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Preparing the new generation of CALL researchers and practitioners: What nine months in an MA program can (or cannot) do

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Abstract

As more and more teacher preparation programs realize the need to include courses that deal with computer-assisted language learning, a crucial decision as to what is taught needs to be made, taking into consideration the various post-graduation goals ranging from teacher or teacher-trainer to researcher. Thus, the question of whether to go beyond teaching the potential uses of the computer and the Internet and to delve into how to create relevant computer-based tasks using the WWW and to train teachers in the use of advanced web page development techniques, including Flash, web-enabled databases, and the interactive possibilities of the WWW needs to be addressed. This paper tackles these issues and illustrates a sample approach in dealing with the grooming of the new generation of CALL researchers and practitioners. What can be accomplished during the first year of an MATESL program that highlights the importance of technology is explored through a reflective questionnaire, a computer capabilities matrix, and an analysis of web-based course projects. Nine first-year M.A. students participated in the study, which revealed that despite widely differing initial computer and Internet expertise among these future teachers and researchers, their knowledge of creating and using web-based materials increased significantly, culminating in a project in which the skills acquired throughout the semester were successfully integrated.

Technology has become integral to the ways in which [teaching] professionals teach, create materials, and even the way they conceptualize the profession in the 21st century. (Chapelle & Hegelheimer, 2004)

1 Introduction

The field of computer-assisted language learning (CALL) holds much promise when it comes to the potential for empowering language learners and language teachers. Equally great is the potential for research. With the increasing importance and prevalence of technology in the classroom in general and the widespread use of CALL, degree- or certificate-granting programs in the area of second language learning and teaching are faced with the significant task of ensuring that the future generation of

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teachers is equipped with the skills to transform language learning and teaching. This also applies to future researchers, who are initially often also practitioners and attend the same training programs as the teachers. Hegelheimer *et al*. (2003) argue that it is vital for this new generation to become "guarded technology enthusiasts" that is, people who know what is and what is not possible with regard to the use of technology in foreign language learning.

While still under-researched, technology use has begun to spread from the margins to the mainstream, and various curricula of teacher training programs reflect these changes by including more and more courses on technology use. In looking at M.A. programs for teaching English (or any other language) as a second/foreign language, the requirements are slightly different in how the programs groom future teachers and future researchers. Thus, what should be taught in light of post-graduation options needs careful selection. Researchers have identified key considerations with regard to the effectiveness of computer and technology training for future teachers and researchers. Essential considerations include the realization that technology "permeates" the profession (Chapelle & Hegelheimer, 2004), teachers' perceptions of the role of technology in their teaching (Meskill *et al*., 2002), and the impact of CALL instruction on teaching and research (Egbert *et al*., 2002).

This paper outlines an approach taken by an M.A. program in Teaching English as a Second Language/Applied Linguistics (TESL/AL) at a major research university in the US to address these issues. The paper further explores what the participants learned, how they currently use technology in the classroom, how their perception of themselves (with regard to technology) has changed, and how what they learned is beneficial for them as developing researchers. The effects of a mandatory teacher training course in computer methods for TESL/AL are investigated through interviews, questionnaires, and projects created by students enrolled in the program. The contribution of this paper comes at a time when issues revolving around CALL and teacher training are becoming more and more important. One supporting piece of evidence is the newly formed CALICO Special Interest Section (SIG) on this topic.

Clearly, the importance of technology use and training is moving from the margins to the mainstream within the field of teacher training. Doing this training in an appropriate and structured way is crucial as future language teachers are shaping future language pedagogy, with the effective and critical use of technology playing an essential part. Common perceptions of entering teacher trainees often include that these young, aspiring teachers and researchers have grown up with technology and are, therefore, computer and technology-savvy and eager to utilize both in their teaching. However, our research, as well as findings from other scholars revealed that this is often not the case. Still, while this population is generally critical towards the use of technology in language learning, they are very interested in exploring potential benefits.

