially in an oral or impromptu setting’ (*Silva Rhetoricae*).

If considered in the context of language teaching, impromptu MOO discourse is not necessarily in conflict with task-oriented learning, what in rhetoric and composition we would call the “writing exigence.” Doughty and Long’s M1 principle suggests that we ‘use task, not text, as the unit of analysis.’ As they explain: ‘Building lessons around texts (as in most content-based language teaching) means studying language as object, not learning language as a living entity through using it and experiencing its use during task completion’ (2003:56). In other words, ‘[t]here is a world of difference, for instance, between learning to make a particular kind of social, busi-

ness, or emergency medical telephone call through acting one out, as in a role play and/or making a real one to given specifications, on the one hand, and on the other, in a text-based program of some kind, listening to or reading a “dead” script of someone else’s effort’ (56).

The problem of reading a “dead script” is, like committing language to memory versus writing, nowhere more explicitly exposed than in the Platonic dialogue, *Phaedrus*. Indeed, this dialogue has long been at the “heart” of an historical conflict between philosophy and rhetoric. If you recall, Socrates has been lured outside the city to hear Phaedrus recite a speech by Lysias that he has memorized, although Phaedrus holds the written copy hidden beneath his robes. Socrates wishes to hear the speech, but when Phaedrus protests that he cannot recite the speech from memory, Socrates insinuates that, knowing Phaedrus, he has taken the speech ‘and pored over the parts he liked best. He sat reading all morning long, and when he got tired, he went for a walk, having learned—I am quite sure—the whole speech by heart’ (*Phaedrus* 3:228a–b). In the original Greek text, the last phrase is *exepistamenos ton logon*, meaning ‘to know thoroughly, to know well’ (*Phaidros*, Perseus Digital Library). It is clear that Socrates privileges this form of learning over written forms.

But when paired with Doughty and Long’s M2 principle, ‘promoting learning by doing,’ we find that the best methods for learning combine memory and doing. They suggest that ‘[a]ctually *doing* a task, or initially a simple version thereof, is more relevant, comprehensible, and memorable than reading about someone else doing it The basic idea is that a learner on his or her own can gain experience in a simulated environment under conditions of reduced stress and without real consequences to their actions’ (2003:58). It is interesting to note that this simple principle was also at the heart of the struggle between the rhetoricians and philosophers. According to George Kennedy, philosophers like Socrates and Aristotle complained that the sophists (early rhetoricians) used a merely pragmatic method of teaching students to deliver speeches, and this method ‘consisted only of furnishing speeches to be memorized by students, much as one tried to teach shoemaking by giving the student a collection of shoes (1980:28). Philosophy, they would argue, teaches by instilling language and truth into the deeper memory of the soul. In other words, we must “go through” (*dialogos*> through words) the heart. Aside from their narrow and derogatory views of rhetoric, against which I do not have the space to argue, our discussion of memory and MOOs benefits from *both* the rhetorical practice of ‘doing’ (delivery) as well as the philosophical understanding of the inmost dwelling place of knowledge and the role of language as the means of taking up residence in the heart.

More contemporary rhetorical theories have forged new alliances among writing, memory, and the heart; and technologies like MOO provide a single environment in which such theories may be tested. A prime example on which to test this claim is the predominant perception that MOO discourse is merely ‘chat,’ and that ‘chat’ is unproductive discourse. But since MOO discourse is conducted entirely in writing, it is necessary to further advance the claim that writing and memory conspire to conduct meaning across the barriers between different languages through the process of rhetorical invention. For example, writers must rely on memory to construct and

reconstruct meanings for notes they take while reading (active, versus passive, reading), and they must rely on memory to make connections among ideas, and to attend to such things as usage, grammar, and spelling. Then they re-collect. In Roman times, recollection was called *meditatio*. Properly speaking, *meditatio* (meditation) involved listening to one's own composing—a kind of inner dialogue. As Ovid's Leander writes, 'having spoken in such words to myself in a low murmur, the rest my right hand talked through with the parchment' (quoted in Carruthers: 1995:202). In other words, memory is a dynamic process that involves gathering, listening, and dialogue; and learning is 'a process of composition, collation, and recollection' (203). In later times, what Augustine understood as *cogitatio* is the act of bringing memory images together to create 'new' knowledge; but knowledge alone is not enough. He says in one sermon, 'I know but do not understand' (203). Thus, '[k]nowledge extends understanding not by adding more and more pieces, but because as we compose, our design becomes more capacious, it dilates' (203).

Such dynamic processes (gathering, listening, and dialogue) are still a vital part of learning, and easily manifested in examples of MOO activities and tools. Students may use the MOO as a combination workspace, research lab, classroom, or private office, and they may create and utilize a variety of virtual tools such as note objects (that may be encrypted while in draft form), recitable notes (that allow users to "recite" something by prompting a scrolling version of the text set at three second delay for each line), noteboards (for communal posting of notes, assignments, project storyboard items), recorders (for logging MOO conversations), MOO web projectors (for displaying a web page to all users in their MOO graphical window), MOO text slide projectors (for displaying chunks of text on the "talk" side of the MOO window), and so forth. The conjunction of rhetorical invention and memory, task-based language learning and learning by doing, is a conjunction perfectly enacted in a MOO environment.

Memory as image

While early explanations of how memory works dwelt on invention and inner dialogues, in time other memory systems emerged, such as the 'memory palace' conceived by a sixteenth-century Jesuit, Matteo Ricci. Historian Jonathan Spence relates the story of how:

Ricci went to China in 1582 and spent the remaining 32 years of his life there. ...Then, in 1596, Ricci wrote *A Treatise on Mnemonics*, in Chinese, for the governor of Jiangxi Province. In it he recreated the medieval European idea of a memory palace—an edifice you build in your mind and furnish with mnemonic devices. Recollection is a process of walking through the rooms and associating information with their contents. Those contents must be distinct and dramatic. (Lienhard)

Ideal as an allegory for the building of MOOs, wherein virtual space is rendered in architectural metaphors, a MOO as "memory palace" certainly contains "distinct and

dramatic” contents, and all crafted in language (both textual and visual). The MOO is a perfect blend of text and image, and of orality and literacy. Oral insofar as the interaction among writer/speakers in the MOO reproduces oral conversation via written text, literate insofar as the writing requires fluency to produce meaning. The interesting, and innovative, aspect of this phenomenon is that in the MOO tightening (and blurring) the orality/literacy split is achieved visually.

Returning briefly to Doughty and Long’s model, the M3 principle involves ‘elaborate input.’ Doughty and Long explain: ‘*Elaboration* is the term given to the myriad ways NSs modify discourse (i.e., in language use for non-native speakers [NNSs] to make meaning comprehensible, as revealed by studies of foreigner talk discourse). Most of the modifications occur during negotiation for meaning (i.e., when NS and NNS are focused on achieving communication while working cooperatively on a task)’ (2003:59). When students elaborate on previous written discourse in the MOO, whether their own or another conversant, such elaborations provide additional meaning-making images of text, as well as the supplemental benefit of such input emerging as ‘elaborate input’—input that is extravagant, detailed, and composed of multiple elements (see Blake, this volume, on interaction between heritage speakers and NNS online).

It is not enough, however, to provide elaborate input, claim Doughty and Long; it is necessary to specify ‘rich input,’ which is their MP4 principle. They conclude that ‘[a]dult foreign language learners require not just linguistically complex input, but rich input (i.e., realistic samples of discourse use surrounding NS and NS-NNS accomplishment of target tasks). This will usually mean task-specific and domain-specific target- language use not typically found in commercially published language teaching materials, not even those allegedly designed for language-for-specific-purposes programs. ...Rich input, in sum, is not just a matter of linguistic complexity, but of quality, quantity, variety, genuineness, and relevance’ (2003:61–62). Such elements also suggest that graphic arts have more influence upon how we learn than we might otherwise believe. At *Lingua MOO*, for example, we combine the textual and graphical registers of meaning-production with one window that splits the text side and the graphical side. Rhetorically, the design allows for style to enhance input and for an intertextual-graphical interface to border the space in which learning takes place. What I want to impress upon us is the direct (and substantive) relation between writing as image and language learning. As the Chilean artist Robert Matta explains in ‘Psychological Morphology,’ ‘the eye as the agent of memory is a means to simplify.’ The story goes that in 1938 at the *Les Deux Magots* café in Paris, Matta was asked to explain his phrase ‘psychological morphology.’ whereupon he spoke ‘with large gestures and using the objects which were at hand, in front of an impassive [André] Breton who declared not to have understood anything of it.

He asked Matta to write down his theories. This was difficult for Matta, not due to the fact that he did not have ideas enough, but because it was causing him to lose his momentum. But he succeeded in producing this text’ (intro. to Matta, trans. Petiot, np): ‘In the area of consciousness, a morphological psychology would be the diagram of ideas. It should be conceived before optical images may give us the form of ideas

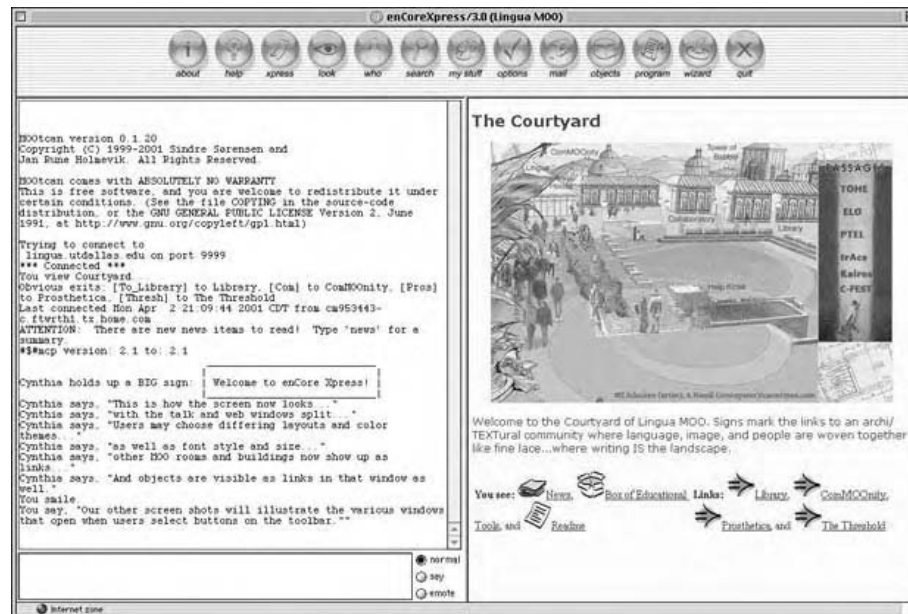


Fig. 1: Lingua MOO Xpress MOO interface (© Jan Rune Holmevik and Cynthia Haynes)

if we want to stay in the transforming medium. The optical image is only a theoretical section within the morphological fall of the object. The image is retained to calm the anxiety' (Matta).

Language learning transformed by image, text, and memory takes place in the MOO. If we extend Matta's explanation a step further, language as image (i.e., the image of language) is retained to "calm the anxiety," which evokes emotional registers as well. When we see text produced in real time, something different happens that triggers several registers of learning. Add to that equation the presence of interactive agents of language, that is, other languaging beings, and learning language is transformed into learning in deep time, inscribed in deep memory. We stay in/on the path of language. As E.M. Forster wrote in the fifth chapter of *Aspects of the Novel*, 'I never know what I think until I see what I have written' (1927). In other words, learning by heart calls for us to suspend our conventional means of connecting the dots, of translating mere morphematic syntaxes. It means for us to make meaning out of other phenomena imagined for us in other media. Pierre Petiot, who translated Matta's essay, further articulates the confluence of memory, morphology, and language, adding now the computer:

On all these previously obscure aspects of machines, the computer now casts the most vivid sort of light. Although they all have their roots in language, since they are essentially built to fulfill again and again a prediction, never has a machine been so clearly made of language than the computer. Never has a machine been

so openly granted the divine power of oracles—at which practitioners of circuitry or program burst of laughter, of irritation or just sadness, as they know what the heart of things is actually made of. ...And computers also have thrown a new sort of space under our feet. An intermediate space, neither real nor unreal, woven with metaphors and hypothesis of images and computation. A space where possibilities, compatibilities and consistencies are at stake. And as soon as dream and automatism filter in this space, they root there and find their anchors, they melt with it and they provide proof and evidence of themselves. There collapses and vanishes the false dichotomy between reality and thought. (Petiot: 2002)

My point in this excursus on memory is that if our tradition of memorization has forgotten the ‘essence of the path, the journey,’ the relation between memory and invention, and the power of text *as* image, then it is time to re/member. If we reconceive how memory functions in language learning, we may begin to understand how teletechnologies like MOOs help re/invent language learning more effectively, how a language could write us into being there, into being, again. In his chapter in *High Wired*, Michael Joyce put it well: ‘Words are the way, I want to say.... And yet I know, in the way someone watches water slip through sand, that words are being displaced by image in those places where we spend our time online, know as well that images, especially moving ones, have long had their own syntax of the preliminary and the inevitable’ (2001:314). Invoking the temporal and dynamic aspect of writing online, Joyce points to one of three themes to which I attribute the crux, or heart, of the matter in the next section. The second theme, prefigured in my rhetorical mantra of being there, Joyce affirms as well: ‘It is exactly in the commonality of MOOspace, the noise and actions, the kaleidoscope projections, the constant replacement...[in] which...we lose and gain our lives’ (2001:321), and, I would add, in which we encounter language as kaleidoscopic shards of memory, emotion, and meaning.

MOOs

Unlike email, which is solely asynchronous, MOOs are synchronous systems that also contain asynchronous features. And aside from the graphical webbed MOO interface (found in enCore MOOs, among others) or the occasional ASCII graphics (found in earlier text-based MOOs), all interactions and descriptions are conducted and created in text, in real-time. So, while being inside text with others is precisely what make MOOs so innovative, this does not, however, prevent some from raising questions of quality and permanence, relegating conversation in MOOs to ‘chat,’ or ‘kitchen-talk’ (a feminized, hence perceived as generally unproductive, discourse). This raises the first problematic addressed in this section, namely, text and how MOOs amplify and endow conversational text with new meaning (and new value). Joyce offers an edgy perspective on this problem:

The debasement of language in electronic texts leads some cultural commentators and critics to argue that theory such as this essay overstates the ordinariness or worse of the language of MOOspace, the web, and so on. In fact, canonical critics might argue that the argument here is carrion criticism, parasitically feeding on waste in order to puff up a claim of transcendence and the poetic. The MOO (all of electronic text) is faulted for not having a language worthy of eternity. This is of course a macho claim.... (2001:320)

In other words, the tendency to apply traditional, and printcentric, standards of value to MOO technology, pedagogy, and communities misfires (because misguided), misdirects (because misunderstood). It is necessary, then, to understand the context for rethinking what it means to be with others in text in real-time.

Rethinking text

At first glance, language learning may seem like the wrong context in which to resurrect the value of informal conversation given its investment in dialogue generation. But prefabricated dialogue, or stock dialogue, lacks the credibility of the real, except when practiced extemporaneously in face-to-face improvised situations. And while the MOO is hardly the place to hawk the real, packaged as the virtual, it does inure us to dialogue constructed without the benefit of that version of reality long hyped as more real than virtual, the physical real. So, I prefer to dispense with the question of the “real” altogether. In the past decade, I have thought a great deal about the effect of text in relation to learning, identity, proximity, and reality. In our introduction to *High Wired*, Holmevik and I argue that the textual nature of MOO architecture and discourse calls for new definitions of writing and new conceptions of text. We specified that what makes language different in MOOs involves what we call *élekcriture* and *cyphertext*.

One of the most persistent questions we asked ourselves, and that was frequently asked of us, concerns the description of writing in MOOs—both the “act” of writing and the textual residue it leaves behind. It was not a matter of defining writing in MOOspace, it was more a matter of explaining how it differs from writing in conventional print media. Thus, its difference began to take shape in two ways. First, we knew that writing in MOOspace acted as a lure to students who lacked confidence in their writing for any number of reasons, whether because they were not fluent in the language being spoken/written, or they considered themselves shy or reticent participants. Once they began writing in MOOs, however, they saw the possibilities for expressing themselves in more powerful ways and to a larger audience. They exhibited what I call ‘resisting their own resistance,’ which I came to call *élekcriture*. Borrowing from the Greek for the beaming sun (*elektra*) and French feminism’s *écriture féminine*, which is writing that resists the dominant power structures in language, I knew that writing in MOOs deserved its own theory to account for the writing in practice that I witnessed every day. This kind of writing mirrors the rhetorical type of “freewriting” often delivered in bursts (chunks) that are highly aphoristic (fragmentary). Holmevik then added the idea of *cyphertext*, which takes *élekcriture* a step fur-

ther by including the reader/author/observer (and also textual objects) in a galvanized real-time theatre of interaction. So, writing in MOOs is qualitatively different in ways that benefit writers in language learning contexts.

