CALL and the Future of Language Teacher Education*

PHILIP HUBBARD
Stanford University

ABSTRACT
Interest in technology in language teacher education has grown recently as evidenced by the success of CALICO’s Teacher Education SIG and the publication of two edited volumes on the topic in the past 2 years. Here, I explore the current state of technology and teacher education and suggest that the future paths of language teacher education and CALL are linked. I begin with a review of data showing that technology education for language teachers is lacking in the majority of existing training programs but that the institutional demand for technology savvy teachers is increasing. I then speculate on the barriers that are limiting the supply. Next, I briefly discuss two concepts that bear on the future of educational technology, Prensky’s “digital nativism” and Bax’s “normalization.” The remainder is devoted to identifying and discussing issues, approaches, and processes that are emerging in CALL language teacher education, drawing primarily from the two previously mentioned edited volumes. The approaches and processes in particular represent promising directions for future CALL course development. I conclude by noting the importance of having a sufficient number of CALL professionals available to develop novel applications and train the next generation of language teachers.

KEYWORDS
Normalization, Project-based Learning, Reflective Learning, Situated Learning, Teacher Education

INTRODUCTION
As we come to the end of CALICO’s first quarter century, it is tempting to look at the past to see where we have been and to congratulate ourselves as a field for all our accomplishments. During that time computer-assisted language learning has gone from small groups of enthusiastic language teacher-programmers to a growing cluster of national and international professional organizations. Increasingly, it is entering the mainstream of foreign and second language teaching.

I will leave the path of reflecting on the past to others, however, and instead in this paper look at the present and down the road toward the future. What will CALICO—and CALL—be like in 10, 15, or even another 25 years? It seems certain that technology will play an increasing role in language education but will there be a place for CALL specialists and professionals and the organizations that bring them together in the pursuit of common goals? Will CALICO and other such organizations still have relevance in, say, 2032?

One can imagine any number of different futures, but providing details is a bold step that I will not take here (but see, e.g., Meskill, 1999, pp. 459-460 for a scenario that begins “It is 2005 ...”). At a broad level, it is possible to foresee the future for CALL as bright, one in

*This article is a revised and expanded version of the banquet keynote address given at CALICO 2007, the Many (Inter)Faces of CALL, May 25, 2007, at Texas State University.
which technology becomes increasingly powerful, useful, and intuitive, where governments and other stakeholders provide needed research funding, where institutions offer the technical infrastructure and support to allow teachers to optimize technology use, and where the unique elements of learning through computer mediation and learning a language are elegantly combined.

It is also possible to see a dismal future for CALL, one in which technology remains weakly integrated, where research remains fragmented, underfunded, and institutionally undervalued thereby discouraging newcomers to the field, where infrastructure and support are incomplete and inconsistent, and where assumptions of the computer as a nonessential learning adjunct and of learning languages as identical to learning anything else dominate.

The future of CALL, I would argue, is closely tied to the future of language teacher education because language teachers are the pivotal players: they select the tools to support their teaching and determine what CALL applications language learners are exposed to and how learners use them. Yet until recently, there have been only sporadic attempts to reconcile the two. Several factors are changing this situation and in the remainder of this paper I will focus on those factors. They center on the content and themes emerging from two recent edited volumes—Teacher Education in CALL (Hubbard & Levy, 2006a) and Preparing and Developing Technology-Proficient L2 Teachers (Kassen, Lavine, Murphy-Judy, & Peters, 2007)—but also involve other forces in the development of teacher education. Before moving on to a discussion of these, however, I would like to set the stage by looking briefly at where CALL and language teacher education seem to be today with respect to one another.

THE PRESENT STATE OF CALL AND LANGUAGE TEACHER EDUCATION

Prior to the publication of the volumes mentioned above, the focus on CALL-based teacher education was largely the production of textbooks and other materials to support CALL courses. In addition to the growing number of monographs and edited volumes aimed at CALL professionals, several books now exist to provide a reasonable overview of the field to teacher candidates (e.g., Beatty, 2003; Butler-Pascoe & Wiburg, 2003; de Szendeffy, 2005; Ducate & Arnold, 2006; Egbert, 2005; Fotos & Browne, 2004; Levy & Stockwell, 2006). Yet despite the presence of these resources, there is evidence that language teachers are leaving their certification and degree programs with little or nothing in the way of formal training in the use of technology in language teaching.