2 Issues related to teacher training and CALL

Among the various researchers who have looked into how teachers view technology (Trotter, 1999; Watson *et al*., 1998), a particularly insightful study was conducted by Meskill *et al*. (2002). They compared novice and expert teachers and technology users along four "teacher-development continua" (*op. cit*.: 48): locus of learning (machine –

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learner), focus (self – student learning), practice (managing students – empowering students), and emphasis (product – process). Novice teachers tended to give authority to computers and even used anthropomorphic references for the machines while transitional and expert teachers viewed the locus of learning as residing within the learners rather than the computers. With regard to focus, Meskill *et al.* found that beginning teachers focused significantly more on themselves being teachers rather than on student learning. Technology as viewed by novices was instrumental for the teacher's plan and "not for the learners and their learning" (*op. cit.*: 50). Thus, unlike expert teachers, beginning teachers often did not allow their learners to take "ownership of the computer" (51). Computers were used as a management tool in an effort to control the learners (e.g., using technology as a reward) by novices, while experienced teachers viewed the computer as an "additional opportunity to teach, rather than to punish" (*op. cit.*: 53). Not surprisingly, novice teachers were most concerned with what their learners would get done, i.e., the product. Experts, on the other hand, were most concerned with the learning process. Meskill *et al.* suggest that in light of the differences in terms of how novice and expert teachers approach technology, training (i.e. completing a course in technology use) alone is not sufficient to provide the conceptual development necessary for better integration of technology in a classroom setting. Thus, a combination of technology training and teaching experience may be necessary to more successfully integrate technology in the classroom. The M.A. program examined attempts to address this issue by employing a two-pronged approach, i.e. most of the future teachers receive a teaching assistantship and are engaged in college-level teaching while they take courses leading to the M.A. degree. The initial hesitation toward using computers can be alleviated by putting in place a prerequisite course that enhances the students' computer literacy and illustrates possibilities with regard to computer use in a classroom language learning setting.

A second consideration is the actual integration of technology into a classroom and one major question is whether technology training leads to greater classroom integration. Thus far, research findings have not been very encouraging. Cuban (1986) found that technology learning occurred, but technology use (in the actual classroom) did not necessarily occur. Grau (1996) found little or no impact of courses on student beliefs about what they can use in their teaching. Examining how 20 ESL and foreign language teachers who took a CALL course are using technology in the classroom, Egbert, Paulus and Nakamichi (2002) determined that taking a course in computer-assisted language learning was not a good predictor for the implementation of CALL activities in subsequent teaching. Rather, teachers who had used it prior to taking the course were more likely to continue using it. The most frequently used CALL activities were E-mail, developing computer-enhanced lessons, and creating instructional Web pages. Repeatedly, lack of time, support and/or resources were mentioned as reasons for the inability to implement CALL in the classroom more frequently. Wentworth (1996) found this absence of resources in the form of adequate facilities in schools to be problematic as well because it meant that the projects created by teacher-education students could not be used in the schools. To address this problem, Smerdon *et al.* (2000) and Fisher (1999) suggest that situated learning contexts seem to be more successful because teacher-trainees develop for a particular context and know what is and what is not available in terms of resources and facilities. Accordingly, technology courses should be designed in an attempt to

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address these findings as they educate technology-using teachers.

Researchers have used categories to describe the approach or capabilities of technology-using language teachers and researchers. Bickerton (1999), for example, proposes a four-tiered user typology, i.e. the plug-and-play academic, the supported academic, the scripter, and the programmer. Since the population queried in this research project was obtaining an M.A. degree and since the participants were not 'academics' in the sense that they had full-time jobs, the more general terms user, developer, and researcher were employed for the purposes of this research project.