Rethinking interaction with others

Doughty and Long's fifth (M5) principle, 'encourage inductive ("chunk") learning,' harbors the same potential for learning I have been describing in MOO *élektriture* and cyphertext. They claim: 'If adult foreign language learners are to sound like natives, they need to be exposed to realistic (genuine or elaborated) samples of target language use (see MP3 and MP4), for example, as input components of pedagogic tasks, and then helped to incorporate, store and retrieve whole chunks of that input as whole chunks. When performing tasks, that is, they must be encouraged to plagiarize' (2003:63). This may be implemented by the donning of persona in the MOO and blurring the boundaries between themselves and other participants they encounter, so much so that they repeat whole chunks of language and behavior. Scrolling back to previous sections of a conversation makes it easy to re-inscribe that output with a simple copy and paste into the input window. The result is often being rewarded for both the ingenuity of technically recovering the prior text and for knowing the proper context for repeating it. Persona becomes less significant in the exchange as the priority of languaging together takes over. Other MOO tools that support 'chunk' learning are MOO slide projectors (which display chunks of text) and a lecture device that when prompted delivers text as if being read/typed spontaneously, but it has been programmed into the device in advance, so it acts like a real-time presentational tool (Figure 2).

```
Cynthia shows slide #1.
* * * * *
During a course in Computers and Writing Lennie took last
year, the work of Vygotsky and his idea of the "zone of prox-
imal development" came up. Lennie says he never quite got
a handle on what the "zone" was. What is Dr. Vs "zone" and
how might we see it in action in our computer learning envi-
ronments?
* * * * *
```

Fig 2: Lingua MOO slide projector

And the MOO remembers it all (c.f. Kötter, this volume). Whether in the very pragmatics of the daily backup of the database, or the ephemerality of the recited poem, *élektriture* stretches our understanding of discourse, of text, and of cypher/textual being. Since elsewhere in this volume MOO discourse has formed the basis of more straightforward analyses of computer-assisted language learning, it is my aim to be suggestive, to trace an image of *élektriture* as *dynamis* (potency, potential) and cyphertextual being(s) as energy (*energeia*, actively existing). Insofar as this potentiality and energy are rendered solely in language, which situates both in the rhetori-

cal dimension, we know little about what essentially happens between languaging beings in MOOs. The potential to slip into and out of multiple identities is immaterial evidence, just as the slippage of meaning as it emerges in disjunctive threads of discourse (both as overt/public output and covert backchannels of whispers, pages, and other exclusive channels) suggests the mere shadows of language.

To test the edges of such transient and translucent concepts in practice, we created a room called *The Threshold* at Lingua MOO.⁴ It is unique insofar as it separates written texts, but different in that it also binds together memory and magic, anonymity and text. In *The Threshold*, we also see a strange reversal of interactivity, what you might call interpassive writing. Each line of text spoken (i.e., written) by a player is unattributed in the textual output, blurring the boundaries between self and other, but also between self and its own language. In addition, the description of the MOO space is constantly dynamic in that it captures and retains only the last twenty-five lines that have been spoken in the room as the room description itself, as in the example in Figure 3 captured on a random day in 2003:

```
The walls echo from past conversations?
Who is listening in these walls? Or looking? Do you need per-
mission to speak?
Raise your hand
hei hei her inne er vi anonyme ingen kan se hvem som snakker
hvorfor d men vi kan se hvem som gjør verb:) fordi det er
litt spennende
I've been wondering how to capture the experience of bewil-
derment and wonder, the undercurrent of anxiety in the
unforeseen consequences of these mutually constituted envi-
ronments
are [sic] you afraid of the loss of coherence?
I'm not sure what to be afraid of, or even whether
"afraid" is the name of the experience I am having.
Part of it is energizing and captivating. There is an
exploratory part of my mind that is filled with curios-
ity I've returned here many times, and the room is filled
with questions, but I am not sure who is an audience.
Punctuation disappears, the mood and concepts blend into a
shared text that changes like a kaleidoscope. but is that
enough?
Have you been here before?
Never, but I return often. Here I can talk amongst
myself, argue, joke, and thrash out ideas, yet still be
strangely alone, except for the eery experience of
inscribing on the walls the traces of my presence.
Yes, you are here now.
```

Fig. 3

Experimental MOO spaces such as the *Threshold* are not uncommon in social MOOs, although at Lingua MOO, which is primarily professional/educational, we view the MOO as a research testbed wherein players may program new functionality, explore alternate subject positions, or examine silence in the midst of noise. But, there are, of course, more traditional MOO tools that emulate more traditional collaborative and interactive discourse, especially objects like chain stories that encourage students to produce language together in an impromptu accumulative story. My point is that when you interact with text (in the form of anonymous players and/or the room itself), the interesting question to consider is how to understand this very different kind of interaction? One possibility is to think in terms of interpassive discourse (discourse that goes against the grain of writing and interacting), which serves nicely to deconstruct a concept we need to (perhaps) retrofit, or retool—interactivity.

According to Espen Aarseth, one of the narratives most in need of critical rehabilitation is the notion of interactivity. Aarseth argues that to label something interactive in the name of innovation inaccurately describes the nature of the interaction. According to Aarseth, the notion of interactivity emerged when computers accepted user input while programs were running, unlike batch computers running processes that did not accept interruption (1997:48). He explains that '[i]nteractive thus came to signify a modern, radically improved technology, usually in relation to an older one. ...To declare a system interactive is to endorse it with a magic power'(48). It is possible, as Aarseth's analysis suggests, that interactivity misfires in terms of describing most distance learning software, especially programs that do not allow the user to extend or modify the database. Such programs claim they are interactive by virtue of their "clickability," rather than their potential for users to be immersed in a learner community that they have shaped and defined themselves, such as a MOO. So, retooling the notion of interactivity does not mean rejecting the term so much as understanding the difference between a website that claims to be interactive and the *cypher-textual* (users inhabiting text) interactions in a MOO.

When students inhabit text, they have a profoundly different relation to text and its forms. In this respect, language learning in a MOO environment is more conducive to studying, acquiring, and understanding the basic structures of language. Doughty and Long principles M6 and M7, 'focusing on form' and 'providing negative feedback,' are both ideally accomplished in MOO conversations. Doughty and Long argue that although focusing on meaning alone is insufficient to achieve 'full native-like competence' (2003:64), it has not been productive to 'focus on forms,' such as in 'discrete-point grammar teaching' (64; see also Levy and Blake, this volume, on accuracy and fluency). What is needed is a focus on form during meaning-making interactivity. In other words, 'during an otherwise meaning-focused lesson, and using a variety of pedagogic procedures, learners' attention is briefly shifted to linguistic code features, in context, to induce "noticing" ...when students experience problems as they work on communicative tasks (i.e., in a sequence determined by their own internal syllabuses, current processing capacity, and learnability constraints). This is called focus on form' (64). Examples of techniques of focus-on-form are input flood,

input elaboration, input enhancement, corrective feedback on error (recasting), and input processing (64). Doughty and Long acknowledge, however, that the 'most difficult practical aspect of focus on form is that, to be psycholinguistically relevant, it should be employed only when a learner need arises' (64). And as I have emphasized, the MOO is ideal for resolving this problem. To repeat my earlier contention in the section introducing memory, learning by heart involves sustained real-time contextual interactivity.

Providing negative feedback is a bit trickier, though no less important to the collaborative learning and contextual interactivity environment that the MOO creates and sustains. While Doughty and Long are concerned that in some distance learning programs 'effectiveness tends to diminish as distance between triggering event and feedback increases' (65), they also understand that:

the value of negative feedback lies in drawing learner attention to some problematic aspect of their interlanguage ... [thus] the timing of that feedback is critical. Where corrective recasts are concerned, the information must be provided within some as-yet-little-understood cognitive processing window (for instance, but not necessarily, in working memory), such that learners can make some sort of comparison between the information provided in the feedback and their own preceding utterance.... The psycholinguistic mechanism by which they are believed to work depends upon the juxtaposition of the learner utterance and the recast. It is claimed that learners have sufficient working memory to hold both utterances, thereby enabling the comparison to take place... . Nonetheless, there has been at least one study that documents the provision of negative feedback by learners in a chat room. Pellettieri (2000) found that L2 learners of Spanish can recognize and correct their own errors, as well as incorporate corrections prompted by others into their production in chat room tasks designed to promote language learning. In other words, negative feedback was a consequence of appropriate task design. (2003:65)

In terms of Doughty and Long's principles of chunk learning, focusing on form, and providing negative feedback (M5, M6, and M7), it is clear that more research in the implementation of these principles in a MOO environment is needed, although we have the excellent work (such as tandem learning in MOOs) already begun by Randy Donaldson, Markus Kötter, Klaus Schwienhorst, Jeff Schneider, and Silke von der Emde, to name a few of the pioneers. Doughty and Long also list 'promoting co-operative/collaborative learning' (MP9) among their ten principles. But they do caution that '[o]ne, perhaps obvious, finding of recent research is that clear goals for collaborative tasks must be established at the outset of the foreign distance course. . . . The end result when collaborations have no clear goals is failure to engage with the technology' (2003:67).

My colleagues in rhetoric and composition departments have similar concerns about the efficacy of collaborative activities in MOO environments, therefore much of our research is related to rereading the history of collaborative learning theory in

light of new technologies. We already know, for example, that writers are always already situated in a “rhetorical situation” in which they are writing to an audience, and that rhetoric is epistemic—a theory of language as transactional, knowledge-making. MOOs provide an immediate audience and real contexts for learning language through writing. But we do not want to blithely import collaborative learning theories into MOO technology without taking the opportunity to rethink *how* collaboration in real-time MOO activities increases learning. To begin to reconceive learner collaboration, whether between tandem learners or among participants of a group, we must, therefore, look beyond collaborative learning theories conceived in the wake of “open admissions” policies at American colleges and universities during the late 1960s, when enrollments soared and teachers more or less had to group students in the hopes they would teach each other. It is also inevitable that we move beyond social constructionist theories, many of which lack critical awareness of the category of the “social” itself. To base our understanding of MOO interactivity on either of these theories risks the establishment of alliances with disciplines in which the theories are in crisis. It signals a desire to import the comfortable and familiar instead of remaining open to the surprising effects witnessed at the rhetorical intersection of *techné*, *dynamis* and *energeia*.

I would rather have us situate ourselves as the vanguard searching for new allegories, new alliances, and new trajectories. We might, for example, draw from research focused on the technology of interactivity, such as recent innovations in artificial intelligence. One exemplar is Maja Mataric, who conducts Herd Mentality experiments at Brandeis University Labs where she builds small robots that work together as a group. They are known as the ‘Nerd Herd.’ Essentially, each robot must be programmed to do things individually, but you have to bias the system ‘to give them some impetus to do things that have no payoff to them as individuals.... They sublimate their own goals for the good of the group’ (Shine: 1996:98). ‘The result: a group of robots that is able to think locally but act globally’ (104). Mataric is working on something in artificial intelligence called subsumption architecture. It is a bottom-up versus top-down approach. In top-down, robots are given specific goals and complex reasoning abilities to fulfill them. In bottom-up, robots are given only the minimum amount of knowledge needed to react to, though not understand, the situations they encounter. Mataric explains that deliberative (top-down) and reflexive (bottom-up) behaviors can be combined to invoke a different kind of interactivity and mode of collaboration. Thus, her robots communicate their reflexive actions to each other and learn what to do and not do from each other. They learn from the others’ experiences and share that information with each other. But detractors of her work say it is impossible to let twenty robots all communicate at once without interference and bandwidth problems. No big deal, she says. Her solution is ‘to let them all talk [at once]—but only those nearby can hear, eliminating the need to exert constant, top-down control over who is communicating with whom’(100). Their behavior reaches higher and higher levels as they begin ‘flocking, foraging, herding, and sharing’ (100).

The similarities between Mataric's robots and MOO communication and interactivity are striking. Like Mataric's critics, similar criticisms of MOO discourse also point to the problems of reading and comprehension when everyone talks at once, arguing that it is impossible to detect a consistent thread of discussion, that the disjunctive nature of the output goes against the grain of our linear-based trained incapacity to make sense of disorder. To add to this confusion, there are also small A.I. objects in MOOs called bots whose educational uses are only beginning to be explored. Furthermore, many teachers (unless they have MOO administrator powers) find the restructuring of power relations between them and their students, the sudden bottom-up conditions, discomfiting and disorienting. I offer these suggestions knowing that there are lessons to be learned for tandem learner L2 pedagogy, already adapted in MOOs by Markus Kötter and Randy Donaldson in the mid-1990s (recounted in Kötter's chapter in this volume), as well as by Klaus Schwienhorst (1998:119) and others. In sum, we not only need to deconstruct the notion of interactivity, and redefine power relations between teacher/student in MOOs, we also need to tap in to existing bot research for language learning and adapt it to MOO bots.⁵

Rethinking real time

The third aspect of MOOs in need of rethinking has to do with proximity and time. We have been taught to thrive on proximation. We have need of the near and the far, and of duration. Traditional education may pivot predominantly on face-to-face instruction in real time. Yet the advent of distance education can be called novel only if we overlook how research, knowledge, and teaching have historically progressed, that is, through scholarship over time. We cannot discount those seemingly peripheral avenues of learning merely because physical presence has been privileged methodologically and institutionally. Nor should we forget the fact that the publication of research may now also take advantage of the Internet, exponentially decreasing the time it takes to access knowledge, not to mention the increasing number of marginalized groups who now have access to a qualitatively different education. We are facing the largest increase in student enrollments ever, and yet the rise of corporate universities, technical and trade schools, enrichment programs, continuing education, and other non-traditional models of education are making the competition for students fierce. Traditional institutions of learning are facing budgetary challenges that create shortages in all sectors of resources: classroom space, faculty, libraries, research and development, and time (c.f. Godwin-Jones & Murphy-Judy and Burston, this volume).

Thus, putting the distance in distance education has been a relatively swift, though not uncontested, process. The use of email may date back to the 1960s, but that and other CMC (computer-mediated communication) asynchronous forms of communication have supplemented conventional teaching methods more gradually and more pervasively than synchronous systems. The earliest inroads in synchronous interaction (in both composition and language learning fields) made use of the stand-alone Daedalus program called *InterChange*, followed soon after by Internet-based MOOs (Kötter: 2002:45–58). Citing qualitatively enhanced “learner reciprocity” and “learn-

er autonomy,” advocates of tandem language learning have been quick to realize the potential of the Internet (Little and Ushioda: 1998; Donaldson & Kötter: 1999; Schneider & von der Emde: 2000; and Schwienhorst: 1997, 1998 are key figures among the pioneers). Kötter presents a thorough summary of real-time learner interactions (2002:70–75) of various stripes, as well as the most recent and comprehensive study of language learning in MOOs. He also provides a substantive and highly nuanced analysis of learners’ negotiation of meaning, error correction, codeswitching, communication strategies, conflict, and humor. It is my view that adding to Kötter’s analysis is most effectively achieved by returning to the nature of real-time itself, sketching first some fairly entrenched resistance to it, and then to suggest attributes that inflect learning with im/mediate and durable reciprocity.

Earlier I noted Paul Virilio’s lament that teletechnologies shortcircuit the ‘essence of the path, the journey’ (1997:23), a loss in which I share. Now, however, I will object to Virilio’s conflation of real-time with the present, and his resistance to teletechnologies that ‘puff up... the perpetual present’ (137) because it bolsters an unfounded fear of distance, which can harm much needed perceptions of distance for language learning. Keeping in mind Roland Barthes’ reminder of rhetoric’s role in language, it is instructive here to explain how distance itself figures within language. Barthes suggests, as have others over the years, that all language is rhetorical, that is, it is highly figurative. There are countless ways we attempt to maintain the distinction between two dimensions of language, the literal and figurative; but in the end, language is all figurative (1998:82–93). In short, Barthes argues, ‘the meta-rhetorical expressions which attest to this belief are countless.... Aristotle sees in it a taste for alienation: one must “distance oneself from ordinary locutions...: we feel in this respect the same impressions as in the presence of strangers or foreigners: style is to be given a foreign air, for what comes from far away excites admiration”’ (88). There is, then, in language itself a dimension of distance, a sense in which words travel across time and distance in order to “mean” something in the here and now. Words exhibit the wear and tear of distance and time, and no amount of anti-rhetorical rhetoric can undermine this fact. But critics like Virilio misdirect their fears at the technologies themselves in an effort to restore to language (and thus to ourselves) a degree of nearness and sovereignty that seems to have slipped away (when it was never ours to begin with).

Understanding this allows us to more adequately understand why, in order to strengthen his argument, Virilio cites Paul Klee, who claimed that ‘[t]o define the present in isolation is to kill it’ (1997:10). Virilio fears that the ‘urbanization of real time’ will result in a loss of ‘concrete presence’ in the world. In effect, Virilio seems, in my view, to be killing the messenger. Virilio’s claim that ‘getting closer to the “distant” takes you away proportionally from the “near” (and dear)—thus making strangers...of all who are close at hand’ (i.e., family, colleagues, etc.) strikes me as reactionary and hyperbolic (20). If, as he argues, ‘[w]ith the “law of (electromagnetic) proximity,” the far prevails over the near and figures without density prevail over things within reach’ (26), the question to consider is what exactly is at stake in his objections?

Kevin Robins may supply some answers. According to Robins, '[v]irtual culture is a culture of retreat from the world' (1999:166). Robins complains that 'the technological abolition of distance becomes the prerequisite for creating a new and better kind of order. And through the institution of this virtual new order, something else takes the place of distance—something that is called "presence at a distance"' (164). In a nifty substitution, Robins then equates this "presence at a distance" with a sanitized, globalised, and naïve desire for intimacy that 'presents itself as the foundation for a broader social and political vision' (165). I grant that much of the rhetoric of cyberculture smacks of utopian communitarianism. Furthermore, I recognize the need for deconstructions of community, work admirably begun by Jean-Luc Nancy, Maurice Blanchot, Giorgio Agamben, D. Diane Davis and others. What is more interesting, in my view, is Robins' desire to 'rescue distance' as 'a social and political project' (169) on the following grounds:

Perhaps it might be conceived in terms of a political alternative to the cloying vision of virtual intimacy, familialism and communitarianism? Perhaps it could develop as an alternative to the blandness of "connecting" and "bonding" in cyberspace and to the banal idealization of "global conversations" through the Internet? With its well-intentioned belief in sharing, collaboration, mutuality, and so on, virtual communitarianism is a stultifying vision—an absolutely anti-social and anti-political vision. Cyberspace, with its myriad of little consensual communities, is a place where you will go in order to find confirmation and endorsement of your identity. And social and political life can never be about confirmation and endorsement—it needs distances... Encounters with others should not be about confirmation, but about transformation... Against the sentimental ideal of consensus and community, it is vital to protect the more robust principles of adversarial democracy, "a coming together which can only occur in conflict" (Robins: 1999:169–70).