Butler-Pascoe (1997) reported on a survey she conducted in the mid 1990s involving responses from 109 of 153 TESOL MA programs on their integration of technology. Among other results she found that 42% did not utilize any computer technology and only 18% offered a course in CALL. More recent data suggest only modest changes in the past decade. In the introduction to their detailed review of research on technology integration in teacher preparation programs across both general education and TESOL, Oxford and Jung (2007, p. 23) put the situation bluntly, “According to existing research, technology integration is unsatisfactory in teacher education.” In a recent online survey of 240 teachers who had graduated from ESL/EFL master’s programs in the US and Canada, Kessler (2006) found that more than half had not had any formal training with technology as part of their coursework and more than three quarters felt that their program had not been effective in preparing them to teach with technology. Given that the survey was limited to practicing teachers who were available through professional listservs (through which the call for respondents was made) and thus were technology users at some level, one can imagine that the overall situation in language teacher education may be much worse. In the same article, Kessler reports on a review of 50
websites for graduate TESOL programs in North America in early 2004, where he found that “only eight had had any mention of CALL as a component within their coursework. Only three of these included a CALL course among their requirements” (p. 23). Corroborating evidence can be found in Hubbard (2007), showing that of the 172 TESOL MA programs in the US and Canada covered in Christopher (2005), 63% had no mention of technology coursework. Only 13% had a required technology course with an additional 24% offering one as an elective. It is worth noting that in some cases the technology course was taught outside of the department offering the degree and may therefore not have included any relevant pedagogical elements.

One plausible reason for not offering CALL courses is the perception that they do not represent a present need in the field. However, there is evidence against this view at least within TESOL, evidence showing that in fact teachers with technology skills are actively sought after by institutional employers. Hubbard (2007) notes that 39% of the positions listed on the TESOL Career Center site (now at http://careers.tesol.org) on October 29, 2005, mentioned CALL or technology skills as required or desirable. Kessler (2006, p. 23) reports that 60% of those listed on the same site 5 months later (March 22, 2006) “listed training or experience with CALL, online delivery, or educational technology as a required or desirable attribute.” Although the data reported here come solely from English language teaching sources, it would not be surprising for similar statistics to be found in training programs and job announcements for foreign language teachers. There is clearly demand for technology-proficient language instructors.

If we assume—as noted by practicing teachers in Kessler (2006) and elsewhere (e.g., Robb, 2006) and echoed in job listings—that there is an established need for CALL courses that teacher education programs are not meeting, the question is why? There seem to be at least seven possible reasons (for a discussion of barriers to success in technology integration, see also Oxford & Jung, 2007).

1. **Inertia**
   It is always easiest to maintain the status quo, and, if institutions—and individual teacher educators—believe they have been successful in the past, they will aim to continue along that path. Ironically, this is the same situation that can happen with language teachers whose language teaching approach becomes fixed during their own student or teacher candidate experiences and then does not change substantially throughout their career, despite opportunities for in-service renewal.

2. **Ignorance**
   It is likely that many teacher education programs, lacking faculty who understand CALL and in some cases populated largely by faculty who themselves may not have fronted a language classroom in quite some time, are unaware of the options available. There may also be an assumption that learning to use technological tools is the task of the teaching institution rather than the one that trains the students.

3. **Insufficient time**
   As the research base for second language acquisition grows and the body of nontechnological options for techniques and materials increases, teacher education programs are hard pressed to find additional space in their curricula for one or more CALL courses, especially in the K-12 domain where general education courses are also required. In addition, faculty at institu-
tions with heavy teaching loads may find it particularly challenging to keep up with developments in education, SLA, and their own specialization as well as in CALL.

4. Insufficient infrastructure
Although this varies widely from institution to institution, sometimes a major stumbling block for a program is the lack of access to technology. Along these lines Partridge (2006, p. 74) notes a case where interactive whiteboards readily available at “a local infants school” were not available at the nearby university where technological teaching aids were supposed to be evaluated. “Visiting school students and teachers were not impressed.”

5. Insufficient standards
Technology standards are a relatively new addition to the field of language teaching. Although, as we will see in a later section, there has been some progress in creating and promulgating technology standards specific to language learning, at present these do not have much of an impact (Oxford & Jung, 2007). In the US, the most influential technology standards are those provided by the International Society for Technology in Education (ISTE), and the bulk of these are aimed at the US K-12 domain, with little reference to ESL or foreign languages independent of other educational areas (see Murphy-Judy & Youngs (2006) for a discussion of this as well as standards in the European Union and Colombia). The existence of enforced standards in a field can assist in overcoming the preceding problems, in particular inertia and ignorance, since a program that fails to meet them may encounter difficulty with certification and recruitment of students.