As Chapelle & Hegelheimer (2004) point out, technology permeates the profession. Thus, the goal of an M.A. program in the 21st Century should perhaps focus on empowering future teachers to successfully and competently implement technology in their classroom practices. At minimum, and in addition to theory and pedagogy, future teachers should attain the ability to conceptualize good (online) language learning tasks that are solidly grounded in theory and to create online learning tasks and upload them to make them accessible to language learners. Future teachers will then need to evaluate (using judgmental and empirical methods, e.g. Chapelle, 2001) the extent to which the tasks learners are engaged in do what they are supposed to do, whether learners interact with the tasks in the way they were conceived and whether this interaction leads to positive language learning experiences. Lastly, future teachers need to be able to use the information gained through the evaluative process to modify tasks before engaging in an iterative process involving all five components, i.e. conceptualizing, creating, uploading, testing, and modifying.

This paper aims to document the development of first-year students with regard to their attitudes towards CALL, illustrate their self-assessment of their computer skills, and gauge the level of integration of computer skills in creating tasks for language learning.

3 The study

3.1 Participants

Nine students (8 females, one male) who were either enrolled (8) or contemplated enrolling (1) in an M.A. program in TESL/AL at a major research university in the Midwest of the United States of America voluntarily participated in the study. Eight participants started the program in the fall semester of 2002. Each participant except for one who worked as a research assistant had been awarded a teaching assistantship and taught one section of either freshman composition, ESL, or a course for international teaching assistants. In the following spring semester, each participant taught two sections of the same course (three sections in one case). All nine participants completed the reflective questionnaire while only six of the nine participants also completed the computer capability survey. The participants were mostly novice teachers with little or no adult ESL/EFL teaching experience except for one participant who had taught for several years at the elementary level in an EFL setting.

3.2 Materials

The materials used to investigate the role an introductory computer literacy and CALL

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course can have on the development of entering M.A. students included a reflective questionnaire and a computer capabilities matrix. To more fully appreciate the context of the study, the student projects are outlined as well. The course is described in Appendix 1.

3.2.1 Reflective questionnaire

The reflective questionnaire (Appendix 2) consisted of eight questions aimed at eliciting the participants' perceptions on whether the course objectives had been achieved (Q1), their comfort level with the applications introduced in the course (Q2), the current use of skills learned in the class (Q3), a self-assessment of the ability level before and after the course (Q4 and 5), how varying proficiency levels affected the flow of the course (Q6), attitudes towards CALL (Q7), and suggestions for improving the course (Q8).

3.2.2 Computer capabilities matrix

The computer capabilities matrix (Appendix 3) was developed to determine and describe skill levels by doing a self-assessment in order to illustrate potential for effective application of skills. Building on questionnaires developed by various other researchers (Bunz & Sypher, 2001; Goemann & Braak, 2001; and Ropp, 1997) and projects dealing with the assessment of computer skills (e.g. the European Computer Driver License), the matrix described in greater detail what the various categories (basic, intermediate, and advanced) entail in terms of abilities required for each level.

3.2.3 Student projects

The student project, the culminating activity of the class, required the combination of computer skills and theory/pedagogy. It was intended to give the course participants the opportunity to think about ways in which technology (specifically the WWW) could be integrated into their classroom specifically or a classroom in general. The project guidelines also encouraged the participants to expand on all the skills that were introduced in the course by integrating web pages (Macromedia Dreamweaver MX), graphics (Macromedia Fireworks), multimedia (Adobe Premier), database design and development (FileMaker Pro), animation creation (Macromedia Flash), and interactivity (Macromedia Flash, Hot Potatoes) in a meaningful way.

3.3 Procedure

All participants were enrolled in the mandatory 15-week teacher-training course in the fall semester of 2002 (late August until late December). Led by an individual instructor, the class met face-to-face twice a week for 90 minutes in a computer research facility which was available to the students enrolled in the course at all times. A detailed syllabus indicating the amount of time spent learning the applications is available at the course homepage. The final projects were completed by the end of the semester and in April 2003, approximately four months after completing the course (and being able to reflect on its usefulness and coverage of applications and theory), the participants in the study completed the questionnaire and self-assessment of computer skills. Both were sent to the participants as an e-mail attachment and structured interviews were

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conducted to clarify the responses when necessary.