It is tempting to rebut the apparent fear of intimacy explicitly stated, as well as to counter Robins' description of global conversations as banal and bland. But I am most troubled by his call to protect 'the more robust principles of adversarial democracy' from the 'cloying vision of virtual intimacy.' That reservation aside, it is more productive to juxtapose Virilio's and Robins' somewhat demonizing views of real-time interaction with the potential of real-time MOO interaction to foster im/mediate and durable reciprocity.

As one of the three main principles of tandem language learning, learner reciprocity is considered crucial to the process. According to Klaus Schwienhorst, the principle of reciprocity means that '[e]ach student must benefit equally from the partnership, and can expect to receive as much help as s/he gives (c.f. Blake, this volume, on the mutual benefits of interactions between partners of differing linguistic capability). Each student depends on contributions from both students to make the partnership successful' (1997). Kötter cites T. Lewis on the subject, who put it thus: 'each partner should benefit equally from the exchange. At its most basic, this can mean sim-

ply that an equal amount of time is spent working in each language. On a more sophisticated level, however, it means that learning objectives, and the means of achieving them, are negotiated between partners, so that each feels (s)he is deriving full benefit from the partnership' (as quoted in Kötter: 2002:36). Allow me to highlight two key terms in these passages: equally and negotiated. The resonance of democracy should not go unnoticed. But rather than wrap our foci in the more 'robust' principles of democratic conflict, it seems more productive (and edifying) to align them with reciprocity and understanding.

Reciprocal interaction does not mean only mutually beneficial, but hearkens back to a fluidity of movement related to (and determined by) tides and time. The backward (re-) and forward (-pro) movement of the tides, the ebbing and flowing of *Oceanus* in Homer's *Iliad*, lends its sense of fluid and cyclic language to real-time reciprocity. It is constant, continuing without intermission, steadily present, the constancy of real-time. Reciprocity is also associated with breathing, the alternating action of our lungs contracting and dilating. In each instance life depends upon the durability of reciprocity, and by that I mean the duration of time during which life endures. Language reciprocates durably in real-time through living beings.

Robins would have us believe such intimacy is cloying, that it weighs us down or encumbers us somehow, prevents us from engaging in the more legitimate enterprise of democratic conflicts. He would have us engage in quarreling at a democratic distance. This is understandable in a paradigm of privilege. Robins' claim that virtual culture is a 'culture of retreat from the world' is at first glance a call to re-engage the so-called real world in which distance is the only 'meaningful reality' (1999:166). But when he puts it into a historical perspective by citing Dorinda Outram's study of mobility at the end of the Enlightenment, he reveals not a democratic principle but a highly classist attitude toward travel. According to Outram, '[m]obility was becoming linked up to escape, to the wish to travel endlessly to elsewhere which were literally no-where' (quoted in Robins: 1999:166). But mobility is rather limited to those with the means to travel, the money to live elsewhere, and the privilege to leave and return to their own country.

It is necessary here to remind us of Gayatri Spivak's invocation to pay attention to our subjective investment in the narratives we produce (1990:29). Obviously I am well aware that my trip to Europe as a teenager in 1968 was made possible by privileged conditions. I am equally aware that (serendipity aside) logging in to Media-MOO in 1994 was also preconditioned by my privilege as an academic. Thus, when I suggest that real-time should be aligned with reciprocity and understanding, I mean that in the fullest sense possible. I choose to stand under the alibi of reciprocity only insofar as my privilege has enabled me the freedom to choose and the opportunities to learn what it means to understand.

In accordance with these cautionary disclaimers, I have offered possible alternate ways of understanding text, interactivity, and real-time. It is not enough, however, to weave these few strands of Memory and MOOs into mere memoranda. According to Quintilian, we must improvise (un/fore/seen), speak extemporaneously (*ex tempore dicendi*), for 'the crown of all our study and the highest reward of our long labors is

the power of improvisation' (*Institutio*, book X; quoted in Carruthers, 2009). Improvising as we go, Holmevik and I have lived and worked in real-time on MOOs for almost a decade, making of MOOs a space for research, collaboration, teaching, exploration, investigation, and play. Through our work in and on MOOs, we have exponentially broadened our professional and personal spheres. We view ourselves as morphological beings, constituted by text and complicated by real-time amphibian lives. We have one foot on land and one in the water, one language at hand and more in our pockets. We have learned the world by heart. And we know what it means to have traveled. But we also understand there are ethical, pedagogical, and professional issues that make the trajectory waters and morphologic routes of real-time learning environments like MOOs difficult to navigate, and so it is necessary to turn our attention to these issues.

Morphology

Although Robins finds little redeeming value in virtual communities, he does believe that '[e]ncounters with others should not be about confirmation [of identity], but about transformation' (1999:170). Robins, however, is after the 'rehabilitation of distance' in order for a 'therapy of distance' to provide a 'meaningful alternative to the technocultural agenda' (169). Thus, his notion of transformation is not offered in the sense I wish to invoke, namely, meta/morphosis. On the one hand, we have ample evidence that the Internet is radically affecting education, but transformation must not reproduce the status quo in the guise of change, as when virtual spaces simply import traditional classroom spatial metaphors and objects, or when assignments and syllabi are merely uploaded on the web and touted as interactive. On the other hand, we should not divest education of traditional methods in order to jump on the distance education bandwagon with little knowledge of why or how to incorporate it into our curriculum, how to retool our teaching practices, and how to reconceive the role of the teacher in the teacher/student relation. The good news is that some of us in the MOO community never jumped on to that bandwagon, and consistently raised objections to short-term investments in overpowered equipment and ill-conceived software products written not by educators, but programmers (see Bancheri, this volume). We balked at administrators' dreams of multitudes of untapped streams of corporate revenue for Distance Ed MBA programs, and we lamented when they launched them anyway. Fortunately, the MOO community has always been on the cutting edge of metamorphosis, rather than the bleeding edge of institutional politics.

As we have seen, CALL researchers who have embraced MOO technology are making extremely important contributions to L2 theory and pedagogy. In my remaining remarks, I would like to remain suggestive by assuming the probability that soon traditional language learning will debate how to import CALL theory and practice into traditional methods and spaces, rather than the other way around. And in so doing, I would like to presume that we have moved past issues of access to technology, that cross-platform and multiple operating systems will be a non-issue, and col-

laboration (co-laboring) will morph into cocreation (co-creating). In this not too distant future, CALL will have morphed due to the passion and patience of people like Markus Kötter, Randy Donaldson, Margaret Haggstrom, Jeff Schneider, Silke von der Emde, Klaus Schwienhorst, and many new CALL MOO researchers already working on new research. CALL pedagogy will take for granted Schneider and von der Emde's claim that MOOs are also 'cultural studies laboratories' ('Brave New'), and that language learning is as much about collaborative reading as experiential writing' (2003:8). What follows are scenes from the future.

Cross-dissolving process, product, and activity

You've seen the videos on MTV, the cinematic special effects on film, where faces morph into other faces, or animals, or some combination. The process of cross-dissolve is complicated, yet the effect is a clean transformation that appears seamless and swift. As a technique of compositing, it carries vestiges of the distinction between process and product that dominated much rhetoric and composition theory in the late 20th century. Language learning theories experienced similar growing pains when product-oriented teaching gave way to process-oriented pedagogy. One of the more problematic effects of the shift from product to process was that methods of assessment lagged behind, creating a disjunction between what was taught and how it was evaluated. Process proved difficult to evaluate with old product-oriented assessment methods.

With the advent of interactive real-time learning environments, such as MOOs, process took on an added dimension: activity. The question of how to evaluate product, process, and activity is the most pressing challenge today (see Burston, this volume, on evaluating the effectiveness of CALL). How can these facets of learning cross-dissolve, or morph, into a seamless new thing? What do we evaluate in CALL? Such questions have been the subject of a small movement in composition studies called L2 writing. The problems they address carry implications for CALL theory and pedagogy that the MOO may help ameliorate. According to Eli Hinkel:

Although ESL researchers and curriculum designers have learned a great deal about the language needs of academically bound NNSs, their findings have had minimal influence on the teaching of L2 writing because the prevalent ESL pedagogy addresses preparation for English composition courses to the exclusion of practically all other writing needs. Focusing predominantly on the process rather than on the qualities required of the product puts students at a disadvantage outside ESL or English composition programs because evaluation in the larger academic environment remains focused on the end product (Leki and Carson: 1997). If students are to benefit from what is known about expectations for L2 writing, it is incumbent on curriculum designers and teachers to address learners' language needs accordingly (2000).

In stands to reason, then, that the use of MOOs in language learning may also fall victim to similar concerns. If process-oriented pedagogy puts L2 students at a disadvan-

tage in the target language, might activity-oriented MOO pedagogy also present problems? The answer hinges on retooling evaluation methods to not just include evaluation of MOO activity, but to treat it as qualitatively different. Equal weight should be given to MOO activity insofar as one can redefine the nature of activity as part process and part product, although this move merely reinforces the product/process dichotomy. One means of blurring the boundaries of all three elements is the use of electronic portfolio systems of assessment such as the Learning Record Online system developed by Peg Syverson at the University of Texas at Austin.⁶

The LRO uses a number of types of student work, including interviews about their past learning from family/friends, self-reflections on their past learning, weekly observations about their on-going learning, work samples, and summary interpretations of their learning. Students also argue for their own grades in this system. Teachers take their arguments into consideration as they weigh all evidence in the portfolio, and their final grade includes explanations about why they agree or disagree with the student's grade estimate. The work samples section allows students to upload all types of files, including audio, visual, and textual files. They may also link from the LRO to MOO rooms, objects, and conversation transcripts. Students may also work on their LRO portfolio while logged in to Lingua MOO by using the MOO's web side of the real-time session to go to the LRO site. Each work sample is given equal weight and constitutes evidence they may use in their final argument for their own estimated grade. Unlike course management systems like WebCT, language arts teachers, whose aims include philosophically sound rationales for portfolio assessment and student self-evaluations, have developed the LRO system. Use of the LRO would also dovetail nicely with another principle of tandem language learning, namely, learner autonomy. Thus, teachers must not only redefine their assessment philosophies and methods, they face a radical restructuring of the basic teacher/student relation.

One way that Doughty and Long make the same suggestion is in their M8 principle, which explains that teachers should 'respect developmental processes and "learner syllabuses".' While other educational theorists in other disciplines have reached similar conclusions, Doughty and Long specify how this principle supports effective language teaching:

The idea that what you teach is what they learn, and when you teach it is when they learn it, is not just simplistic, but wrong.... The question, then, is how to harmonize instruction with the learner's internal syllabus, with so-called 'natural' developmental processes. TBLT does this in a variety of ways, first and foremost by employing an analytic, not synthetic, syllabus, thereby avoiding futile attempts to impose an external linguistic syllabus on learners (e.g., the third conditional because it is the third Wednesday in November), and instead, providing input that is at least roughly tuned to learners' current processing capacity by virtue of having been negotiated by them during collaborative work on pedagogic tasks. (2003:66)

The MOO is an ideal learning environment for the implementation of this principle. It allows for individual and collaborative work to occur simultaneously if desired; and the learning/working pace of each is not necessarily the same, nor is it dependent on the other activity. For example, students may be working alone on a task in their own MOO room while multi-tasking impromptu and improvised conversation through paging other students logged in to other places in the MOO (serving as backchannels of discourse). Some of these conversations may be rapid and occur in brief bursts; others will be slow and sporadic. At the same time as such conversations may be occurring, the student may be progressing on some individual project/task in one window of the MOO session, while also conducting a language activity in the web side of the MOO window that may progress at no more, nor less than, the pace that most people proceed through any website with embedded activities. The MOO environment is thus highly conducive to respecting the developmental processes of each student and their own internal learner syllabuses. Rhetorically speaking, we need to respect and foster the ethos of our students, which demands ethical pedagogical practices. All of this presupposes that teachers rethink their relation to the student in a number of respects, but most especially in terms of the student's learning pace, which has traditionally been controlled and complicated by the necessity of timed activities and dense curriculum. The next section expands on the nature and difficulty of this pedagogical shift in thinking.

Morphing power relations in the MOO

Michel Foucault predicted '[e]verything we experience today in the mode of a limit, or as foreign, or as intolerable will have returned to the serenity of the positive. And whatever currently designates this exteriority to us may well one day designate us. Only the enigma of this exteriority will remain.' Like Michel Foucault, I am fond of the future perfect (though not of perfection). To ask what will have been marks the present, the real time, as enigmatic. To ask who will have been, and how, marks the present power relations between teacher and student as enigmatic. In any event, this relation will have been transformed by MOO pedagogy. This is not to say that the metamorphosis will be painless or uncomplicated. As mentioned earlier, the MOO is no utopia. But affirmative discussions and explanations about its benefits are not pledges of utopian bliss, regardless of their positive patina. The enigma of such exteriority should be, well, enigmatic—difficult to explain, but not impossible—hard to prove, but not illicit.

If the architecture of most educational MOOs replicates real-life places like classrooms, we can be assured that real-life problems exist there, too. Educators need to be aware of how and in what forms these problems take shape online, in addition to knowing how to handle them. It is not easy to find answers in the mountains of popular culture hype and mass media reports on the Internet. Depending on what magazines and newspapers you read, Internet technology is either the salvation or the demise of civilization. Certainly the rapid growth of access to the Internet has parents and educators wringing their hands over how to protect children and students online from some of the same dangers they face in the physical world. Yet one of the most

encouraging aspects of the growth and scope of the Internet is the opportunity for all of us to contribute to the social construction of ethical guidelines in the development and use of Internet-based technologies in educational settings.

There is a fine line between giving students the latitude to be creative online and setting them loose with no ethical boundaries whatsoever. Just as in traditional classroom settings, common sense and proper preparation go a long way toward anticipating problems and resolving them. It is not necessary to blame the whole of cyberspace and thereby throw the virtual baby out with the virtual bathwater. There are ways to manage the 'fluidity' associated with identity, speed, and open access on the Internet. We need to avoid the rhetoric of negative cyber-hype and engage instead in productive discussion about the Internet in terms of its positive impact on individual and collective lives. Especially with respect to the use of Internet technology in education, we should do so rhetorically, going slowly, doing our homework, so to speak, before we make claims about the dangers of the Internet. That said, there are examples of sound efforts to respect student autonomy in the age of teletechnologies.

As Donaldson and Kötter report, learner autonomy is a significant principle of tandem language learning that seems to flourish in the MOO. But they 'discovered that proactive teacher behaviour via un-announced visits in their students' [MOO] rooms was more likely to create confusion among learners than be of actual help to them, because the arrival of a new person in a MOO locale usually triggers a sequence of welcome messages, which in turn delay and disrupt an ongoing conversation (Donaldson and Kötter; quoted in Kötter: 2002:147). My experience confirms their observation, and while my colleagues in rhetoric and composition have debated methods of de-centering authority in their classrooms for several decades, it seems that tandem language learning theorists have conceived of a useful principle other disciplines should take up as well. The question, however, is one of adapting to the reconfigured power relations. Nowhere are such adaptations more necessary than in the MOO. As Kötter explains, '[a]utonomous language learning is a process that gradually transfers responsibility from the teacher to the learner though the learners remain accountable for the steps they take to reach their goals' (2002:145). Without sufficient preparation and understanding, however, teachers will find that the MOO removes the gradual nature of this principle rather swiftly. Time and again I have witnessed amazed and bamboozled teachers after their first MOO teaching experience. Their reactions range from excitement to total horror; excited that their students are writing so much so swiftly, horrified that they completely lose control of their classroom.

As hard as teachers try to reinvent their face-to-face classrooms online, the nature of conducting class in the MOO has very little similarity to physical classroom conditions. And that is not a bad thing. It is simply different, though radically different. It means letting up, letting go, and letting be. In *The Question Concerning Technology*, Martin Heidegger called this *Gelassenheit*, letting being appear in the clearing of language. Letting be, he argues, means releasement, equanimity, and composure because humanity 'does not have control over unconcealment itself' (1977:18). But I am not suggesting *Gelassenheit* is an alibi for not teaching. Nor is it a substitute the-

ory of subjectivity by which we covertly reinstate the old teacher/student power relationship. Education has been dining out on that ticket for too long. *Gelassenheit* means we must prepare ourselves to be released into the draft of the pure Open, the 'space [that] touches man when, in the inner recalling of conversion, he turns toward the space of the heart' (Heidegger: 1971:133–34, 138). The conversion, the turning, our metamorphosis, can be accomplished 'only in this precinct' (132).

Transforming teaching preparation

The final principle listed by Doughty and Long encourages teachers to 'individualize instruction' (MP10; c.f. in this volume, Godwin-Jones & Murphy-Judy on learning styles and Chenoweth *et al.* on restructuring instructional time). This is easier said than done even in traditional classroom-based settings. Put into the general context of distance learning, and the specific context of MOO environments, their suggestions below need to be situated among other considerations with which I want to conclude:

Work by numerous scholars in general education and in foreign language classrooms has long shown the benefits of tailoring instruction to cater to individual differences in goals, interests, motivation, cognitive style, and learning strategies (Altman, & James, 1980; Harlow, 1987; Logan, 1973; Sawyer, & Ranta, 2001; Wesche, 1981). Improvements in the measurement of these and other individual difference variables, such as language learning aptitude and short-term memory (see, e.g., Ehrman & Leaver, 2001; N. Ellis, 2001; Grigorenko, Sternberg & Ehrman, 2000; Miyake, & Friedman, 2001), further justify the individualization of instruction in any language teaching program. In TBLT, individualization occurs in the selection of syllabus content, in respect for individual internal syllabuses, and in modifications of the pace at which and manner in which instruction is delivered, as suggested by diagnostic information gathered on individual differences. (2003:67)

They do caution that this is not the same as the self-directed, autonomous learning found in much distance learning curriculum. And I agree that those sorts of "packaged learning" systems tout themselves as flexible enough to individualize instruction, but that is a deceptive flexibility. In the MOO, the interface is designed for a multitude of users each of whom have different personality types, different learning styles, different paces at which they learn, and different emotions that drive their desire to learn (pathos). A rhetorical language learning pedagogy that is self-reflective, student-centered, and decentered (in terms of authority in the teacher/ student relation) is highly effective in a MOO environment.