6. Lack of established methodology
For programs exploring the possibility of including CALL, there are at first glance a bewildering number of options. As with other areas, in the absence of experience, the textbook selected may to a large degree determine the content and structure of the course. As we will see below, there are, in fact, certain clear methodological themes emerging in CALL teacher education that should lessen this concern.

7. Lack of experienced, knowledgeable educators
This is arguably the single, most critical obstacle for the field as a whole. If we assume that the standard for most professional education is that it should be taught largely (though not necessarily exclusively) by Ph.D.s to those in master’s and Ph.D. programs, then that standard is clearly not being met. Given the relative newness of CALL, a great deal of CALL education is being done by those who are self-taught in this domain, and the number even of those is clearly insufficient.

TEACHER CANDIDATES, DIGITAL NATIVES, AND NORMALIZATION
Let us turn now from the abstractions of obstacles to education to the target of our discussion, the teacher candidates. If we assume candidates complete a master’s or even a Ph.D. program as early as their mid to late 20s, then with a full teaching career ahead of them, we could be training them for a 40-year period. Given the generational nature of teaching, there can be a huge span of time involved from the point at which trainers themselves are trained to the end of their direct influence over others. As Figure 1 illustrates, without becoming too
extreme, a teacher candidate in 2007 could (potentially) be trained by trainers themselves
trained in 1967 and that candidate could still be teaching in 2047.

Figure 1
Generational Range of Teacher Training

<table>
<thead>
<tr>
<th>1967</th>
<th>2007</th>
<th>2047</th>
</tr>
</thead>
<tbody>
<tr>
<td>original trainer trained</td>
<td>teacher trained</td>
<td>teacher stops teaching</td>
</tr>
</tbody>
</table>

It is also worth pointing out that teacher candidates trained today could themselves
be training teachers in 2047 who would then still be teaching in 2087 (if indeed, we still have
language teachers then). This figure undercuts any notion that somehow the goal of educa-
tors should be to ensure merely that students leave with an understanding of the current view
of “best practices,” be it with technology or otherwise. We owe them and those whose lives
they will touch far more than that. They need the conceptual tools that will enable them to
evaluate and engage with subsequent research developments and swings in the methodologi-
cal pendulum that will inevitably occur, especially in the area of technology where change can
be so rapid.

Indeed, one problem with discussing the future in time frames as expansive as these
is that the landscape is constantly changing. Along those lines, two recent concepts are worth
considering in exploring the possible future of CALL and language teacher education: the
“digital native” (Prensky, 2001) and the normalization of CALL (Bax, 2003; Chambers & Bax,
2006).

Prensky (2001, p. 1) describes digital natives as those who “have spent their entire
lives surrounded by and using computers, videogames, digital music players, video cams, cell
phones, and all the other toys and tools of the digital age.” Prensky further claims that based
on this experience it is likely there have been physical changes in their brains and “we can say
with certainty that their thinking patterns have changed” (p. 1) and that those changes re-
quire a revolutionary shift across the field of educational methodology. There is certainly value
in considering that some of the current generation of teacher candidates, and an increasing
percentage over time, will have grown up with technology as an integral part of their lives.
Although they may be more psychologically attuned to digital devices for entertainment, com-
munication, and expressing a community presence and persona, it is still an open question
whether this has in some ways “changed their thinking patterns” in any fundamental sense
that would necessitate radical educational reform of the type Prensky promotes. Furthermore,
it is not clear to what extent this familiarity would transfer so as to significantly impact their
ability to know how to more intuitively use these tools effectively for teaching and learning. If
it turns out that the digital native concept has value (and a lot of additional research remains
to be done before that can be confirmed) and that training digital natives to be effective tech-
nology-using language teachers is less difficult than for their predecessors, that would be a
bonus. However, it is not something we should count on at this juncture.