3.4 Analysis

The data were analyzed through qualitative analysis of responses whereby similar responses were grouped based on content. All numerical responses were recorded and descriptive statistics obtained. The final projects were analyzed in terms of their integration of various technologies and pedagogical principles.

4 Results and discussion (what nine months did)

The following sections of the paper outline the findings of the participants' responses to the reflective questionnaire, present the self-ratings on the computer capabilities matrix, and highlight the variety of skills used in the semester projects and the subsequent usage of the projects in actual classroom settings.

4.1 Reflective questionnaire

The responses to question one on the reflective questionnaire revealed that all nine participants felt that they had achieved at least the following two objectives relevant to CALL and teacher training:

1. Acquisition of knowledge pertinent to the potential uses of computers and the internet in language teaching
2. The ability to design and create functional web pages.

With respect to question 2, the participants increased their comfort level with all the applications introduced in the course. Question 3 asked the participants to identify the current use of skills learned in the class in the areas of teaching, studies, and research. Seven of the nine indicated that they were creating web pages to communicate with their students, mostly to make course information and links accessible. However, what becomes evident in the responses is that the participants viewed the use of the WWW as a means for classroom management or communication. Comments such as "[a] Webpage is very practical for teaching", "[I] have [a] webpage for my students that lists the days they will give their speech", or "I have a class web page on which I post current assignments and website links" indicate that while seeing the usefulness of the WWW as a means for keeping their students up-to-date, none of the participants used specific examples or language that would indicate that they viewed the skills as a means for what Meskill *et al*. call empowering learners. Instead, the emphasis lies on disseminating information and on managing students. Furthermore, the emphasis is clearly on a product view, which supports the findings of Meskill *et al*. for novice teachers. Other participants echoed the findings of Egbert *et al*. regarding the perceived lack of time for implementation by saying "Currently, I use only Excel. I wish to use the rest (update the homepage, create interactive tasks for class), but never have the time." Encouragingly, some responses indicated a transfer of skills at least to other graduate classes, a finding

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anecdotally supported by other faculty members in the M.A. program. For example, the following two responses in particular highlight the kind of positive transfer that could and should occur.

> "For my assessment class, I have a group project in which we're creating a mini-version of a web-based test using video and Hot Potatoes and Dreamweaver".

> "I've used Flash and Fireworks to enhance some projects created for classes. I use PowerPoint often in presentations and Excel for organizing data".

One respondent made the following striking comment, which illustrates that it is not necessarily the computer programs that stimulate further inquiry. Rather, the readings left this participant with a hunger for more investigation: "I am going to base my thesis on something I read in a journal article during 510. In the project I hope to integrate several different theories and programs presented in the class".

Table 1 illustrates the self-assessment of the individual's role before and after the course (questions 4 and 5), indicating an increased post-course self-confidence despite the initially hugely varying proficiency levels.

The responses to question 7, which asked participants to identify whether the experience of taking the course influenced their attitudes towards CALL, were generally positive. All but one (who did not respond to this question) indicated that their attitude was affected by the course and that the comfort level when using computers was up significantly. One participant said that she was "much less intimidated by computers and more open to using them and learning to use them." Another said "Yes, I feel much more confident in my computer usage. I was extremely unfamiliar with CALL – basically ignorant – before the class, and now I feel I have a grasp of some of the potentials in the field". The following response exemplifies what a course like the one described could do. While feeling aggravated when it comes to computers, she also viewed them as "cool," and added that she "can see how CALL could be useful to an ESOL teacher," which is rather encouraging.

All except for one participant had suggestions on how the course could be improved (question 8). The most frequent suggestions related to the lack of time, the (perceived) insufficient number of pedagogical applications, and the wish to provide better guidelines on post-course maintenance of computer skills. One participant aptly described her feelings of

Table 1. *User level self-rating (Note: * One participant failed to respond to the question)*

Before taking the course	After having taken the course
User	Developer/Researcher
User	Developer
User	Developer
User	Developer
Non-User	Developer
User	Developer (edging close to a researcher)
Beginner	User Beginning Developer
User	User
User	----*

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not having had sufficient time to excel on all the skills by saying "One semester is not enough." However, the students also realized that the course in question here is merely an introductory course and that additional options for those interested in CALL exist. Indicative of this perception was one respondent's suggestion that those people "really interested in CALL will take [English] 526," which is the seminar course on CALL. While a number of students requested that the "pedagogical point of CALL applications should be more explicitly made" and wanted to create more actual activities, one respondent, an aspiring researcher, suggested "[…] covering some of the skills necessary for CALL data collection."