But, while I agree in principle with the aim of individualizing instruction, it remains to be seen exactly how one does so in light of other equally pressing considerations brought to bear on the possibilities of language teaching with MOOs. Practically speaking, real-time teaching in a MOO certainly creates real-time homework for teachers. Thus, we need to insure that working with technology does not penalize faculty in material and financial ways. It is imperative that our professional teaching

organizations adopt position statements/resolutions that may be used in support of obtaining grants, course release time to develop curriculum and materials, equipment and software, and other tangible means of material support. The National Council of Teachers of English (NCTE) recognized the need and published a vital position statement that members of my field may include during tenure and promotion reviews. It is also crucial that graduate students working with teletechnologies are not over-extended or exploited merely because they are more interested, more energetic, or more available to assist faculty and administrators in the move to online teaching. Whether working with MOOs, or other educational technologies, these guidelines are important first steps to transforming how teachers *praeparare* (Lat. > to procure).

In our discussion about morphing the teacher/student relation, a significant side effect has a direct bearing on the issue of teacher preparation. Not only does the MOO change the way teachers relate to their students, they may find that they must give up their 'principle orientation' toward the individual student (Porter: 1999:248). Teletechnology mixes new modes of intelligibility (and new codes of behavior) with new pedagogical contracts between teacher and student, and it also effectively "outs" the faculty in ways that they may find unnerving. In a recent study, Susan Romano concludes that '[t]eachers allotting class time to electronic conferences [i.e., online class discussions] and committed to sponsoring equitable discursive environments find themselves awkwardly positioned with regard to their own assignments' (1999:265). Put simply, teachers become more accessible because of Internet technology, and the degree to which they prepare for teaching (or not) is often starkly (and unexpectedly) revealed in online real-time sessions. If embarrassed or worse, a teacher in this situation may be completely converted against using MOO technology without ever giving it another chance. MOO administrators should adequately, and honestly, prepare teachers for as many consequences as possible, not just how to handle the more delicate problems associated with student misbehavior online, or how to monitor whether students are on task. Teachers are also just as capable of being off task. But my prior comments about *gelassenheit* are highly applicable here. If teachers make the turn and lean into the draft of the pure Open, letting other ways of teaching and interacting with their students come into the clearing space of the MOO, some of these precautionary remarks are simply not necessary.

The power of MOO has always been its mutability, its open architecture, and its open source philosophy. And those who have pushed the edge along have mostly been graduate students and junior faculty teamed with (or turned into) self-taught programmers and hackers. Learning and language have always been at the heart of MOO technology. And passion has always been at the heart of learning MOO. Having been an integral part of this movement, and of the MOO core responsible for the creation of many second-generation educational MOOs, I must situate my perspective squarely within this trajectory. I have seen change firsthand, first in my own thinking and teaching, and countless times in other teachers. Yet, nothing can compare to the innumerable times I have witnessed change and transformation in students who use MOO. Often that witnessing is not face-to-face, but word-for-word in the MOO. And I see them no less materially than if I had been physically present, rather than present at a

distance. These powerful dimensions of creating, using, and teaching in MOOs are represented in both formal and informal research, much of which is collected in this volume. My aim has been to reciprocate with all those here and elsewhere who help further MOO theory and practice in the constant ebb and flow of language, raising the principle of reciprocity up to a meta level and into its essential, constant tide of meta/morphosis.

Happily, educational teletechnologies like MOOs are disturbing the academy and challenging conventional education by radically changing the way we teach and learn with whom and where. But let us not end with ethical and pedagogical alarms ringing when we can look to ways of future-proofing, or morphing, old dilemmas into new promises. When we 'will have returned to the serenity of the positive,' the mystery of language learning in MOOs will have morphed into our communal memory. The MOO, as merely one among the latest windows on reality, will have become another atmosphere into which we launch new ways of learning with new modes of navigation in order to inhabit new languages. Flaubert wrote, 'The better the telescopes, the more numerous the stars.' Preparing ourselves to teach in such metaphysical and technological precincts requires more than learning to use the software, more than reading reference guides, more than upgrading one's pedagogy to the most recent version. It demands a conversion not unlike what happened to Paul on the road to Damascus. I am not suggesting we all become disciples of MOO, rather that we change our attitudes toward real-time technologies; and that means adjusting the pitch of our inner radar. What does this mean? The answer is in you, just as it was in me in 1968 when I set out to learn a language by heart.

Notes

- 1 This essay is a substantially revised version of a keynote talk I gave at a CALL MOO Seminar held at U of Bergen, Norway, 1997 ('Total ReCALL'). Many of the ideas herein are the result of my collaboration with one person; therefore, I owe a huge debt of gratitude to my husband, Jan Rune Holmevik, without whom none of this research, or life, would have been possible.
- 2 Refer to Markus Kötter's essay in this volume for an excellent explanation of how MOOs work, as well as a detailed analysis of learner interaction in MOOs. For further study and reference, see Haynes & Holmevik's *High Wired* and *MOOniversity*.
- 3 My introduction to MOO on May 9, 1994, was a powerful combination of fun, curiosity, social interaction, and education, all of which I owe to Jan Rune Holmevik's serendipitous presence in MediaMOO's TV Studio. But as for understanding the power of MOO for language learning, I have Jeff Schneider, Silke von der Emde, Markus Kötter, Randy Donaldson, and Klaus Schwienhorst to thank.
- 4 To experience *The Threshold*, log in to Lingua MOO (<http://lingua.utdallas.edu:7000>) as a guest and type @go Threshold, or view the room as a web page. Available: <http://lingua.utdallas.edu:7000/1736>
- 5 See Andreas Lund's site (<http://home.online.no/~anlun/bots.htm>); Daxtron Labs (<http://www.daxtron.com/123start.htm?AIML>); and Simon Lavon's site (<http://www>).

simonlaven.com/). These represent just a cursory search online of some interesting research in bot technology, some of which is devoted to language learning.

- 6 The LRO site contains a comprehensive tour of the Learning Record Online portfolio method of assessment, including background research and rationales, as well as comparative analysis of the LRO versus traditional grading scales and standardized testing. The site is located at <http://www.cwrl.utexas.edu/~syverson/olr/>.

Appendix: Task-Based Language Teaching, MOO, and Rhetoric

	Principles	L2	MOO	Rhetorical
		implementation	implementation	implementation
Activities				
MP1	Use tasks, not texts, as the unit of analysis	Task-based language teaching	MOO conversations (task-based)	Memory/invention; writing exigencies
MP2	Promote learning by doing	(TBLT; target tasks, pedagogical tasks, task sequencing)	Activity-based; presentation tools	Rhetorical delivery; active vs. passive reading
Input				
MP3	Elaborate Input	Negotiation of meaning; interactional modification; elaboration	MOO conversations (informal/impromptu) <i>écriture/cypher-text</i> (interpassive writing)	Memory/image; secondary orality; rhetoric as negotiation/mediation
MP4	Provide rich input	Exposure to varied input sources	Combines text/graphics and research resources	Style and intertextuality
Learning Processes				
MP5	Encourage "chunk" learning	Implicit instruction	MOO chunk talking; MOO slides, lecture device, logs	Aphoristic style; fragments; freewriting
MP6	Focus on form	Attention; form-function mapping	MOO recitable notes; noticing chunks	Logos and rhetorical arrangement
MP7	Provide negative feedback	Feedback on error (e.g., recasts); error 'correction'	Tandem learning (reciprocity) in real-time and asynchronous	Rhetoric as epistemic social construction

MP8	Respect developmental processes	Timing of pedagogical intervention to developmental readiness	MOO as multi-tasking with scaffolded interaction and pace	Audience-centered; rhetorical grammar in real contexts
MP9	Promote collaborative learning	Negotiation of meaning; interactional modification	Group MOO projects, building rooms, chain stories, noteboards	Ethos; ethical rhetorical pedagogy

Learners

MP10	Individualize instruction	Needs analysis; consideration of individual differences (e.g., memory and aptitude) and learning strategies	MOO interface design supports individual differences, immersion in language differences	Pathos; self-reflective rhetorical pedagogy; student-centered and decentered
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Adapted from Doughty & Lang: 2003:52

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Two Heads Better Than One: C[omputer] M[ediated] C[ommunication] for the L2 Curriculum

Robert Blake

Introduction¹

The interactionist model predicts that oral discussions between native speakers (NS) and non-native speakers (NNS), as well as those that only involve NNS interacting with other NNS, will prime second language learners to notice their linguistic limitations—an essential step in the SLA process (Gass: 1997; Schmidt: 2001). The notion of negotiation is central to this priming process and can be defined as ‘communication in which participants’ attention is focused on resolving a communication problem as opposed to communication in which there is a free-flowing exchange of information’ (Gass: 1997:107). Typically, negotiations arise in the foreign-language classroom when students must accomplish a communicative task and then encounter a non-understanding along the way.² Researchers have referred to the process of “pushing down” from the original line of discourse in order to resolve these miscommunications or non-understandings (Varonis & Gass: 1985). The conversation is momentarily put on hold while the particular item, be it lexical or grammatical, is negotiated and the participants “push [back] up” to the original line of discourse. These linguistic negotiations become precious moments when new structures can first be noticed or primed for acquisition.

Several researchers (e.g. Pellettieri: 1999; Blake: 2000; and Blake & Zyzik: 2003) have shown that these “priming” benefits also obtain for exchanges within the medium of synchronous computer-mediated communication (CMC) and encourage the same collaborative knowledge construction observed in face-to-face negotiations, especially with respect to vocabulary development. While Pellettieri employed tasks that specifically promoted syntactic negotiations, Blake found that intermediate Spanish learners, when not specifically directed to carry out purely grammatical tasks, tended to focus more attention more on lexical items.

While face-to-face encounters undoubtedly offer an array of positive pedagogical advantages for students, networked communication has often been praised for neutralizing the negative effects of asymmetrical power relationships and unequal status often experienced in a face-to-face setting (Warschauer: 1996). Partners in CMC tend to concentrate more on the message since they have no recourse to their partner’s physical appearance or body language.

The present chapter strives to document L2 development of lexical knowledge as stimulated by CMC exchanges of two kinds: Spanish heritage speakers chatting with L2 learners [type I] and L2 Spanish learners chatting with other learners [type II]. In both cases, the students in the experimental groups were asked to interact with one another online after completing a Web reading task that contained unfamiliar vocabulary. The first study clearly shows that both heritage speakers and L2 learners benefit in the short-run from their respective lexical negotiations with their partners. The second study tries to verify that these negotiations can actually be converted into new, retrievable, lexical knowledge (i.e. lexical acquisition) that is available to them at a later or delayed time. In the second study, the computer, then, becomes an ideal tool for tracking lexical progress one word at a time, a process that seems to parallel how L2 learners expand and develop their lexical knowledge. The results from both studies seem to echo the old proverbial adage that “two heads are better than one” with respect to learning a second language and suggest that online negotiations should play an important role for the L2 curriculum.

Measures of L2 Acquisition

Although most language teachers tend to conceive of second language acquisition (SLA) in terms of grammatical development, SLA researchers in recent years begun to accord more attention to vocabulary growth as a benchmark for SLA development (Read: 2000; Meara: 1996; Hazenberg & Hulstijn: 1996). Karp (2001) found that vocabulary size was the single best predictor of high reading comprehension scores among intermediate Spanish learners. More specifically, Hulstijn (2001:262–263) has calculated that L2 learners at the Waystage Level (Van Ek & Trim: 1991) need to control 1,000 base words in their productive knowledge, but in terms of receptive knowledge they require around 5,000 words to comprehend the main points of non subject-specific texts.

Hulstijn's studies (1992; 2001) have also made it clear that the process of acquiring incidental vocabulary through reading, although much advocated by Krashen (1989) as the only means for increasing L2 students' vocabulary size, is insufficient for the retention of meaning: Students need multiple exposures to new vocabulary in order to retain word meanings. With respect to memory and retention Hulstijn (2001:270) also points out that cognitive psychology attributes a prominent role to the processing activities which the learner engages in. In a second language context those processing activities often include a "phonological loop," silent or overt articulation, in order to promote long-term retention. As of yet, no one has adequately investigated whether or not the "tactile loop" caused by CMC keyboarding also contributes to memory performance. In any event, task-based exercises, such as the ones described in this chapter, appear to comply, at least partially, with the appropriate learning conditions referred to by Hulstijn because they involve producing real output.

The framework for our studies, then, necessarily involves a task-based inquiry into SLA which accents more the notion of output in addition to the traditional concerns about input. In Swain's Output Hypothesis (1985), language production is seen as playing a crucial role in the SLA process. Swain (1985:249) outlines three potential functions of output: it provides the opportunity for meaningful use of one's linguistic resources; it allows the learner to test hypotheses about the target language; and it encourages the learner to move from semantic to syntactic processing. Swain argues that comprehension of input is a process driven by semantics; in other words, learners do not always need to parse the sentences they hear in order to arrive at the intended meaning. Production, on the other hand, requires the learner to utilize syntax and correctly formed words in order to produce coherent, meaningful utterances. When a learner is "pushed" during output, he or she is encouraged to convey meaning in a precise and appropriate manner. This momentary "push" may be critical for language acquisition, since it promotes noticing (Swain, 2000:100). As learners realize that there exists a linguistic problem in their output, they might modify their utterance in some way or attempt to use new linguistic forms (i.e. hypothesis testing). Another possibility is that the learner may look to the interlocutor for some sort of external feedback (e.g. a recast or modification) to help remedy the situation. In either case, the learner's attention is being directed to the more formal properties of the utterance while expressing the meaning he or she wishes to convey. This heightened awareness seems to be enhanced by the textual medium provided by CMC. Accordingly, we assume "pushed output" to be a relevant concept for both face-to-face and CMC exchanges.

In reviewing the actual instances of non-understanding in the literature, it appears that lexical items are negotiated most frequently (Brock *et al.*: 1986; Sato: 1986; Pica: 1994). It is reasonable to assume that a conversation will come to a halt when a lexical item crucial to the solution of the task is unknown to at least one of the interlocutors or cast in an unintelligible, ill-formed way. If the conversation is to "pop [back] up" to the main line of discourse (Varonis & Gass: 1985), the lexical item must be negotiated in some way, or that particular topic must be abandoned altogether. Grammatical items, on the other hand, can often go unnoticed since they carry a lesser com-

municative load. More specifically, the relative communicative value of a particular grammatical item is determined by its inherent semantic value and redundancy within the utterance (VanPatten: 1996).³ This notion of communicative value explains why it is possible to communicate an idea, albeit not accurately, with less-than-perfect grammar: in other words, ‘... language can work well despite poor execution’ (Skehan & Foster: 2001:183).

Negotiations of meaning typically follow a standard protocol described by Varonis and Gass as consisting of a trigger (the utterance that causes a non-understanding), an indicator (the beginning of the negotiation of meaning which pushes down from the original line of discourse), a response (an acknowledgement of the non-understanding by the speaker), and a reaction (an optional recognition of the resolution of the non-understanding and a signal to resume the normal line of discourse), as illustrated in Figure 1, an example taken from our data of learner/learner discussions:

Typical format for negotiations

- Speaker 1: *Él ha corrido por su vida perseguido por una pandilla ...¿Entiendes?*
[TRIGGER]
He’s been running for his life persecuted by a gang. Do you understand?
- Speaker 2: *¿Qué es pandilla?* [INDICATOR]
What a ‘gang’?
- Speaker 1: *“group” yo creo, yo vi [sic] en el diccionario* [RESPONSE]
“Group” I think, I saw [it] in the dictionary
- Speaker 2: *Ah, yo recuerdo ... similar de un grupo* [REACTION]
Oh, I remember, similar to a group
- Speaker 1: *sí*
Yes.

Fig. 1

This is the standard coding procedure that will be used to analyze the exchanges between heritage speakers and L2 learners, as described in Study #1 below.

Study #1: Heritage Speakers Chatting with L2 Learners

During fall quarter, 1999, eleven university heritage speakers enrolled in the course “Spanish for Native Speakers” were paired with another eleven L2 learners from an intermediate Spanish class. Our university has a separate language series for heritage speakers. Heritage speakers can be defined as individuals who have been exposed to another non-English language in the home and are bilingual to some degree (Valdés: 2000:1). Under normal circumstances, heritage speakers would not interact with L2 learners until reaching upper-division courses. The CMC exchanges provide a unique opportunity to allow these two student populations to work together.

The heritage speakers varied in their exposure to monolingual Spanish-speaking norms mostly as a function of when they arrived in the United States. Three students (type I) were raised in Spanish-speaking countries until about age ten. At the time of the study, they had been living in the United States for eight or more years with their parents who were native Spanish speakers. These individuals self-reported their Spanish was better or equal to their English. Another group of eight students (type II) was raised in the United States with at least one parent being a native speaker of Spanish. Some Spanish was spoken at home, but they expressed a preference for English as their dominant language.