Bax’s (2003) view of normalization is a seductive one. He defines the target of CALL
development as a state where the technology becomes invisible, where decisions regarding
the use or nonuse of technology are made solely on the basis of what is best for a given teach-
ing situation. Normalization is the final step of integrated CALL, the third stage in a revised
evolutionary history of CALL (contrasting with Warschauer & Healey, 1998 in particular) in
which what Bax calls “restricted” and “open” CALL are the first two stages.
While it is appealing to both teachers and teacher-educators to strive toward normal-
ization in Bax’s sense, there is a second dimension to his proposal that is considerably more
troubling. Noting that earlier nondigital technologies did not require specialized fields—there
was no BALL (book-assisted language learning) or PALL (pen-assisted language learning)—
Bax (2003, p. 23) concludes that “One criterion of CALL’s successful integration into language
learning will be that it ceases to exist as a separate concept and field for discussion. CALL
practitioners should be aiming at their own extinction.” Consider what that means. What
would happen to dedicated CALL, to software devoted specifically to language learning and
teaching? Where would new breakthroughs come from? Computers are already fantastically
complex things, and those of us who have been working with them for a number of years
realize increasingly the depths of their potential that we have not yet plumbed. Essentially, a
future without a field of CALL means a future without specialists and professionals (Hubbard
& Levy, 2006b) who have devoted substantial portions of their careers to understanding how
computers mediate learning a language and to creating applications and activities that draw
from that experience. In short, while normalization may be the goal for the classroom teacher,
and therefore for classroom teacher education, it is not clear why extinguishing CALL as a field
is a worthwhile or necessary objective.

ISSUES, APPROACHES, AND PROCESSES IN CALL TEACHER EDUCATION

The prospects of digital natives and normalization notwithstanding, let us return to the previ-
ous assumption that the field of CALL will continue as an independently identifiable entity. Let
us further assume that a part of its charge is to equip current and future language teachers
with the knowledge and skills, both technical and pedagogical, to incorporate technology ef-
ectively into their classes. This section will look at a number of themes that have emerged
from the two edited volumes discussed above that center on issues, approaches, and process-
es in language teacher education. Taken together they give a snapshot of the current state of
CALL teacher education and provide some promising directions for the future.

Issues

What is the role of technology standards?

As noted above, technology standards have an important role to play in providing a motiva-
tion for teacher education programs to incorporate appropriate course work. To date there
seem to be two approaches to linking existing standards to CALL. One is to take existing
language standards and incorporate technology into them (Gonglewski, 1999). Another is to
take an existing set of educational technology standards, such as those provided by ISTE and
enhance them to fit the specific requirements of language teaching. A third possible approach
is to use existing technology and/or language teacher standards to inform those for language
teaching with technology while still allowing those standards to emerge more independently,
informed in addition by CALL research. Discussions of standards appear in Murphy-Judy and
Youngs (2006) and Oxford and Jung (2007), the latter taking a rather critical view of progress
so far. A recent post to the CALICO discussion list invited comment on a draft of technology
standards from TESOL aimed at both language learners and language teachers, showing that
professional organizations are becoming deeply involved in this issue.

What do we do differently for in-service versus preservice teachers?

Although this issue has not been addressed directly, it appears indirectly in several of the
works reviewed here (e.g., Arnold, Ducate, & Lomicka, 2007; Bauer-Ramazani, 2006; Rick-
ard, Blin, & Appel, 2006). Despite the many challenges, the situation in a preservice program is relatively manageable: regardless of the teaching and computer experience candidates may have coming in, the program can determine learning objectives. Unless institutionally mandated or rewarded, in-service training is likely to be not as effective. However, in-service training can be (and usually should be) immediately relevant to the teachers, linked to or situated in their current instructional setting (Egbert, 2006; see also the discussion of situated learning in the Processes section below).

Where do we get the CALL teacher educators?

One of the previously mentioned obstacles to effective CALL teacher training is the lack of experienced, knowledgeable educators. Hubbard and Levy (2006b) note the value in recognizing the institutional roles of CALL specialists and professionals, recognition which to date has all too often been informal and uncompensated (Robb, 2006). Rickard et al. (2006) mention this and other issues in describing a national effort in Ireland to develop a system for “training the trainers” for in-service technology workshops with groups of language teachers. Based on feedback from the trainers who went through this experience, the authors conclude: “A number of issues need to be resolved if the training programme is to be scaled up in the Republic of Ireland or indeed adopted by other small countries or regions: time constraints and limitations, availability of and access to hardware and software, and the trainers’ financial and/or academic recognition” (p. 212).