Table 2 outlines how the skills learned during the course are currently being utilized. Encouragingly, six of the nine respondents reported using the web page design skills in their teaching, i.e., suggesting that the skills they learned actually play a role in their teaching. Five said they used Excel, although mostly for grade and attendance management purposes.

4.2 Computer capabilities matrix

The results of the self-rating on the computer capabilities matrix are summarized in Table 3. Interestingly, the participants reported improvements in all nine categories, whereby major improvements occurred in areas that were initially novel, such as database work, web development, and concordancing. In categories in which some students had experience and others did not, the group as a whole became more homogeneous. For example, in the categories 1, 2, 3, 5, and 6, the standard deviation decreases almost by half. Conversely, improvements in previously unknown areas created a more heterogeneous group, as evidenced by the increased standard deviations in categories 4, 7, and 8. These results suggest that all students improved in the familiar and the novel categories and that it was more difficult to master the new skills than it was to improve on already existing skills.

4.3 Projects

In addition to the results of the questionnaire and the computer capabilities matrix, the group projects (four groups of 3–5 members) are a third indicator of actual production and implementation. The final projects were web-based teaching units, produced in groups on a topic that each group chose as something useful for international students

Table 2. *Current use of computer skills*

Program	Teaching	Studies	Research
Dreamweaver/ Webpage skills	6	2	1
Hot Potatoes		2	
Monoconc Pro		2	2
Fireworks		1	
Excel	5	2	1
Quicktime		2	
Flash		1	
Powerpoint		1	2
Journal articles			1

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Table 3. *Computer skill self-rating (Note: * = statistically significant at p = 0.05)*

			Average	SD	Difference
1	Computer Familiarity	Before	2.83	0.75	
		After	4.17	0.41	1.33*
2	Word Processing	Before	3.5	0.84	
		After	4.67	0.52	1.17*
3	Spreadsheet	Before	2.33	1.75	
		After	4.33	0.82	2*
4	Database	Before	0.5	0.84	
		After	3.67	1.51	3.17*
5	Presentation	Before	2.5	1.05	
		After	3.83	0.41	1.33*
6	Internet	Before	3	0.89	
		After	5.17	0.41	2.17*
7	Web Development	Before	0.17	0.41	
		After	4.17	0.98	4*
8	Concordancing	Before	0.17	0.41	
		After	3.67	0.82	3.5*
9	Integration of Skills	Before	1.17	1.6	
		After	4.17	1.47	3*

during their first six weeks in the US, particularly in a university setting. Each group integrated the skills taught in the course in different ways.

All projects consisted of a series of web pages created in Macromedia Dreamweaver MX, whereby features such as frames, tables, and layers were integrated. Multimedia such as audio files created using Sound Recorder and video files manipulated in Windows Movie Maker were also used and each project included the required web-enabled database component created using FileMaker Pro. The projects also incorporated animations created in Macromedia Flash and a variety of interactivity features created using Hot Potatoes and overLIB, a JavaScript library that allows for the easy integration of pop-ups or sticky notes.

A brief description of one of the projects, *Classroom Culture*, will serve to illustrate some of the ways the final projects demonstrated an integration of the students' skills. Intended to educate international students on aspects of American academic culture with which they may be unfamiliar, this project included Flash-controlled video clips depicting various scenarios international students might encounter. A database was incorporated into this project by providing a "Frequently Asked Questions" portion, allowing the user to choose from a list of topics related to classroom culture and view questions and answers stored in the database that pertain to this topic. *overLIB* functionality was used to gloss unfamiliar words and basic form elements were used to display correct answers in an informal quiz. Other lessons included audio files, Flash buttons, and quizzes generated using Hot Potatoes or Quicktime audio files.