Each HS/NNS pair was asked to solve the “apartment hunting” task, which had proven highly effective from previous research in eliciting linguistic negotiation from learner/learner pairs (Blake: 2000). This activity can be described as a two-way jigsaw task that requires each participant in the pair to share their portions of a totality of information as they converge toward a single goal (Pica *et al.*: 1993). Because of the nature of the jigsaw task, the participants enjoy increased opportunities to experience comprehension of the input, feedback on production, and modification of interlanguage forms (Pica *et al.*: 1993:17).

Task type was an important consideration for this study since it is widely recognized that interaction is an extremely task-sensitive phenomenon. There are many types of communicative tasks (for a taxonomy, see Pica *et al.*), and they differ from one another in four major ways: the responsibilities of the interlocutors (which one holds the information); the interaction requirement (optional or obligatory); goal orientation (convergence or divergence); and outcome options (one or more than one final outcome). In this model, the jigsaw task is viewed as the one most likely to generate opportunities for the learners to interact and negotiate meaning. This does not mean, however, that the other tasks (such as problem solving, decision making, or opinion exchange) are not valuable in their own right. The less restrictive tasks (i.e. opinion exchange) can also serve as a platform for interaction, especially in the realm of controversial topics. In short, the tasks must be used wisely in conjunction with the specific goals of the classroom or the research agenda.

The partners were seated at computers located in different buildings and instructed in English to connect to each other online via the RTA chat program (<http://davin-ci.cs.ucdavis.edu>). They were told they were connecting to another student of Spanish without reference to the linguistic background of their partner. All focus was directed to solving the task at hand via the chat tool. They then proceeded to solve the “apartment hunting” task using only Spanish. The goal of this task was to share their respective apartment listings (four each, a total of eight) and find the perfect fit given their assigned personalities, which provided points of conflict as well as agreement. The details of their assigned personalities (type A vs. type B) were given in English through Web pages (see <http://philo.ucdavis.edu/zope/home/rblake/task6.html> for details). The separate apartment listings were in Spanish and had been taken from a Madrid apartment-finding Internet service. The RTA chat program allowed these pairs to engage in synchronous CMC and kept a record of all of the keyboard exchanges. The pairs communicated online for about an hour in order to come to a

consensus on which apartment they wanted to rent. All pairs successfully agreed upon one apartment, which required them to share their four listings as well as their assigned likes, dislikes, and budgetary restrictions.

The eleven pairs generated thirty instances of negotiations during their respective hour-long CMC sessions. For an unfocused task such as the “apartment hunting” task,⁴ the amount of negotiations of meaning is consistent with previous findings (Blake: 2000). Table 1 shows the distribution by lexical, grammatical, and pragmatic negotiations.

Table 1. Total negotiations of meaning

Negotiation Type	Tokens
Lexical	24
Grammatical	4
Pragmatic	2

As can be seen from Table 1, the negotiations were primarily lexical in nature (N = 24), as has been reported elsewhere in the literature (Blake: 2000: 132). This result is not surprising because of the nature of the task, which involved reading the apartment listings and understanding the descriptions and Spanish abbreviations. Vocabulary, not grammar, is crucially important for choosing the best apartment among different advertisements. The transcripts show that the pairs communicated mostly in Spanish, although they did resort to English at times in order to clear up some lexical misunderstandings. Code-switching did occur for both types of participants but seemed to be restricted, once again, to the lexical domain. The exchange in Figure 2 is representative of a successful lexical negotiation.⁵

NNS → HS (type II)
 NNS: *que significa “piso a estrenar?”* [INDICATOR]
 What does “flat to be used for the first time” mean?
 HS: *que esta nuevo* [RESPONSE]
 That it’s new.
 NNS: *ay que bueno* [REACTION]
 That’s good.

Fig. 2

The transcriptions were further analyzed to reveal who was responsible for resolving the communicative breakdowns. As Table 2 illustrates, the majority of the resolutions can be attributed to the heritage speakers with lexical confusions being the principal trigger.

In Figure 3, the L2 learner is forced by the communicative task to find an equivalent for English “to save” (a digital computer file). In Spanish there are at least three separate entries for this English verb: *guardar* (‘to save/store information or objects’),

Table. 2: Resolutions of linguistic difficulties by type and speaker

TYPE	HS	NNS	NNS
			SELF-CORRECTION
Lexical	18	5	1
Grammatical	3	—	1
Pragmatic	2	—	—

ahorrar ('to save money/time'), *salvar* ('to save a life'). As Swain (1985: 2000) has noted, the demands of producing output forces learners to put their linguistic resources into action and make specific grammatical choices. In this case, this learner opts for the already known meaning of *salvar*, which is a false cognate in this particular context. This provokes a clarification request from the HS. Once the HS understands the context, the proper Spanish verb *guardar* can be suggested and the breakdown is resolved.

HS (type I) → NNS

NNS: *esta bien, como terminamos esa programa, lo salvamos el texto?* [TRIGGER]

fine, since we finished that program, we save it the text?

HS: *salvamos que?* [INDICATOR]

we save what?

NNS: *la informacion, no?*

the information, right?

NNS: *para Ana?*

for Ana?

NNS: Eva

NNS: *para Eva*

for Eva

HS: *si hay que guardar la informacion* [RESPONSE]

yes we have to save the information

HS: *Lo quieres guardar bajo el nombre de NNS, Aguilar, Anna, o Juan?*

Do you want to save it under the name NNS, Aguilar, Anna, or Juan?

NNS: *no importa*

it doesn't matter

NNS: *pon los dos*

put both.

HS: *Lo voy a guardar bajo el nombre "Aguilar y NNS" entonces*

I am going to save it under the name "Aguilar and NNS" then

NNS: *bien!*

good!

HS: *ya lo guarde*

I have already saved it

Fig. 3

Not all the help is flowing in one direction, just from the heritage speakers to the learners. In this study, L2 learners resolved five of the lexical confusions, taking the initiative in helping the heritage learner understand an unfamiliar vocabulary item. In four of these five cases, the learner was working with a type-II heritage speaker, but in one instance, a learner assisted a type-I heritage speaker in finding the precise word for “heating.” The L2 learners have more exposure to certain formal lexical items normally found in the classroom that are not necessarily part of the bilingual repertoire.

In reviewing the transcripts, special attention was directed towards instances of output that resulted from previous negotiations. The transcripts provide solid evidence that the NNS were not familiar with these particular lexical items prior to the negotiation sequence. The knowledge gained from the negotiation appears to be recycled and used appropriately at a later point in time in the conversation, as shown in Figure 4.

HS (type II) → NNS

HS: *Eso me parece bien. Yo necesito algo con calenton porque soy muy friolenta*
[TRIGGER]

That sounds good to me. I need something with a heater because I get very cold.

NNS: *Que es calenton?* [INDICATOR]

What is a heater?

HS: *Tambien te queria decir que tengo muy poco dinero y necesito algo de menos de 100.000 pesetas. Un calenton es algo para que no te de frio. Un heater*
[RESPONSE]

Also I wanted to tell you that I have very little money and I need something for less than 100,000 pesetas. A heater is something so that you don't get cold. A heater

HS: *Me gustaria tener algo con lavaplatos porque yo soy muy limpia*

I would like to have something with a dishwasher because I'm very clean

NNS: *El alquilar del apartamento que (a mí) me gusta es muy caro. Yo sólo necesito la cocina y la terraza.*

The rent of the apartment that I like is very expensive. I only need the kitchen and the terrace.

NNS: *Pienso que nos encontro un apartamento. Tiene una cocina, electrodomésticos, y cuesta 85.000 pesetas. Pero no sé si tiene un calenton.*

[OUTPUT]

I think that I find us an apartment. It has a kitchen, appliances, and costs 85,000 pesetas. But I don't know if it has a heater.

HS: *Hay un apartamento que tiene cocina, calefaccion, lavaplatos y esta junto el Metro San Bernardo. Vale 31.000 pts*

There is an apartment that has a kitchen, heating, a dishwasher and it's right next to Metro San Bernardo. It costs 31,000 pesetas

HS: *calefaccion es lo mismo que un calenton*
heating is the same thing as a heater

Fig. 4

A complete analysis of these exchanges brings to mind yet another important issue: the interaction between the reading material of the task and the instances of output. It is predictable that the L2 learners will make use of the written input of the apartment ads as they attempt to produce the target language while chatting with a partner. Swain and Lapkin (1998:386) explain ‘when learners cannot work out a solution, they may turn to input, this time with more focused attention, searching for relevant input.’ This appears to be the case in Figure 5, in which the NNS first struggles with the word for “furnishings” and then finds the answer he was looking for by returning to the text of the reading. The heritage speaker then reinforces this new vocabulary item later in the conversation and, finally, the learner tries it out, again. Although the final output is not entirely accurate, it cannot be said that the interaction has been unproductive. It simply underscores the fact that acquisition is often a process of trial and error, and that many opportunities for production are needed to gain control over linguistic forms, in like fashion to Hulstijn’s (2001) point about multiple exposures. In addition, the L2 learner is trying to make associations between the new lexical item *amueblado* “furnished” and a possible synonym, *completo* “complete, fully furnished”.

HS (type I) → NNS
 HS: *cuales otras cosas?*
 what other things?
 NNS: *en una apartamento*
 in an apartment
 NNS: *como un sofa, y las sillas, y un escritorio*
 like the sofa, and the chairs, and a desk
 NNS: *los (furnishings) ...*
 NNS: *se ve bien, tambien, pero no esta amueblado* [picks it up from the reading]
 it looks good, also, but it is not furnished
 NNS: *estoy de acuerdo contigo,*
 I agree with you,
 NNS: *numero 3 esta el mejor*
 number 3 is the best one
 NNS: *puedo tener control de otras ventana?*
 can I have control of other Windows?
 HS: *Creo que tienes razon. Ademas de estar amueblado, tiene calefacción, television, etc.* [reinforced by HS]
 I think you’re right. In addition to being furnished, it has heating, television, etc...
 HS: *Lo unico que no tiene es el lavaplatos*
 The only thing it doesn’t have is the dishwasher
 NNS: *completo? es amuebable?* [output, although not accurate]
 complete? is it furnished?

Fig.5

Discussion of Results from Study #1:

The central concern of Study #1 was to investigate the nature of HS/NNS interactions in a CMC environment. Based on the exchanges described in the previous section, it is apparent that heritage speakers and L2 learners negotiate meaning and engage in the same types of interactional modifications as do L2 learner/learner pairs, regardless of the medium (i.e. face-to-face or CMC). The transcripts reveal instances of clarification requests, expansions, recasts, self-corrections, and other strategies that have been well documented in both face-to-face and CMC environments. This result was expected, but HS/NNS exchanges provide other theoretical interests as well.

Both groups triggered and resolved miscommunications, although the heritage speakers assisted their L2 partners much more often. This fact should not suggest that these exchanges were unproductive for the heritage speakers. On the contrary, these types of CMC exchanges are able to provide heritage speakers with opportunities to expand their bilingual range or command of multiple registers, a goal advocated for by Valdés (1997). More specifically, such tasks may force heritage speakers to discuss topics which are not part of their usual repertoire. Likewise, the highly active role assumed by the heritage speakers in these exchanges (seventy-six percent of the negotiations are solved by them) appeared to affirm positive attitudes of language pride and linguistic authority which are essential for heritage speakers to experience, especially since they are often the target of much gratuitous linguistic criticism and ridicule for using colloquial forms. However, unlike many exchanges with native speakers reported in the literature, the heritage speakers did not seem to project any sense of unequal hierarchy or superiority when working with the L2 learners, at least from the conversational evidence found in the transcripts.

Due to the small sample size in this study, it was not possible to determine if the different types of heritage speakers (Type I or Type II) had a significant effect of the task-based interactions. Future studies should target more specifically how different types of heritage speakers shape NNS/HS negotiations.

Finally, the evidence seems to indicate that the demands of electronic chatting, which force the participants to produce output and consequently provide an immediate record of subsequent uses of new vocabulary items bring about a change in the L2 learners' linguistic knowledge. However, Study #1 was not designed to determine whether or not these advances yield only short-term gains or signify a more permanent restructuring of their L2 lexicon. Study #1 shares this defect with many other interactionist studies, as Skehan and Foster take pains to point out:

Negotiation studies have appeared for the last fifteen years or so, but they are still preoccupied with a descriptive level of research which seeks to identify when negotiation is more likely to occur. Although there has been ample time during this period to demonstrate some sort of empirical link between negotiation and acquisition, no work of that type has been done. (2001:187)

Although the subjects in our study were not administered a delayed post-test, Swain & Lapkin (1998) provide examples confirming a strong relationship between output and delayed recall for vocabulary acquisition. Study #2 tries to address this issue by including a delayed recall measure as a means to explore more thoroughly this apparent connection between forced output and acquisition.

Study #2: Learners Chatting with Other Learners

Students from two different Spanish classes at UC Davis and another two Spanish classes at UC Santa Cruz participated in this study. The students from Santa Cruz were third-quarter Spanish learners and those from Davis were fourth-quarter learners. Those in the experimental group were required to chat with each other (Davis to Santa Cruz) and accomplish a series of reading tasks online. More specifically, fifteen Santa Cruz students chatted in pairs with another fifteen Davis students at a mutually convenient time outside of class. The pairs in this experimental group read three multimedia selections on their own before engaging in the collaborative CMC comprehension and writing tasks posted on the Web. The control groups consisted of twenty-five students from UC Davis and eighteen at UCSC. The students in the control group were given the same reading materials in print form and were asked to perform the same writing assignments individually outside of classroom time. The three readings, in order of presentation, dealt with Salsa music and the personage of César Chávez and Eva Perón, all of which corresponded to parts of their normal Spanish language curriculum (for more details, see the following Web pages: <http://philو.ucdavis.edu/zope/home/rblake//TAREAsalsa.html>; <http://philو.ucdavis.edu/zope/home/rblake//TAREAchavez.html>; <http://philو.ucdavis.edu/zope/home/rblake//TAREAeva.html>)

The readings were accompanied by guided questions which incorporated the words most likely to force the dyads to negotiate meaning in order to finish the task. The students knew that their answers to these questions would be graded and, therefore, made every effort to provide the correct answers according to the content of the readings. The experimental groups from Davis and Santa Cruz communicated with each other using the Remote Collaboration Tool (RCT [formerly RTA] software [<http://davinci.cs.ucdavis.edu/>]), previously mentioned above. The control groups worked on the same readings individually outside of class but did not participate in any collaborative CMC.

Fig. 3. Language preference in the chat transcripts

Language Employed in Chat Transcripts:	Total (N=58)
Spanish	42
Spanish with minimal observation in English	7
Both Spanish/English	2
English with minimal observations in Spanish	3
English	4

As can be seen from Table 3, the overwhelming majority of students in the experimental group followed directions and carried out their electronic exchanges in the target language. In the course of finishing three readings (one every two weeks), participants self-reported their respective vocabulary knowledge by means of a pre-test and a two-week delayed post-test patterned after Meara's LLEX vocabulary test (Meara, 1996). Instead of simply requesting yes/no responses, as is the case for Meara's instrument, I used a Likert scale from one to five in keeping with the practice of other lexical studies (Knight: 1994; Karp: 2001). These tests included key words from the three readings judged to be unfamiliar to them and, therefore, possible stimuli for lexical negotiations. More importantly, it should be remembered that the guided questions specifically required students to deal with these key words as part of the tasks they had to finish and turn in for a grade.

The delayed test was administered two weeks after the last reading assignment with an eye to providing some idea of vocabulary acquisition and retention as a function of networked pair-work negotiations, the central interest of Study #2. Not surprisingly, the experimental group made improvements in their respective vocabulary development in terms of the aggregate totals, but so did the control group. This result is not unimportant because it confirms that the tried-and-tested technique of offering students guided questions—a method for directing students' attention to lexical and syntactic issues—remains a fundamentally sound pedagogical practice in whatever learning environment, whether in class or online. But these aggregate figures reveal little about each individual's own learning experience. Likewise, the aggregate values do not answer the question of whether or not networked negotiations had any effect on vocabulary growth—not all subjects in the experimental group entered into lexical negotiations.

To get at this question, I analyzed the data further by focusing specifically on instances of individual lexical negotiations and the corresponding individual score values for those particular words. The experimental group engaged in twenty-nine lexical negotiations stimulated almost entirely by two readings, Salsa and Eva Perón. The data made it clear that answering the guided questions for the César Chávez reading triggered relatively few lexical misunderstandings—illustrating how difficult it is to predict beforehand which guided questions or tasks will stimulate lexical negotiations within any particular group of L2 learners.

For this study, I sought to document how well students learned the specific words which attracted the dyad's attention long enough so as to spawn some time negotiating word meaning before completing the writing task. Accordingly, in order to investigate whether or not networked negotiations had a beneficial effect on vocabulary development, I looked at the individual performance for negotiated words as compared to the group norms or average vocabulary test performance on the final or delayed test, as shown in Table 4 below. The asterisked individual scores indicate test values above the group norms from both the Davis and Santa Cruz experimental and control groups alike. What matters here is not the chatting *per se*, but the conscious focusing of attention on lexical meaning which only happens in a specific context, one at the time, when a word is negotiated.