Approaches

There are several ways to approach technology instruction for language teachers and teacher candidates in setting up units within a course, structuring a dedicated course, or integrating technology across a whole program. Each is briefly discussed below.

Breadth first

This is represented by the traditional “survey course,” which has the advantage of introducing a wide range of CALL alternatives, placing CALL into perspective vis-à-vis language teaching as a whole and providing a foundation from which to explore specific interests later. A number of the books cited previously are examples of this approach (Beatty, 2003; Butler-Pascoe & Wiburg, 2003; de Szendeffy, 2005; Ducate & Arnold, 2006; Egbert, 2005; Fotos & Browne, 2004; Levy & Stockwell, 2006). Ideally, this sort of course should not be about technology, or even technology in education, but specifically about technology in language education and should help participants to build both technical and pedagogical skills and knowledge (Hubbard & Levy, 2006b).

Depth first

In a depth-first approach, all or part of the CALL course may focus heavily on a single area, allowing students a narrower but much more intensive experience, especially if the objective is a project. Depth-first courses are particularly useful for shorter, in-service training courses since a positive, concrete experience with a single application is more memorable and can motivate the teacher to explore further independently. Chao (2006) gives an example of a course built around development of a WebQuest (for an explanation of WebQuests, see http://
webquest.sdsu.edu). In creating their WebQuests, teachers in Chao’s course acquired both technical and pedagogical skills and knowledge through firsthand experience, giving them a base on which to explore further uses of the computer in language teaching. Other examples of depth-first would be technology courses that focus primarily on computer-mediated communication or a specific skill area such as technology in writing instruction.

**Integrated**

An integrated approach to CALL in teacher education is one in which the use of technology appears in multiple places during the teacher candidate’s coursework rather than in a single, stand-alone class. The ideal form of this is akin to Bax’s view of normalization in CALL itself: the use of technology in language teaching would come up in all classes in situations where technology options make sense. However, a fully integrated program does not yet seem to exist for reasons mentioned above. Support for this approach can be found in Peters (2006) and Desjardins and Peters (2007), both of which report on research into the question of whether a single technology course is effective in providing language teachers in a 4-year program with the necessary foundation. Hegelheimer (2006) provides an example of one developing model for this. He describes a course he teaches in technology skills that aims to provide a foundation during the first semester of the two-year program that faculty in later classes can then build on. However, he also mentions some of the difficulties in bringing other faculty on board, including comments by some in other disciplines that the teaching of “skills” is not appropriate at the graduate level.

**Online**

The online approach is an example of learning about technology through technology. Online CALL courses may be offered for practical reasons (e.g., because the teacher candidates are not physically in the same location as the course; see Bauer-Ramazani, 2006) or because the objective of the course is to train teachers for online delivery of their own language courses (see the TESOL online certificate at http://www.tesol.org > Education > Online education). In either case, teachers have to use technology regularly to receive instruction, communicate, collaborate, and complete assignments, including tasks and projects. In addition to dedicated online courses, increasingly, we are seeing blended courses where some combination of face-to-face and online instruction or interaction is occurring. Lomicka and Lord (2004), for example, discuss bringing eight “virtual guests,” authors of articles that students were reading as part of their course, into online discussions with students.

**Processes**

Perhaps most important in successful technology education is selecting a learning process appropriate for the content and fitting the needs of those being taught. Each of the processes described below has particular strengths, and they may be combined in various ways to create a coherent and effective course.

**Lecture/demonstration**

Given the number of CALL textbooks available today, it is likely that many CALL courses rely on this more traditional approach to introduce novices into the field, especially in breadth-first
survey courses. Interestingly, none of the papers in the two volumes specifically supports this as the preferred method of instruction, though it is clear that several do incorporate it. In the event this approach is used, it is valuable to follow the demonstration with hands on experience with the technology (e.g., see Eskenazi & Brown, 2006).

**Project based**

Although it is not unusual for courses to have one or more projects as a part of them, in project-based learning the project is at the center of the course, and learning builds on the basis of accumulating the skills and knowledge necessary to accomplish the project goals. Debski (2006) provides an example of this along with a well articulated rationale for what he calls “project-oriented” learning. In Debski’s course, students worked collaboratively to build a website to support the Cultural Programs at the University of Melbourne. In addition to the website itself, students collectively produced a detailed project specification document, wrote essays on issues related to the project (e.g., learner autonomy), and wrote an individual reflection paper describing their contributions to the project and what they had learned (see the Reflective learning section below). Another example of project-based learning can be found in Chao (2006), though in this case the projects are individual rather than collaborative. She describes the development of her CALL course over 2 years. In the first year (2003), designing a WebQuest was the final project, but students in that course felt that it should have been started earlier. The following year the course was more clearly project based; as Chao explains, “Following the teachers’ suggestion, work on the WebQuest project for the 2004 group started from the second week. The reading discussion which was originally done before the project, was also carried out side by side with the project” (p. 225).