Although the projects were created for the same audience, they were designed to be used in different settings. For example, *Classroom Culture* consisted of several lessons with activities and group work designed to be used in a classroom setting mediated by an instructor. In contrast, *Basic Word and Web Skills* included diagnostic quizzes and

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tutorials intended for students to use on their own or at a teacher's recommendation to learn certain specific features of MS Word or basic Internet skills. While the design of this project did not preclude use in a classroom setting, the students who created it envisioned it as a "stand alone" tool for students without the aid of an instructor.

Indicative of a relatively high level of awareness of the importance of the needs of the audience, each group arrived at their topic which was intended to meet the needs of actual students in a different way. The group that created the *Basic Word and Web Skills* unit, for example, surveyed composition teachers at the same institution in order to determine which skills would be the most useful or necessary for first-year university students. Topics in the *Culture Gaps: Bridging the Gaps in Everyday Conversations* unit were chosen based upon actual experiences where international students have found everyday conversation difficult. Some of the idioms for *An Idiom Learning Experience* were gathered from conversations that the students observed during the creation of the project. Table 4 provides a brief description of each project and lists the technologies used.

One participant reported using their project (*Cultural Gap and Classroom Culture*) in her class for international teaching assistants in the Fall of 2003. She reported customizing the units to fit the time limitations and needs of her students and receiving informal positive feedback from her students about the units, which "opened up many discussion topics" in her class. Another participant indicated that she was not currently using the project because she was not assigned to teach ESL students. However, she indicated referring individual students "if they ask me for help with some of the things the projects deal with". For example, she referred a Kenyan student who was not computer literate to the *Basic Word and Web Skills* project.

5 Conclusion

The results of this study suggest that the course clearly addressed the issue of computer literacy of teacher trainees and helped them become more familiar and confident with computers and the Internet, but also with the potential uses thereof in language teaching. While encouraging, the results do mirror the results of other studies (Grau, 1996; Levy, 1997; Egbert *et al.*, 2002) in that even though computer literacy levels increased, the integration of these skills in the classroom does not happen as rapidly as one could hope. However, the re-use of the projects in their actual teaching and individual interactions with students is promising indeed. Furthermore, unlike several other studies, the setting described here was different in that the course described was a mandatory prerequisite for an M.A. program in Teaching English as a Second Language. As computer literacy and knowledge about CALL become mainstream requirements for job applicants, this model may be indicative of what will be necessary for other teacher training programs as well.

In order to effectively prepare the future generation of CALL researchers and practitioners, the general objectives of any such course should include:

- A changed (or enlightened) view of technology (or computer literacy) and an increased comfort level with the use of technology in teaching and research.
- The realization that technology is here to stay and that it permeates the profession.
- A changed view of agency (i.e. teachers are in charge) and computers can help.

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Table 4. *Projects overview*

Project name	Description	Technology used
Culture Gaps: Bridging the gaps in everyday conversations	Going to the bank or shopping for groceries can be a struggle as international students attempt to understand a new culture and new set of vocabulary. This website is designed to help students understand (and perhaps prevent!) many common "cultural gaps" that are not often discussed in a foreign language classroom.	√ MM Flash buttons, quizzes, videos, animations √ Hot Potatoes quizzes √ MM Dreamweaver frames, drop-down boxes, check boxes, buttons √ overLIB √ FM Pro database
Basic Word and Web Skills for First-Year University Students	This web based teaching unit is specifically designed for firstyear composition students in order to guide them to use basic MS Word and web skills in their written assignments, but it could benefit other students as well.	√ MM Flash buttons, video √ MM Dreamweaver frames, behaviors √ Hot Potatoes quizzes √ FM Pro databases
Classroom Culture	In this unit, students will consider aspects of US classroom culture that may differ from their own cultures. The goal of this unit is to raise awareness of cultural differences and to helpstudents develop cultural competencein US classroom settings.	√ MM Flash videos, buttons √ Hot Potatoes quizzes √ Sound Recorder √ MM Dreamweaver frames, drop down boxes √ FM Pro database √ overLIB
An Idiom Learning Experience	This site allows students to study a range of idioms appropriate in academic or informal settings.	√ Hot Potatoes quizzes √ MM Flash animations, videos √ MM Dreamweaver frames, drop down boxes, behaviors √ FM Pro database