Table 4. Comparison of Average Vocabulary Test Results With Individual Students who Negotiated Word Meanings Through Chat

Negotiated words for all readings:	Students who negotiated meaning Pre-test	Students who negotiated meaning Final	Santa Cruz +chat Final	Davis +chat Final	Santa Cruz -chat Final	Davis -chat Final
ajeno			1.4	2.0	1.8	2.3
W1-SC	1	1				
Z1-D	5	5				
ciudadano			4.5	4.9	4.7	4.8
B1-SC	3	5*				
B2-D	3	5*				
desarrollo			5.0	5.0	4.5	4.8
T1-D	3	5*				
R1-SC	5	5				
E1-SC	5	5				
E2-D	5	5				
desempeñar			3.1	2.9	2.8	4.0
W1-SC	4	5*				
Z1-D	5	5*				
desafío			2.5	3.2	2.7	2.8
W1-SC	1	5*				
Z1-D	3	4*				
E1-SC	1	1				
E2-D	1	4*				
F1-D	1	1				
G1-SC	3	4*				
encasillada			3.4	2.7	3.0	2.8
W1-SC	1	5*				
Z1-D	2	3*				
T1-D	2	5*				
R1-SC	1	—				
A1-D	1	4*				
B1-SC	1	—				
esfuerzo			4.1	4.8	2.7	4.5
M1-D	1	5*				
M1-SC	1	3				
ingreso			2.7	3.9	3.5	3.8
H1-SC	1	4*				
M1-D	1	5*				
H2-D	1	3				
G1-SC	2	2				

pesado			3.6	4.2	3.6	4.2
E1-D	3	5*				
U1-SC	3	5*				
vergonzosa			2.9	4.1	3.5	4.2
E1-D	1	5*				
U1-SC	1	5*				
yendo			1.8	2.5	2.3	2.7
W1-SC	1	3*				
Z1-D	5	5				

Discussion of Results from Study #2:

With respect to the experimental chat groups, two readings, *Salsa* and *Eva*, triggered the bulk of the lexical negotiations of meaning. From Table 4, it can be seen that most subjects involved in these specific online word negotiations registered a notable improvement (i.e. the asterisked items) in vocabulary knowledge on the delayed post-test vis-à-vis the mean values exhibited by all other groups, both control groups and experimental.

This comparison illustrates a unique attempt to document the act of lexical acquisition made possible only by the computer's tracking capacity. In other words, intermediate language students make progress toward expanding their L2 knowledge one word at a time, a process that is highly dependent on the individual's own learning experiences and exposure to input that can be noticed and converted into intake, in this case, by means of carrying out CMC negotiations of meaning. The data from Study #2 help support the notion that online negotiations create favorable conditions for vocabulary growth and begin to provide evidence to establish the connection between negotiations and acquisition.

Undoubtedly, negotiation data from face-to-face negotiations would also reflect a positive effect on vocabulary development, but tracking these events would have been much more difficult because it is hard to predict when they will happen. Subsequent capture of these negotiations, without the constant intrusion of videotaping, is not very feasible. The computer and CMC, on the other hand, lulls students into thinking that they are not being observed—despite clear notification to the contrary—and, consequently, provides a unique window to observe lexical acquisition, one word at a time.

The tracking method described in this study pioneers a new way for isolating the learning moment and, therefore, makes a contribution toward the characterization of the L2 acquisition process. Whether these negotiations will yield lasting effects (i.e., lexical incorporation and retention) cannot be fully judged by this experiment, given that the delayed post-test came only two weeks after the first post-test. Clearly, this is an issue that should be addressed more fully in future studies. Likewise, there are undoubtedly vocabulary measures other than the self-reporting LLEX technique used

in this study that would also be suitable for evaluation of vocabulary growth. Again, issues of measurement should be addressed more fully in future investigations.

Conclusions and Pedagogical Reflections

The two studies presented in this chapter explore the effects of online lexical negotiations among HS/NNS and NNS/NNS pairs. From an interpersonal perspective, Varonis & Gass (1984:84) have suggested that learner/learner pairings encourage negotiation because learners recognize that they have a 'shared incompetence,' while exchanges involving native speakers often discourage negotiation because there exists an inherent 'inequality in the status of the participants' (Varonis & Gass:86). These observations are thought provoking for the analysis of the pairing of L2 learners and heritage speakers. Many heritage speakers have negative perceptions of their own Spanish abilities that are not grounded in solid linguistic facts. As a result, when faced with a monolingual native speaker of Spanish, they are often intimidated, fearing that their Spanish is "not good enough." This linguistic insecurity is sometimes reinforced by social class differences as well. When interacting with L2 learners of Spanish (NNS), however, the opposite reaction is more likely, especially over the Internet where physical anonymity is the order of the day. The heritage speakers find themselves in a non-inhibiting situation, as do the learners, which may tend to encourage language output, with all the benefits discussed above. Both HS and NNS are learners of Spanish, but the HS clearly are able to bring to bear their superior linguistic knowledge to the tasks at hand without the impatience often exhibited by native speakers when dealing with either L2 learners or heritage speakers. In these circumstances, the HS may justifiably feel that he or she is the linguistic expert or authority, which is a confidence-boosting experience. The reality of the situation is that with respect to CMC exchanges, heritage speakers constitute a respected source of information as far as the L2 learners are concerned. With respect to the L2 learners, being paired with someone above their competency level has obvious benefits. Porter (1986) found that the mixing of proficiency levels is advantageous, especially for the intermediate learner paired with a higher-level partner. Porter suggests that the intermediate learners were in an ideal situation to receive input that was just beyond their current level of competence. These findings are particularly applicable to the HS/NNS match-up, in which the heritage speaker clearly commands more linguistic expertise.

Heritage students with developing literacy skills are rarely considered an asset to the standard university-level Spanish curriculum.⁶ But this study would suggest the opposite is true: Spanish heritage speakers can be a valuable resource to L2 learners, given a careful presentation of collaborative tasks. At the same time, heritage speakers also profit from their exchanges with L2 learners, both in terms of refining their vocabulary breadth and reinforcing a more positive self-image of their superior cultural and linguistic knowledge of Spanish. The fact that these beneficial pairings can

also be done on the Web through CMC expands an institution's possibilities for maximizing the potential of all of its language resources, locally or at a distance.

Turning now to the specific nature of processing, the CMC exchanges between pairs appears to mitigate the taxing working memory demands for immediate performance that typically plague face-to-face L2 speech because they provide textual support to facilitate student output. Following Levelt's (1989) model, Payne & Whitney (2002) explain that [in CMC] 'the processing demand is reduced or more precisely, the amount of language that an individual has to parse, comprehend, and respond to is lower for a given time period.' This is one significant advantage of a text-based medium: it facilitates comprehension of input (Warschauer: 1996). This is not to say that the exchanges of the participants from these two studies, if carried out completely in a face-to-face environment, would not have yielded a similar set of results. The literature is clear that the results from face-to-face and CMC negotiations are quite compatible. But the CMC discussions free the participants from having to be in a particular place at the same time, along with providing the textual support discussed above.

With respect to output, the learners have an opportunity to pre-plan their utterances, to perceive visually the utterance they are creating, and then to edit the initial response. The same holds for lexical retrieval, a frequent problem for non-balanced bilingual speakers (de Bot: 1992:14). Just as in the case of the L2 learners, the CMC medium gives heritage speakers more production time to search their lexicon and find the appropriate items. The possible benefits of this visual saliency have also been discussed by Pellettieri, who suggests that the CMC environment allows learners to compare directly their original utterance with a modified version, or with a recast supplied by their partner. Visual saliency is also related to working memory, allowing the learner to strengthen memory traces by referring back to a preceding exchange. These particular features of the text-based medium imply valuable advantages for the second language learner.

On the practical side, CMC tools greatly facilitate data collection and are less intrusive. With the availability of transcripts, researchers do not need to monitor directly pairs working at solving collaborative tasks. When and where one pair or a series of pairs will push down to negotiate a lexical problem cannot be predicted. After all, negotiations are not very frequent to begin with, if the task is truly authentic (i.e. "real world-like") and interesting. Fortunately, the computer will patiently wait for them to occur and then capture them in the transcripts.

The importance of these practical concerns bears directly on the researcher's need to isolate the learning moment to the extent possible. Study #2 is a first attempt to examine the connection between lexical priming and acquisition and constitutes a partial response to Skehan and Foster's criticisms of the interactionist model. Study #2 does not provide conclusive linkage but its contribution consists in trying to document if such a relationship exists. If two heads are truly better than one, I predict the evidence will surface most clearly in the area of L2 vocabulary growth. The present line of inquiry suggests how to develop more fully a methodology that can bridge the gap between describing a process and documenting acquisition.

Turning now to strictly pedagogical concerns, these two studies have demonstrated the potential for using chat and task-based inquiries in the foreign language classroom, especially a student-centered classroom in contrast to a teacher-centered one. L2 students will negotiate meaning while chatting if the tasks are properly constructed. The additional benefits that the CMC medium offers the foreign language curriculum is one of increased access: L2 learners can chat with each other outside of class at times and places that are convenient to them. In addition, CMC opens up the possibility of interacting with native speakers or heritage learners from any institution in the world. Again, the CMC benefits for a task-based curriculum parallel those of face-to-face interactions, but the increased access provides an interesting inducement to implement CMC.

However, a few practical observations are in order when trying to implement CMC into the foreign-language curriculum:

- Successful CMC activities are highly task sensitive. Tasks must be carefully crafted with an eye to stimulating interactions and negotiations of meaning. Poorly designed tasks will create little interest and, consequently, the impression by all concerned that CMC is a waste of time. Teachers need to pilot the tasks they choose beforehand in order to determine what constitutes a productive CMC task. The apartment-hunting task reported in the present two studies was the culmination of just such a search; many other tasks were abandoned after they generated little interest or interactions among the students.
- The technical limitations and protocols of the CMC tool need to be taught to the students beforehand as well. Nothing subverts a CMC curriculum faster than a few technical glitches or the lack of technical knowledge caused by incomplete learning of the tool. Likewise, care needs to be exercised in choosing a CMC tool that fits both the technical infrastructure of the particular institutions and the expectations for the type of desired networked exchanges. For example, will the students be expected to exchange voice files, share URLs, co-edit word documents, or engage in file exchanges? These functions are all available, but not with every chat tool. Careful choices need to be made in the planning stages. Above all, the tool itself needs to be transparently easy to use.
- There must also exist an adequate system of technical support if something does go wrong so that the students can report the problem (s) and receive a timely solution.
- The students must feel that their work is part of the normal curriculum—not extra credit—and will be reviewed and rewarded as such. We found that asking the students to jointly write a final report of their work gave them adequate incentive to do a good job.
- Finally, CMC tasks that are reincorporated into the classroom activities will reinforce the lessons learned individually and stimulate other students to achieve a high level of quality in their own exchanges.

There is no denying a novelty effect of using chat software: Students will spend a great deal of time concentrating on CMC because everyone else is doing it (world-wide, for that matter). Why shouldn't teachers capitalize on this trend, especially when the research such as the present study supports the notion that real L2 learning is occurring? Careful planning is needed to make these CMC activities go smoothly, but the sense of accomplishment and the language development experienced by the students are worth the extra effort.

Notes

- 1 I wish to thank Eve Zyzik for reading and improving the original text as well as for doing the data collection for Study #2. Much appreciation is owed to María Victoria González Pagani, who directed the data collection at UC Santa Cruz. I also thank Teresa Oteiza who compiled portions of the statistical data for Study #2. I much appreciate the comments of Travis Bradley on the final draft. All errors are mine alone.
- 2 For the purposes of this paper, the terms "second language acquisition" and "foreign-language classroom" are not mutually exclusive. Since linguistic negotiations occur in both contexts, research on negotiation can be applied to both second- and foreign-language acquisition.
- 3 Nevertheless, researchers have become increasingly clever in designing structure-focused tasks that have proven effective in eliciting production of certain morphological and syntactic features of the target language (c.f. Bygate, Skehan, & Swain: 2001; Doughty & Long: 2000; Mackey: 1994; 1999).
- 4 For a definition of focused and unfocused tasks, see Nobuyoshi & Ellis: 1993.
- 5 Technically speaking, what is being negotiated is input from the text, not from any of the two interlocutors. In this study, I will include this as a negotiation event since 'attention is focused on resolving a communication problem' (Gass:1997:107).
- 6 For an example of the curricular inclusion of heritage speakers as tutors for L2 learners, see Quintanar-Sarellana *et al.* (1997).

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12

Working Towards Effective Assessment of CALL

Jack Burston

Introduction

The goal of this chapter is to establish criteria for the effective assessment of Computer-Assisted Language Learning (CALL). The chapter stresses the need for the assessment of CALL to focus on pedagogy rather than on technology and especially on the need to move beyond the simple measurement of immediate learning outcomes. It argues that the evaluation of instructional technology for foreign languages must take into account both its long-term contribution to the entire foreign-language curriculum and its salutary effects upon students in general.

The Role of Technology in Education

Historical perspective

CALL has been around now for nearly forty years. The use of modern technology in the classroom goes back more than twice that far. Instructional technology, in its broadest sense, stretches back much further, some 2,400 years in fact. Despite its long history, the role of technology in education remains very much a subject of discussion, not to say controversy. At the heart of the debate has been a concern with the

effects of technology upon the educational process and, above all, its pedagogical effectiveness.

In Western culture, the very first technological innovation to be exploited in education was arguably alphabetic writing, which made its way into the curriculum of ancient Greece in the fourth century BC. It was, however, not without its critics, who lamented (in writing naturally) this new form of “artificial memory.” The best-known example of this is to be found in Plato’s *Phaedrus*, where Socrates is quoted as saying:

The fact is that this invention will produce forgetfulness in the souls of those who have learned it. They will not need to exercise their memories, being able to rely on what is written.... And once a thing is put in writing, the composition, whatever it may be, drifts all over the place, getting into the hand not only of those who understand it, but equally of those who have no business with it. (Hamilton & Cairns: 1989:520–521)

The second major technological innovation to significantly affect the educational process was unquestionably the invention of the printing press in the fifteenth century. Printing greatly expanded the “artificial memory” made possible by written language and, through related innovations such as page numbering and indexing, provided ways of cataloging, indexing, and retrieving information. The addition of illustrations further enhanced pedagogical effectiveness and was used to good effect in children’s works such as Canisius’ sixteenth-century catechism and the famous seventeenth-century visual Latin textbook *Orbus Pictus* of C  menius. As with writing, however, the effects that printed books would have on learning and wisdom were called into question, and this well into the eighteenth century, as the following quote from Diderot, himself a prolific book writer, illustrates:

[T]he number of books will grow continually ... [people] will not do very much reading, but will instead devote themselves to investigations which will be new, or which they will believe to be new (for if we are even now ignorant of a part of what is contained in so many volumes ... they will know still less of what is contained in those same books, augmented as they be by a hundred—a thousand—times as many more).... And eventually the world of learning—our world—may drown in books. (Diderot as quoted in Lough & Proust: 1976:234–235)

Diderot correctly foresaw the explosion of book publication, but like Socrates and Plato before him, he was quite wrong about the effect of technology on learning. True, due to their prohibitive cost, books at first had very little impact on education. In fact, books were so expensive that they were literally introduced into the curriculum one at a time, read out loud to a class by “lectors,” whence the academic titles of Lecturer and Reader. Students had to make do with older technology, slates and chalk. It was not until well into the nineteenth century that printed books became affordable enough for student usage. From then until now textbook technology has, of course,

been the mainstay of instruction, for foreign languages no less than any other discipline.

Modern technology

Needless to say, the earliest critics of instructional technology have been proven quite wrong. However, the proponents of the educational exploitation of modern technology haven't fared much better.

Compared with the development of writing and print technology, the "Electronic Age" descended with lightening speed. In quick succession, the twentieth century witnessed the invention of audio recording, radio, motion picture photography (eventually with sound and color), television, and most notable of all, digital computers. As quickly as these technologies appeared, they were hailed for the revolutionary impact they would have upon education. Edison, for example, is well known for his 1922 prediction that:

... the motion picture is destined to revolutionize our educational system and ... in a few years it will supplant largely, if not entirely, the use of textbooks. ... on average we get only about two-percent efficiency out of school books as they are written today. The education of the future will be conducted through the medium of the motion picture ... where it should be possible to obtain a one-hundred-percent efficiency. (Edison: 1948:78-79)

A decade later Darrow proclaimed that the power of radio would similarly usher in an era of 'textbooks of the air' which would bring the world into the classroom:

The central and dominant aim of education by radio is to bring the world to the classroom, to make universally available the services of the finest teachers, the inspiration of the greatest leaders ... and unfolding world events which through radio may come as a vibrant and challenging textbook of the air. (1932:79)

There were even greater expectations in the 1950s and 1960s for instructional television:

...there can be little doubt that a wider use of television in teaching may be expected.... It also seems likely that as much as 50 percent of the college degree program will be available for credit via television and that school buildings will be more frequently designed for the use of instructional television. (Saettler: 1968:248)

The use of audio recording was, of course, the great promise of the language labs of the 1960s. And for the teaching machines of the late 1960s Skinner confidently claimed that 'students could learn twice as much in the same time and with the same effort as in a standard classroom' (cited in Oppenheimer: 1997:45).

A 1978 edition of *Time Magazine* upped the ante even more with regard to the use of mainframe computers in education:

Across the country, these ‘magical beasts’ as they have been called, are assisting hassled, often incompetent, teachers. They are revivifying soporific students, dangling and delivering challenges beyond the ken of most educators. ...U.C.L.A. Professor of Computer Science Gerald Estrin ...says: “The computers provide an intensely visual, multisensory learning experience that can take a youngster in a matter of a few months to a level he might never reach in less than many, many years of study by conventional methods.” (February 20, 1978:48)

With the advent of microcomputers a few years later, *Time Magazine* went so far as to crown the computer “Machine of the Year,” extolling the new generation of “microkids” destined to spearhead the electronic revolution.