**Situated learning**

Situated learning is a concept popularized by Lave and Wenger (1991) among others and focuses on the notion that learning knowledge and skills takes place best in contexts close to those in which they will be used. For teacher education in general, this means providing links to the classroom setting. Egbert (2006) presents two contexts for situated learning. In the first, she uses an evaluation rubric to demonstrate how an online CALL course—where teachers can immediately connect their work in CALL to the classrooms in which they are currently teaching—meets the criteria for a situated learning environment. In the second, she uses the same rubric to show how a case study approach can provide many of the same elements by grounding the teacher candidates in detailed, concrete examples of real-world teaching problems.

**Reflective learning**

A theme that comes up in many of the courses described in the two edited volumes involves the value of teacher candidate reflection in some form (e.g., Arnold et al., 2007; Hoven, 2007; Meskill, Anthony, Hilliker-VanStrander, Tseng, & You, 2006; Slouti & Motteram, 2006). Slouti and Motteram’s contribution is the most detailed, discussing not only reflective learning in general but also the transformative nature of a reflection-based program. Central to their view is the role of reconstructive processes, including metacognition, conscious articulation over time, and reflection on apprenticeship.
Portfolio based

The final section of Kassen et al. (2007) includes three chapters devoted to the development of digital portfolios in language teacher education, although the last of these (Cummins, 2007) focuses on portfolios for language proficiency rather than CALL. In van Olphen (2007) the portfolios were the outcome of an educational technology course: participants commented favorably on a number of areas, including the value of collaboration and reflection during the course as well as the value of the portfolio as a way to demonstrate to prospective employers what they could actually do with technology. “Overall, students’ observations indicated that developing digital portfolios gave them a meaningful context in which to learn how to integrate technology” (p. 280). Tochon and Black (2007) similarly show how electronic portfolios allow teacher candidates to demonstrate their ability to use a wide variety of technologies in classroom situations.

Mentor based

Although several studies mention mentoring, only Meskill et al. (2006) focus on it as the main theme. In their case the mentoring occurred at two levels: (a) in-service teachers mentored preservice teacher candidates implementing technology projects in the in-service teacher classrooms and (b) doctoral students also mentored the preservice teachers. All three sets of participants brought knowledge and skills of value: the preservice teachers brought new teaching approaches and fresh technology skills to their mentors’ classrooms; in-service mentors brought pedagogical expertise and experience with technology use in their classrooms; and doctoral students brought in a higher level of technology use, new teaching approaches, and pedagogical expertise. Although this particular format would be impossible to duplicate at institutions without a cadre of doctoral students, Meskill et al.’s study shows how a well crafted mentoring program can help teacher candidates transition from the CALL classroom to the language classroom effectively.

Communities of practice

Beyond the more traditional single class structure is the possibility of teacher education through a community of practice (Wenger, 1998). Arnold et al. (2007) describe how they formed a virtual community of practice among 31 graduate students in three classes at two universities, engaging in discussions and collaborative tasks as well as interacting online with experts. Based on an analysis of discussion transcripts and a student survey, the researchers concluded that students had indeed formed a community of practice: “high amounts of mutual awareness and group cohesion indicate that students did try to connect with and support each other as well as with the expert during their discussions in order to from interpersonal allegiances” (p. 125). However, they acknowledged in a footnote that this community lacked some of the defining characteristics of a community of practice as specified by Wenger (1998), notably voluntary participation and longevity. Hanson-Smith (2006) discusses the development of communities of practice in CALL among practicing teachers around the world. She cites several examples, including most notably Webheads in Action (http://www.webheadsinaction.org), a self described “worldwide, cross-cultural, and vibrant online community of educators with an open enrollment for anyone who wants to join,” which regularly offers free 6-week “Electronic Village Online” workshops prior to the annual TESOL convention. In addition to acknowledging their value for in-service professional development, with an eye to the limits of formal education, Hanson-Smith advises teacher training programs to introduce preservice teachers to communities of practice as a way of encouraging life-long learning in their field.
Self-directed learning