- A framework for user typology (e.g. realizing that it is important to be a knowledgeable user).
- The feeling that technology can be implemented intelligently.

Nine months in an M.A. program that focuses on the use of technology in teaching can significantly help with moving future teachers along on their way to become technology-using teachers. However, it can (and should) only be an introduction to the field and invoke the curiosity of future researchers in CALL, which can be accomplished by a carefully balanced curriculum that includes theory (see course description and reading list in Appendix 1) and practice. Future studies should take a longitudinal approach rather than the cross-sectional approach taken in this study in further investigating possible approaches towards technology integration in subsequent teaching assignments as

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a result of having completed a required computer literacy course and an M.A. in TESL/AL. Particularly interesting would be to find out if there are common skills that may be significantly more beneficial for securing a job or for success in other post-graduation goals.

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Appendix 1: Course information

Course description

The course, *Introduction to Computers in Applied Linguistics* (*English 510*), is a prerequisite course for a 30-credit M.A. program in Teaching English as a Second Language/Applied Linguistics (TESL/AL) offered at a major university in the Midwestern US. It is aimed at equipping entering graduate students with the basic computer and technology skills necessary for the (English) language teacher in the 21st century (Chapelle & Hegelheimer, in press) in addition to introducing them to the possible uses of computers and technology in language learning, teaching, and research.

The hands-on portion of the syllabus covers basic teacher tools (word processing, spreadsheet, and presentation applications, e.g. the Microsoft Office Suite), management tools (database applications, e.g. FileMaker Pro), development tools (WYSIWYG editors, animation applications, graphic applications, e.g. Macromedia Studio MX), and research tools (concordancing, data gathering, and statistical analysis applications, e.g. MonoConc Pro, Camtasia, and SPSS or MS Excel, respectively). Other programs that were introduced are Hot Potatoes (quiz generating software), overLIB (a freely available JavaScript code used to generate post-it notes), and Windows Movie Maker and QuickTime Pro (video editing software). Additionally, theoretical aspects revolving around the use of computers in language teaching were introduced through selected readings (see below). The readings were presented and discussed during the face-to-face sessions and the comprehension of the readings was assessed through contributions to the in-class discussions. Since then, the course has evolved to include an online forum to allow for a discussion of the articles one week prior to the in-class presentation. The M.A. program offers, among others, a CALL specialization for which two additional courses (one seminar in computer-assisted language learning, and a course in instructional technology) are required.

Course readings

Introductory readings

Chapelle, C. (1997) CALL in the year 2000: Still in search of research paradigms. *Language Learning & Technology* **1**(1): 19–43.

Duff, P. and Bailey, K. (eds.) (2001) Identifying research priorities: Themes and directions for the TESOL international research foundation. *TESOL Quarterly* **35**(4): 595–617.

Egbert, J., Chao, C. and Hanson-Smith, E. (1999) Computer-enhanced language learning environments: an overview. In: Egbert, J. and Hanson-Smith, E. (eds.), *CALL Environments: Research, Practice, and Critical Issues*. Alexandria, VA: TESOL, 1–13.

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Meskill, C. (1999) *Conclusion: 20 Minutes Into the Future*. In: Egbert, J. and Hanson-Smith, E. (eds.), *CALL Environments: Research, Practice, and Critical Issues*. Alexandria, VA: TESOL, 459–469.

Issues in research and pedagogy

Bickerton, D. (1999) Authoring and the academic linguist: the challenge of multimedia in CALL. In: Cameron, K. (ed.), *CALL: Media, Design, and Application*. Exton, PA: Swets and Zeitlinger, 59–79.