Obviously, *Time Magazine* got it very wrong, as did all the other prognosticators of technological nirvana. It wasn’t long before critics of instructional technology were relegating computers, micros no less than mainframes, to the historical dustbin of passing educational fads:

As with film, radio, and instructional television, predictions of computers reshaping how schools will be organized, how teachers will teach, and how students will learn surface repeatedly. ...The usual cycle of predicting extraordinary changes in teacher practice followed by academic studies of computers’ effectiveness, in turn followed by teacher reports about glitches in hardware, software, and logistics—all of this happened with computer-assisted instruction (CAI) almost two decades ago. With the advent of inexpensive desk-top machines and the promise of each student interacting with a personal computer, claims for a classroom revolution surfaced again. Yet how different is this current enthusiasm from the surge of interest in instructional television three decades ago or in classroom radio and motion pictures over a half century ago? ... The similarities in claims, media interest, and investment are too vivid to simply brush aside as cynical mumblings from neanderthal educators. (Cuban: 1986:73)

In looking back over the past century, one fact is abundantly clear: modern technology has not had a revolutionary impact on instruction in general, or foreign language teaching in particular. While the use of technology in foreign language teaching has increased markedly in recent years, large-scale incorporation of instructional technology into the curriculum still remains very much the exception rather than the rule (Richmond: 1999). Even at university level, at institutions offering strong infrastructure support for instructional technology, faculty actively integrating CAI into their courses account for only about a quarter of all teachers (Adams: 2002).

The Measurement of Effectiveness

CAI effectiveness studies

While modern technology has not lived up to all the promotional hype and the relative proportion of active practitioners may be small, it is still quite fair to ask just how well those engaged in instructional technology generally, and in foreign languages in particular, have done over the years. A lot of people have asked the question. In fact, over the past forty years more than two thousand evaluative studies across a broad range of disciplines have been undertaken (c.f. Sedgwick: 1999; and Chapelle & Jamieson: 1991). Implicitly or explicitly, the great majority of the studies is based on a quasi-experimental research design based on the quantitative-treatment method. They are “quasi-experimental” because they involve randomly selected intact classes rather than specifically constituted experimental groups. A technology-based innovation (the “treatment”) is then introduced into the curriculum of the intact class, and the learning outcomes for that group are compared to those of a traditional classroom (the “control” group) which did not receive the treatment. With what results?

From the earliest media-comparison investigations of the 1930s, one of the most disconcerting outcomes of studies of the effectiveness of technology-enhanced instruction compared to the traditional classroom has been “no significant difference.” Which is not to say that positive results haven’t been attested, but rather that they are abundantly mixed with inconclusive and even negative findings. First attempts (Vinsonhaler & Bass: 1972; Jamison *et al.*: 1974) to make sense of such disparate findings led to narrative or “box score” compilations which simply indicated which studies did or did not demonstrate learning outcome gains. The most obvious drawback of the early studies was their failure to account for relative differences in outcomes, e.g., two studies involving hundreds of learners and showing large performance increases could be offset by numerous others involving very few students and showing negative or no significant differences.

In order to improve the reporting of treatment effects, meta-analytical techniques were developed (Glass: 1977) to allow relative differences in outcomes to be compared across studies. Through meta-analysis the results of numerous investigations (dozens, sometimes hundreds or even thousands at a time) are combined into a single estimate of effectiveness to determine average differences in performance gains (or losses)—called effect sizes—across a wide range of subject areas. An effect size measures the mean difference in outcomes between experimental and control results, divided by the average standard deviation. Effect sizes less than 0.5 of a standard deviation are considered small and those over 0.8 large (Cohen: 1977).

Meta-analysis considerably improved the reporting of treatment effects by imposing minimal conditions on research design. To be included in a meta-analysis, studies typically need to:

- report quantifiable data;
- indicate the reliability of the data (e.g., standard deviations);

- have a control group for comparison of results;
- describe the evaluation metrics used for assessment (e.g., standardized test);
- be free of gross design flaws (e.g., comparing an experimental group at one proficiency level against a control group at another).

Scores of meta-analyses, as well as over a dozen meta-analyses of the meta-analyses, were carried out during the 1980s and 1990s. Researchers have continued to undertake meta-analyses even into the new century (Soe, Koki, & Chang: 2000; Bayraktar, 2001; Zhao: 2003). Studies consistently show that technology-enhanced instruction results in positive, though mostly quite modest, effect sizes on the order of 0.3–0.4 standard deviations. In practical terms, modest effect sizes equates to a student's advancing from the fiftieth to approximately the sixty-fourth percentile. In addition, where reported, the time taken to achieve these results is typically claimed to be about a third less than in control groups.

Such results are a far cry from compressing many years of learning into just a few months as *Time Magazine* would have it, but statistically significant nonetheless. Yet meta-analysis is not without its critics. Some (Clark: 1983, 1985, 1994; Clark & Salomon: 1985; Clark & Sugrue: 1995; Slavin: 1984) question the very validity of the whole procedure owing to the confounding of independent variables, novelty effects, and especially the uncontrolled influence of teachers and instructional methodologies. In any event, the whole meta-analytic approach to comparative evaluations of instructional technology gives at best a very narrow and superficial view of the effects of technology upon educational processes. In striving to reduce outcome results to a single statistically significant measure of computer effectiveness, it completely ignores the specificity of underlying research questions, lumping together all manner of subjects (reading, writing, mathematics, science, computer programming, dental study, vocational skills, pilot training, etc.). Suffice it to say that anyone looking for incontrovertible evidence that instructional technology improves or accelerates learning outcomes will be hard pressed to find it—certainly as far as foreign language acquisition is concerned.

Traditional CALL effectiveness research

The dearth of evidence supporting the effectiveness of CALL stems not from any lack of treatment-method evaluations. To the contrary, over the past thirty years nearly 100 such studies have been published on the general CAI model. And yet not a single one is included among the 2,180 investigations which formed the basis of the most recent comprehensive meta-analysis of CAI (Kadiyala & Crynes: 1998). The fact that no comparative foreign-language studies made it into this meta-analysis is a telling indication of their failure to meet the basic conditions on valid research design outlined above. Recognizing this failing in their review of seventy studies of CALL from 1990–2000, Liu *et al.* conclude:

Some studies employed pre- and post- tests, semester exams, and e-mail messages, where concrete evidence on whether language skills were improved or not

was clearly presented. The use of well-established measures with clear reliability and validity information was, however, minimal. Many studies relied on students' self-reports with small numbers in responses and provided little reliability information on the instruments used. (2002: 263)

Zhao's more recent meta-analysis of CALL effectiveness research from 1997–2001, which comprises only nine studies, makes much the same observation:

... the total number of well designed experimental studies of the effectiveness of technological applications in language learning is very limited. ... Some of the limited empirical studies did not measure learning gains, relied on learner self-reports as measures of effectiveness, or were not well designed. (Zhao: 2003:12–13)

Among CALL practitioners, critics have for years called into question the practice of reducing the assessment of instructional technology for foreign language to broad comparative studies of "the computer" versus "traditional classroom instruction". Very early on, Stevens questions whether it is even possible to evaluate CAI effectiveness through conventional media comparisons:

...the crucial variables concerning the effectiveness of CAI may be those associated with cognition and attitudes toward language study, and such variables are difficult, if not impossible, to measure. (Stevens: 1984:16)

In reviewing the state of CALL research in the 1980s, Pederson makes a strong case for the need to improve the design of traditional applied CALL research, to make it more context sensitive, and above all to complement it with theory-based investigations focusing on psycholinguistic and ethnographic processes rather than just immediate learning outcomes. She makes no bones about the need to refocus comparative evaluations of foreign language instructional technology:

Comparative research that attempts to illustrate the superiority of computers over some other medium for delivery of language instruction should forever be abandoned. (1987:125)

Writing at the same time, Doughty comes to very much the same conclusion:

Most research into the educational uses of computers has concentrated on examining the effectiveness of the medium in bringing about more efficient learning, particularly in comparison with traditional classroom instruction, and CALL research has often followed this same line of investigation.... In such research, CALL is seen as the treatment applied to the learner, and the effect of that treatment on learning is then measured. This product-oriented approach to the evaluation of the effectiveness of CALL has proven unsatisfactory primarily due to

inattention to the central role of the learning process and the corresponding influence of learner characteristics. (1987:136–137)

At the heart of the dissatisfaction with the treatment model of CAI effectiveness research was concern with the counterproductive effects of its underlying technocentricity. In taking technology as their starting point, treatment-model studies reduce the consideration of pedagogy to isolated learning outcomes directly related to the use of a particular distribution medium. Papert, a long-time opponent of the technocentric mindset within CAI, sums up well the fundamental flaw of treatment-method research:

The treatment method leads to a danger that all experiments with computers and learning will be failures: either they are trivial because very little happened, or they are “unscientific” because something real did happen and too many factors changed at once. (1987:26)

Despite the basic validity of such criticisms, four years later Dunkel is obliged to make much the same arguments as Pederson regarding the still future directions of CALL research. Dunkel argues in favor of a multi-faceted, more closely grained, evaluation of CALL effectiveness, independent of comparisons with non computer-based media, and measured relative to a wide range of learner outcomes and sociocognitive contextual factors:

Future CALL researchers should ... forego conducting the traditional media-evaluation study.... They must instead begin to investigate a wide range of CALL lesson types, a number of different types of computer-student interactions (e.g., single-student tutorial, couple/group networking), a host of learner attributes (e.g., anxiousness) and aptitudes (e.g., cognitive style; L2 proficiency) that interact with CALL treatment, and a wide range of the educational outcomes of CALL (e.g., speaking, reading comprehension skill development). ...L2 researchers need to engage in more ethnomethodological research that investigates the social as well as the cognitive impact of using computers for L2 learning and teaching. (1991:21–23)

The very same year, Chapelle & Jamieson (1991), following in the footsteps of Stevens (1984), still feel it necessary to warn about the internal validity of treatment-method comparative media studies:

Regardless of the way in which independent and dependent variables are defined and operationalized in a CALL study, the internal validity of the CALL study depends upon whether all possible variables responsible for performance on the second-language measure have been examined. ...it is not always easy to determine which of the components of integrative language performance have been affected by which elements in the CALL program—if indeed any have been. An

unequivocal determination of these elements and components is unlikely since language proficiency is a function of a matrix of variables, including student characteristics, and contextual factors such as the overall amount and kind of formal instruction students have received or are receiving. (42–43)

Changes in CALL practice and research

Change did finally come to the paradigm for CALL practice and research, but it had to await the convergence of technological and pedagogical influences in the latter half of the 1990s, which is one reason why it fell outside of the time frame of the last comprehensive meta-analysis of comparative computer-based studies (Kadiyala & Crynes: 1998). In fact, only two of the studies included in the Zhao CALL meta-analysis were published before 1999.

To a large extent, the slow progress of CALL research stemmed from technological limitations. Until the mid-1990s, CALL applications, and the research which flowed from them, were severely constrained by available hardware and software. Although foreign-language teachers abandoned behaviorist-inspired structuralist methodologies in the 1980s in favor of communicative approaches, the computer technology of the day just wasn't capable of supporting the types of collaborative student-centered activities prescribed by constructivist learning theories. Consequently, CALL applications continued to target isolated written tutorial drill and practice uses of computer technology. This left little scope for the kind of multi-faceted, context-sensitive, evaluation of CALL effectiveness, *let alone* the systematic study of cognitive processes espoused by those on the cutting edge of instructional technology for foreign languages.

More powerful computers, and more sophisticated, user-friendly operating systems with fully integrated multimedia and support for virtually any writing system, made it possible to exploit instructional technology across the full range of foreign language skills: speaking, writing, reading, listening comprehension (see, for example, Frommer's discussion on using CALL to enhance listening comprehension, this volume). Likewise, improved networking capability gave full access to the wealth of resources on the World Wide Web (WWW) and in doing so provided support for task-based and content-based approaches to foreign language acquisition.

Current CALL Practice and Research

As computer technology has improved, so too has the sophistication of evaluative CALL investigations. Quantitative quasi-experimental treatment-method studies continue to be undertaken but, as reflected in Zhao, with much better research design and more statistically reportable results. While measurement of the effectiveness of instructional technology still dominates the agenda, broad-based media comparisons are now a thing of the past. Computer versus classroom effectiveness studies have given way to much narrower evaluations targeting specific skills or linguistic areas,

for example vocabulary acquisition, listening comprehension, reading comprehension, oral proficiency, pronunciation, etc. Evaluations have become much more sensitive to learner variables such as age, grade level, linguistic background, degree of language competency. Moreover, they more systematically take into consideration the educational context within which learning takes place, i.e., pedagogical methodology, the purpose of language study and ethnographic aspects of the classroom or language lab (for example, see Blake's study, this volume, of the effects of online chat sessions on vocabulary acquisition). Media comparisons are still being made, but increasingly they are focused on the relative effectiveness of different computer-based media (e.g., e-mail versus word processor).

What is being measured has changed significantly, too. Efficiency, as gauged by the time required to complete instruction, and cost effectiveness no longer figure in the equation. In large part, the change in emphasis is the result of the shift from tutorial uses of computer technology (which sought to teach familiar things faster and cheaper) to its exploitation as a facilitative tool to support innovative pedagogy and enhance the quality of the learning environment. The focus of interest now is much less on technology and much more on the relative effectiveness of the pedagogical techniques it implements, i.e., different types of feedback, online help, textual annotations, glossing formats, etc. Similarly, the outcome of computer-based activities is more routinely assessed not just in isolation but also with respect to corresponding effects upon other related areas of the syllabus, as happens for example when the quantity and quality of participation in collaborative synchronous and asynchronous discussion are related to written and oral production in the classroom.

Current CALL practice, in providing essential support for task-based and content-based methodologies in an authentic socio-cultural environment, has become far more integrative. As Warschauer & Healey explain:

...integrative CALL ...seeks both to integrate various skills (e.g., listening, speaking, reading, writing) and also integrate technology more fully into the language learning process. In integrative approaches, students learn to use a variety of technological tools as an ongoing process of language learning and use, rather than visiting the computer lab on a once a week basis for isolated exercises.... (1998:58)

As a consequence, CALL assessment has become equally concerned with more global, less quantifiable, aspects of foreign language learning, e.g., communicative competence, pragmatic competence, cultural competence (see the study by Levet & Waryn, this volume, on increasing student cross-cultural competency). So, too, CALL research has lent itself to purely qualitative socio-ethnographic investigations of student reactions to technology-based tasks and activities and their interactions with the instructor and other students.

Assessing Language Teaching Effectiveness

Assumptions of effectiveness

CALL practice, and the measurement of its effects, has come a long way since its pioneering days forty years ago, especially in the past few years. However, far less attention has been paid to measuring objectively the effectiveness of language instruction *per se* than to the evaluation of CALL. The claimed benefits of educational technology have always been put to the test, but the effects of instruction upon foreign language acquisition have gone largely unchallenged. In part, this has been due to the intuitive working assumption of language teachers, who take for granted that instruction does make a positive contribution to learning. Ironically perhaps, among SLA theorists the lack of concern with instructional effectiveness stems from precisely the opposite assumption. According to the Monitor Theory (Krashen), which held sway over SLA theory well into the 1990s, overt learning cannot affect language acquisition, so there is little point in investigating the effects of instruction.

Measuring the effectiveness of instruction

It was precisely to test the learning-versus-acquisition hypothesis that Long undertook a box-score summary of twelve studies, of which all but two involved ESL, comparing the relative effectiveness of various combinations of classroom teaching and immersion techniques. On the model of the early broad-based assessment of CAI, he sought to determine whether “instruction,” as opposed to “exposure,” made any difference to language acquisition. Contrary to the predictions of the Monitor Theory, Long concluded:

...instruction is good for you, regardless of your proficiency level, of the wider linguistic environment in which you receive it, and the type of test you are going to perform on. ...For SLA theory and SL educators alike, on the basis of currently available studies, an answer to the question “Does SL instruction make a difference?” is a not-so-tentative “Yes.” (1983:379–380)

As should be obvious, even when buttressed by statistically significant research data, treating “instruction” and “exposure” as independent variables in this way suffers from the same lack of construct validity as similar attempts to demonstrate the effectiveness of the “computer” versus the “classroom.” Fortunately, the lessons learned from the shortcomings of early CALL evaluations were also learned in SLA research, but again not before the mid-1990s. This conclusion is born out in a comprehensive meta-analysis of SLA research literature between 1980 and 1998 (Norris & Ortega: 2000). Out of some 250 SLA research studies during the past two decades, approximately thirty percent (77/250) were concerned with the issue of instructional effectiveness. However, of these, a large proportion suffered from defective research design. In fact, forty-two percent (32/77) had to be excluded from the meta-analysis for want of statistically reportable data. Of particular importance is the observation

that over half (24/45) of all SLA studies retained in the meta-analysis appeared only during the last five years of the research period.¹

Unlike the studies included in Long's earlier summary of CALL research, the publications covered in the Norris & Ortega volume pay careful attention to the definition and evaluation of the independent variables under investigation. The Norris & Ortega meta-analysis keeps very close track of methodological approaches, i.e., implicit vs. explicit instruction, metalinguistic awareness, focus-on-form(s), negative feedback, input processing, comprehension practice. The SLA findings demonstrate an unequivocal, consistent, and very strong effect size:

Effect sizes aggregated across 49 unique sample studies indicated that focused L2 instructional treatments consistently outperformed a range of control/comparison or baseline conditions by an average of nearly one standard deviation unit ($d = 0.96$), by all accounts a large and convincing magnitude of effect.... (Norris & Ortega: 2000:480)

In sum, as classroom teachers have intuitively known all along, formal explicit instruction really does have a major effect on foreign-language acquisition. Interestingly, though, as pointed out in Norris & Ortega, no statistically relevant differences were observed between different methodological approaches (e.g., focus-on-form vs. focus-on-forms).