A final approach found in the literature, and one which represents in some sense a solution to any educational problem, is self-directed learning. Robb (2006) provides an overview of issues for self-directed learning specifically for CALL. Among other points, he argues that an important role for a CALL course today is to prepare teachers for future self-directed learning by providing a sufficient technical and pedagogical foundation. Kolaitis, Mahoney, Pomann, and Hubbard (2006) put a different spin on self-directed learning. Their article describes how a group of ESL faculty at a community college worked collaboratively on a multiyear project to understand and implement CALL learner training in their program and extended their knowledge and experience to other instructors at their institution.

In this section, I have reviewed a number of issues, approaches, and processes related to CALL teacher education. Although this is not an exhaustive list, especially with respect to issues, it offers a starting point and a reasonable range of options for those looking to begin a technology-training course or to revise an existing one.

CONCLUSION

In the preceding sections I have explored a number of areas connecting the future of CALL with that of language teacher education. I began by noting both the apparent lack of sufficient training in the majority of existing teacher preparation programs and the growing interest among institutional employers in CALL proficiency. I then touched on two areas which potentially lessen the impact of CALL as a field, Prensky’s digital nativism and Bax’s normalization, and argued that neither necessarily ameliorates the need for both CALL teacher training and the continuation of CALL as an independently valid research and practice domain. I concluded with a review of material coming largely from two recent edited volumes.

I believe the future of CALL and teacher education is bright, but as noted earlier in this paper, there are a number of obstacles. The greatest of these is the limited number of qualified personnel able to integrate technology into language education effectively, a situation perhaps causally linked to the institutional reluctance to recognize and reward those who choose to devote their professional lives to this field. If CALL is to survive and prosper, then we need a dedicated cadre of graduate students, especially doctoral students, willing to select CALL as their area of specialization. The paths of CALL and language teacher education will increasingly be determined by such students and those they will educate in the decades to come.

REFERENCES


Desjardins, F., & Peters, M. (2007). Single-course approach versus a program approach to develop technological competencies in preservice language teachers. In M. Kassen, R. Lavine, K. Murphy-Judy, & M. Peters (Eds.), *Preparing and developing technology-proficient L2 teachers* (pp. 3-21). San Marcos, TX: CALICO.


Hegelheimer, V. (2006). When the technology course is required. In P. Hubbard & M. Levy (Eds.), *Teacher education in CALL* (pp. 117-133). Amsterdam: John Benjamins.

Hoven, D. (2007). The affordances of technology for student teachers to shape their teacher education experience. In M. Kassen, R. Lavine, K. Murphy-Judy, & M. Peters (Eds.), Preparing and developing technology-proficient L2 teachers (pp. 133-163). San Marcos, TX: CALICO.


Kassen, M., & Lavine, R. (2007). Developing advanced level foreign language learners with technology. In M. Kassen, R. Lavine, K. Murphy-Judy, & M. Peters (Eds.), Preparing and developing technology-proficient L2 teachers (pp. 233-262). San Marcos, TX: CALICO.


van Olphen, M. (2007). Digital portfolios: Balancing the academic and professional needs of world language teacher candidates. In M. Kassen, R. Lavine, K. Murphy-Judy, & M. Peters (Eds.), Preparing and developing technology-proficient L2 teachers (pp. 265-294). San Marcos, TX: CALICO.


**AUTHOR’S BIODATA**

Philip Hubbard is Senior Lecturer in Linguistics and Director of English for Foreign Students at Stanford University’s Language Center. A CALL professional for the past 25 years, he is the author of over 20 disk-based and CD-ROM programs for ESL and has published articles across a range of CALL areas, including methodology, research, software development, software evaluation, teacher education, and learner training. He is the co-editor with Mike Levy of Teacher Education in CALL. He currently serves on the CALICO Executive Board and the CALICO Journal Editorial Board. He is also on the editorial board of Language Learning & Technology and is Associate Editor of the CALL Journal. His current interests center on using technology in developing listening proficiency and expanding CALL as an independent field of inquiry and practice.

**AUTHOR’S ADDRESS**

Philip Hubbard  
Linguistics Department  
Stanford University  
MC2150  
Stanford, CA 94305-2150  
Email: phubbard@stanford.edu