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Appendix 2: Reflective questionnaire

Reflective questionnaires

1. Which of the above [course] objectives do you feel you accomplished in 510? What specific experiences helped you meet these objectives?
2. Which of the above programs [covered in class] do you feel comfortable using, and did 510 help you achieve this comfort level?
3. How are you currently using skills you gained in 510 in your teaching? In your studies? In your research?
4. For our purposes, "user" is defined as someone who can create a task using materials that are already online, "developer" is defined as someone who can put materials online to be used, and "researcher" is defined as someone who is doing research related to these computer-based applications. Prior to your experience in 510, how would you characterize yourself, and why?
5. After having completed 510, how would you characterize yourself, and why?
6. How did 510 address the fact that students came into the course with varying degrees of computer proficiency and varying professional goals related to computers?
7. Did your experience in 510 influence your attitude towards computers and CALL? Did your computer-related goals change (or were they refined) as a result of the course?
8. In retrospect, how could 510 have better-prepared you to use CALL in your teaching, education or research?

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Appendix 3: Computer capabilities matrix

	Non-user 0	Basic 1-2 User is . . .	Intermediate 3-4 In addition to basic level, user is . . .	Advanced 5-6 In addition to intermediate level, user is . . .
Computer Familiarity	No experience with application.	Able to type and manoeuver mouse to access applications, retrieve files, and close applications; Some apprehension about using computers	Able to manipulate files (use Windows Explorer) to copy, move, and organize files on disks and hard drive; use help functions; comfortable with using computers	Able to address computer malfunctions; can use computer language to manipulate files and functions; confident with computers and their capabilities
Word processing (Microsoft Word)		Able to type and print documents using computer	Able to format documents (text, alignment, paragraph, etc . . .); incorporate tables, symbols, and clipart into document	Able to personalize settings in the program, use features, such as highlighting, overwriting, and comment insertion to enhance document
Spreadsheet (Microsoft Excel)		Able to enter and interpret data in pre-prepared spreadsheet	Able to create a spreadsheet which contains basic functions (+,-.,x, /, averaging, etc.); sort data; use the wizard function to create a chart or graph using the data	Able to utilize more complex formulas; use the spreadsheet codes; cross-reference between sheets; select specific data from table to create chart or graph; format design of spreadsheet and chart or graph
Database (Filemaker Pro)		Able to search and enter information into a database	Able to create a small database	Able to web-enable database; use the CDML tool to specify and personalize aspects of database
Presentation (Microsoft PowerPoint)		Able to use the wizard function to create a basic presentation	Able to design presentation (slide transitions, special effects, sound); insert images and charts	Able to create timed presentation (i.e. correspond with music or speech)
Internet		Able to use e-mail programs; conduct simple searches using search engines	Able to send attachments; bookmark sites; create folder of favorite sites; subscribe to a discussion list	Able to personalize e-mail settings (create filters, organize folders); download material (images, audio, and video) and programs (software and plug-ins)
Web development (Dreamweaver, Flash Macromedia, Fireworks, Windows MovieMaker, Adobe Premier)		Able to type and upload text in Dreamweaver; change alignment, background and text color; type and export text in Fireworks; create simple button in Flash	Able to add special formatting to webpage (tables, layers); import images; create a motion tween and edit images in Fireworks; create a short movie in Flash; download movies from camera to the computer	Able to use code language in formatting and creating webpage; manipulate images in Fireworks; create a short movie utilizing motion and music in Flash; edit movies using Windows MovieMaker or Adobe Premier
Concordancing (Monoconc Pro)		Able to search a concordance	Able to download text and search for a specific feature using concordancing software	Able to search for multiple features
Integration of skills	▼	Able to combine information from different Microsoft applications (spreadsheets, graphics, charts, etc.)	Able to incorporate materials from the Internet into Microsoft applications	Able to incorporate/create a multimedia unit on the Web, which utilizes several different applications

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