Evaluating CALL Within its Institutional Context

Thus, serious attention is at last being paid to measuring the effectiveness of instruction upon language acquisition. Unfortunately, however, the evaluation of instructional technology for foreign languages—applied as well as theory-oriented—continues to remain quite detached from broader educational considerations. While CALL has become ever more integrated into the curriculum, with rare exceptions assessments of CALL have continued to focus on learning products and processes independently of the question of overall curricular effectiveness. As Zhao points out in his overview of CALL research over the past five years:

...most of the studies were about the application of a single application instead of systematic large-scale integration of technology. ...the treatment reported was also short term, lasting from a few hours to a few weeks. (2003:13)

Moreover, very little attention has been paid to the relationship of foreign-language instructional technology to the whole institutional context in which it is embedded. Ultimately, taking the full measure of CALL requires a comprehensive, and ongoing, account of how it contributes (or not) to the realization of pedagogical aims as well as how it fits more generally into the academic environment. While such an undertaking has its own intrinsic justification, it is no less motivated by the dictates of insti-

tutional accountability. Because of its innovative nature, not to mention considerable expense, the use of CAI has always been subject to particular scrutiny. It is critically important, therefore, for faculty engaged in foreign-language instructional technology not only to inform themselves, but also to educate their institutional community about the full range of the effects and effectiveness of CALL. Doing so requires taking into account three interrelated factors: input, process, and output.

Assessment of CALL input

Input refers to all the resources needed to support technology for foreign-language instruction. When CALL practice migrated from mainframe to desktop applications, the resulting infrastructure was typically quite independent of most, if not all, other institutional infrastructure. The great attractiveness of desktop computing was precisely that its more affordable costs made it possible to pursue CALL within language departments without having to deal with institutional computer systems (the administrators of which, it must be said, did not always support the application of computer technology outside of the “hard” sciences). Early CALL facilities involved only stand-alone computers. Furthermore, software development was nearly always the product of enthusiastic pioneers working in isolation. Since the advent of networked computers, and especially Internet-based resources, CALL has come full-circle back to reliance on institutional support. So, too, the multimedia and programming demands of current courseware are such that its development and deployment can no longer take place in isolation.

These days the comprehensive evaluation of foreign-language instructional technology has to take into consideration the entire resource structure upon which CALL depends for its success. Any evaluation of CALL must be part of an on-going assessment of the technological means—hardware, software, and, above all, support staff—made available to pursue its objectives. In addition to whatever may be directly provided from within a language center itself, support available for CALL needs to include input from information technology services (i.e., faculty desktop support), campus networking facilities, educational technology support (i.e., training for students as well as faculty), and multimedia production facilities (programming assistance, graphics, video, web page design, etc.). Unless all these enabling (or disabling) elements are entered into the equation, there is simply no way of accurately determining the extent to which the institutional environment is working with or against CALL (see Godwin-Jones & Murphy-Judy, this volume, for a discussion the importance of learning communities to the effective implementation of CALL).

Assessing input at the departmental level

Assessing the effectiveness of the technological input over which a language department or center has direct responsibility is a straightforward undertaking. It involves the drafting of an annual report prepared by whoever is in charge of the facility with feedback from representative stakeholders: technical support staff, faculty and student users. In undertaking such a report, it is important to find out what is working satisfactorily as well as what isn't. Though a summative report may be submitted

annually, it needs to be prepared on an on-going basis. Weekly activity reports, which are (or should be) a routine procedure for technical staff, are an excellent means of tracking the performance of a facility. Does the support staff have the hardware and software needed to do their job? If there are shortcomings with institutional-level technology support, local technical staff will be the first to know and best qualified to articulate the nature of any difficulties and make suggestions for improvement.

If, as frequently happens, there is no technical support staff within a given language department or language center, then the feedback from faculty and students is all the more critical in assessing how well generic institutional support is meeting the particular needs of foreign-language instruction. For pedagogy to be effective, the technology which supports it must be as transparent and user-friendly as possible. The users of instructional technology, faculty as well as students, have every right to expect available facilities to work the first time, every time. And when something does go wrong, as it always will, getting it operational in the shortest possible time must be a high priority. If something is not working properly, there needs to be a means to report it immediately. For emergency situations (e.g., a non-functional computer projector needed immediately for a class presentation) when local technical support is lacking, a telephone hot-line to a quick-response help facility is essential. Again, though intended for a summary report, system operations should be tracked in real time. The information is too important to just wait for the results of an end-of-year questionnaire. Collecting user feedback may be something as simple as filling in a problem report form on a reception desk or as sophisticated as an online reporting system. Web-based materials should always include a mechanism for reporting problems (e.g., dead links, non-functional features, etc.).

Assessing input at the institutional level

Aside from strictly technological considerations, the assessment of the input base of CALL also needs to include an evaluation of the professional development support made available to faculty. However user-friendly the hardware and software resources of a facility may be, training in their operation is essential to their effective exploitation. When providing orientation sessions and training workshops, it is highly advisable to incorporate a short evaluation form to track and, where needed, improve instruction. The cumulative results of such performance tracking, of course, need to feed back into the annual report summary.

When faculty involvement with CALL progresses beyond the adoption of off-the-shelf materials to the creation of courseware and the innovative exploitation of facilitative resources (e.g., video-based student projects, web-based tasks, etc.), the evaluation of professional development efforts becomes both more complex and individualized. Unless technical staff members are available to undertake all media and web-page production, which is rarely the case, faculty need to acquire basic skills in media and web-page editing. Training for such endeavors can be provided through workshops (or for the more technologically experienced, a website which contains a comprehensive listing of FAQ), which like other kinds of training sessions can be assessed on an on-going basis by means of evaluation forms which ultimately make

their way into an annual summary. However, one needs to be mindful of the fact that faculty exploitation of technological resources is an incremental process which typically requires “just-in-time” skill acquisition fostered by one-on-one tutoring. Evaluating this kind of support is best done as part of a yearly questionnaire. At the highest levels of engagement with CALL, those involving major curricular reform and/or funded projects, assessing the adequacy of available professional development resources is an obvious prerequisite of any proposal. So, too, any major project should include a summative outcome evaluation of the successes or shortcomings of technological infrastructure support, which then needs to feed back into the annual report.

The effective use of instructional technology requires more than simply ready access to hardware and software or training in technical skills. Even purchasing off-the-shelf software requires the ability to evaluate its possible pedagogical effectiveness, which itself presupposes an understanding of the pedagogical methodology underlying CALL applications. The creation of courseware and the pursuit of technology-based curriculum reform and funded projects demand an even firmer grasp of learning theory and the principles of second-language acquisition. Helping keep faculty abreast of the procedures and findings of language-learning research as it applies to instructional technology is arguably the most critical aspect of the professional development infrastructure (see Kazeroni & Bancheri, this volume, for a discussion of the importance of applying SLA research findings to courseware design for CALL). Intuition and practical teaching experience are essential to the successful implementation of technology-enhanced language learning. However, without the insights gained from the formal study of second-language acquisition, the effectiveness of CALL activities is bound to be a hit-or-miss undertaking. Likewise, in the absence of solid design principles, the reporting of results is doomed to perpetuate the deeply flawed and technocentric shortcomings of past CALL research. Obviously, professional development at this level cannot be provided by generic institutional infrastructure support. Unless the required expertise is available from related disciplines (e.g., psychology, linguistics), it can only come from language departments and language centers themselves. A summative evaluation of CALL input resources has to make clear the need for SLA expertise and describe how well this need is being met.

Owing to its critical dependence upon the technological infrastructure of an institution, any annual assessment of CALL resources needs to include an evaluation of institutional-level input. This is essential not only for internal reporting, but equally for the benefit of the institution itself. Though the primary audience of an annual CALL input report is the language faculty and Dean, this portion of the document is obviously intended for administrators of institutional technology.

Instituting and maintaining a campus-wide technology infrastructure is enormously costly and complex and, like CALL itself, requires constant feedback from its stakeholders. That being said, evaluating institutional technological support can be a politically sensitive undertaking, so care needs to be taken to do so as collaboratively and competently as possible. System administrators need to know how well the

services they provide are meeting users' needs, which in the case of foreign-language instructional technology are typically more demanding than for other humanities disciplines (e.g., network bandwidth requirements for multimedia applications, access to foreign language satellite/cable television broadcasts, etc.). Needless to say, when addressing technical issues, it is advantageous to speak the language of technology. This is an area where technical staff within the language department or language center can be of great assistance. If none is available, it is highly advisable to consult with institutional technical staff when drafting this part of an annual CALL input resources report. Such a report should specify what resources are being used and how they are being used. It needs to acknowledge what is working well and draw attention to problem areas which need attention with suggestions for improvement. It is also important to foreshadow future needs, short-, mid- and long-term. Being, and projecting the image of, active and informed users of technology is the most effective way of having one's voice heard and one's technological needs met.

Assessment of the effect of CALL on the learning process

Instructional technology impacts a number of quantitatively measurable aspects of the teaching environment which departments would normally be expected to track on a regular basis: enrollment and retention rates within core courses and continuation beyond the minimal requirements as reflected in completed language certificates, minors and majors. In monitoring the effects of CALL upon these critical factors it is important to remember that what is being evaluated is not technology in isolation but the success of the resulting curriculum which instructional technology enables. There are many quantifiable effects upon teaching and administrative practices that can be directly attributable to CALL: contact hours, office hours, preparation and correction, and time spent on administrative tasks. Keeping track of such processes can be done quite simply via a short annual questionnaire. When evaluating the impact of instructional technology upon educational practices it is important not to confuse effectiveness and efficiency. Good teaching, with or without technology, demands time and effort. Rather than seeking to push students along more quickly or with less work (for instructors or students), the primary goal of instructional technology should be to improve the quality of language learning, to make teaching more creative and motivating or simply more accessible. Moreover, upon closer inspection, efficiency gains are often not as substantial as they might first appear. A CALL application which reduces class hours and correction loads will almost certainly increase preparation time. Ultimately, what matters most—and what needs to be kept in focus in any summary report—is the perceived overall return on the investment (for a similar discussion, see Godwin-Jones & Murphy-Judy, this volume).

For the most part, monitoring the effects of CALL upon quantitatively measurable academic practices is just a matter of including the relevant observations within normal record-keeping procedures. However, there are also important qualitative differences in language teaching practices which need to be taken into consideration when evaluating the impact of CALL upon pedagogical processes. The differences include: changes in teacher beliefs about their roles and that of their students; what

instructors expect of students, pedagogically as well as technologically; and teacher expectations with regard to professional development and support for instructional technology. More broadly, the integration of CALL into the curriculum necessitates a collaborative effort with technical support staff and with colleagues both within the department and across the institution.

The integration of CALL into the curriculum may bring about qualitative changes in student attitudes towards language study, motivation to learn, and learning strategies, which all merit evaluation. So, too, do student expectations about what and how they will learn as well as the degree of pedagogical disorientation and reorientation that can be engendered by the integration of instructional technology into the curriculum (cf. Jones *et al.*: 1995:6.31). It is equally important to track effects upon social aspects of the learning environment such as faculty-student and student-student relationships and interactions.

Monitoring the influence of CALL upon qualitative aspects of teaching and learning processes is obviously a major undertaking, one which many language departments may not have the resources (i.e., time and/or professional expertise) to pursue. Unless it is done, however, a very important part of the effect of instructional technology upon the curriculum will go unreported. Where it is not feasible to keep track of such qualitative parameters at the department level, faculty engaged in CALL at the very least need to stay abreast of published research in this domain so as to be alert to its implications for their particular circumstances.

Assessment of CALL output

The measurement of output is the most familiar aspect of the evaluation of CALL. Evaluating the contribution of instructional technology to the pedagogical aims of an entire foreign-language program presupposes that the program's curriculum has clear, measurable educational goals and objectives. The explicit formulation of pedagogical goals is essential to achieving and communicating a coherent view of the underlying purpose of the courses offered to students. Specific objectives for student learning in each course are equally critical. Faculty members as a group need to consider carefully questions such as:

- Which skills, at what levels, should students attain?
- Which grammatical, sociolinguistic, discourse and strategic competencies are expected of students?
- Which aspects of the foreign culture should students understand?
- What other "content" is to be acquired?

Pedagogical goals and objectives must be defined in terms of measurable outcomes; vague and abstract ideals are not enough. Otherwise there is no way to determine whether or not teaching practices, technologically based or otherwise, are having the desired effect.

Setting measurable pedagogical objectives for foreign-language instruction is not, however, simply a matter for individual language faculty members to decide. Acade-

mic coherence requires that such decisions reflect a broad consensus, incorporating all languages taught within an institution even if all languages do not necessarily have the same objectives. While commonly taught European languages can be expected to share a common core of learning objectives, highly inflected languages like Russian or Modern Greek take longer to learn. Similarly, the writing systems in languages like Hebrew or Arabic, not to mention the complexities of Asian logographic systems, require considerably more time to master. Specific languages or language groups may very well need to adapt their pedagogical aims to fit their particular circumstances. The same is equally true in relation to language courses for special student populations (i.e., heritage speakers) or purposes (e.g., medical Spanish, German for engineers, etc.). While it is not necessarily critical that all language courses at the same level have the same objectives, it is crucial that the aims for all courses be defined according to an explicit, commonly accepted, metric. Devising such a metric is a formidable undertaking. Fortunately a great deal of effort has been put into the definition of language standards and proficiency levels over the past two decades. The best known example of these are, of course, the ACTFL *Standards for Foreign Language Learning and Proficiency Guidelines*, which provide an excellent starting point for anyone engaged in defining systematically measurable learning outcomes.

Clearly, the assessment of CALL necessarily entails the systematic evaluation of the entire foreign-language curriculum. Whereas CALL research has traditionally limited itself to an examination of individual sub-components of instruction (e.g., reading/writing assignments, (a)synchronous chat sessions, task-based projects, etc.), the accounting of CALL must examine pedagogical effectiveness not only in relation to whole courses but also across all foreign-language departments within an institution. As a consequence, the time frame of such investigations must expand to encompass results that extend over semesters and years, not just weeks or months.

In assessing the contribution of CALL to the accomplishment of pedagogical aims, it is crucial not to fall into the technocentric trap of attempting to establish simplistic cause-and-effect relationships. In any natural classroom environment there are just too many contributing factors to ascribe a causal relationship to any one element in particular. If, for example, a collaborative project-based approach to foreign language learning proves effective in leading students to an understanding of contemporary L2 attitudes towards family responsibilities, it is likely to owe its success just as much to the pedagogical objectives of the course, the choice of tasks, the enthusiasm of the instructor, the motivation of the students, and the influence of group dynamics as it does to the instructional technology employed. It is nonetheless possible to gauge the extent to which instructional technology supports specific pedagogical activities and enhances their results, even if the direct effects of CALL may not be precisely measurable. A publisher's website, a chat program, and a web page editor all contribute in identifiable ways to the learning process. Any curricular evaluation of CALL should include that contribution in some fashion.

When evaluating the effects of CALL, it is important to include elements beyond strictly linguistic outcomes. In foreign-language instruction which increasingly relies upon collaborative engagement in authentic tasks and content-based learning, the

assessment of CALL at the institutional level must also take into account its contribution to the overall education of students. Often foreign language learners profit linguistically, socio-linguistically, and cognitively from collaboration with other classmates and with L2 native speakers campus- and worldwide. When using facilitative computer-based tools, students enhance their technological competencies in ways that can be applied to other studies and, ultimately, to future work-related needs. Technology for language instruction contributes to life-long learning skills in many ways, and it behooves CALL practitioners to measure the impact and make it known institutionally.

Conclusion

Measuring the effects and effectiveness of CALL is a complex and challenging undertaking. No longer can proponents, or opponents, of instructional technology for language learning simply ask: “Does computer-assisted instruction work?”. It makes no more sense to ask in absolute terms whether the “computer” is more effective than the “classroom” than it does to query whether “instruction” is better than “exposure.” Such simplistic questions demonstrate a fundamental misunderstanding of the nature of the learning process and assume a dichotomy between instructional technology and the foreign-language classroom which is very much out-of-step with current practice. Whether research focuses on the testing of practical applications or the exploration of theoretical constructs, to be meaningful—and useful—the evaluation of CALL must be undertaken with due regard for the many teacher and student variables which constitute the educational context within which learning takes place. It must include not just direct measures of learning effectiveness but also quantitative and qualitative assessments of the full range of effects of instructional technology upon the curriculum. Moreover, as CALL becomes fully integrated into the foreign-language curriculum, its evaluation must ultimately be linked to the contributions, both short-term and long-term, which it makes to that curriculum as well as to the broader academic environment of which it is a part.

At whatever level of engagement with CALL—be it the very first steps of selecting off-the-shelf software, adopting computer-based activities, developing applications, conducting applied or theoretical research, or charting the institutional effects of CALL—the evaluation of instructional technology for language teaching makes considerable demands upon faculty members charged with the task. Those involved in the assessment of CALL must be well-versed in current language-teaching methodologies and have a solid understanding of their theoretical underpinnings. Likewise, they must know the basics of instructional design, testing, and quantitative as well as qualitative measurement. Similarly, whether preparing a departmental report or publishing for a wider academic audience, those who would assess CALL must have a firm grasp of the principles of research design. Above all, those involved in assessment need to work collaboratively; the demands of the task are often larger than the resources of any one individual.

Appropriately, taking the full measure of CALL requires far more expertise in SLA than in technology. But it must be said, too, that both the use and the assessment of CALL presuppose knowledge and skill sets which have not been part of traditional academic expectations or training and which many language teachers will have to acquire as they proceed (see Kazeroni, this volume, for a very interesting discussion in this regard). In so doing, the ultimate benefit to be gained from CALL is very likely to be that which Papert predicted many years ago for CAI:

One could even argue that the principal contribution to education thus far made by the computer presence has been to force us to think though issues that in themselves have nothing to do with computers. (1987:23)

Note

- 1 Because some reports included more than one study, the actual number of unique sample studies in the meta-analysis totaled forty-nine.

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