EMERGING TECHNOLOGIES
THE TECHNOLOGICAL IMPERATIVE IN TEACHING AND LEARNING LESS COMMONLY TAUGHT LANGUAGES

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Anyone in the United States who wants to learn Spanish can easily find local instructional options. Opportunities abound as well for maintaining one's Spanish: all-Spanish television stations, widely distributed print media, and an abundance of native speakers. Learning opportunities and resources for other commonly taught languages (CTL) such as French or German are fewer than for Spanish, but still much greater than for less commonly taught languages (LCTL) such as Russian. Prospective Russian students will have considerably more difficulty in finding classes offered locally. That is true as well for local conversation partners and other available means to maintain proficiency. If this is the case for Russian, with its over 150 million speakers and geo-political clout, one can imagine the difficulty would-be learners of Dari or Ojibwa face. It's likely that learners of LCTLs will find and use online resources for learning and maintaining the language, because there may be no other option available.

One might assume therefore that LCTL learners would be eager to embrace technology for language learning. Paradoxically, however, surveys have found that LCTL learners are by and large less computer-savvy and not as interested in online language instruction (Winke, Goerther, & Amuzie, 2010). The latter finding is particularly ironic because for some languages, classes may be possible only through distance learning. In this column, we will discuss some of the ways technology is being used in LCTL instruction and explore the dynamics of the integration of technology into the learning of LCTLs. The languages discussed here are those less commonly taught in the United States. Grouping the diversity of world languages (except for English, French, German, and Spanish) together in a single category ignores the huge differences among them, both in terms of the nature of the language and the dynamics of language learning for native speakers of English (the perspective used here). Nevertheless, from an educational and pragmatic perspective, there are still enough commonalities to warrant some observations and recommendations.

PRACTICAL ISSUES IN TEACHING LCTLS

In the United States, there has been considerable growth in interest in LCTLs in recent years, with dramatic enrollment increases in Chinese and Arabic in particular (Furman, Goldberg, & Lusin, 2010). In fact, the prominent place these two particular languages have begun to occupy in American higher education puts them into a somewhat different category from the rest of the LCTLs. Administrators in American universities seem more amenable to supporting Arabic and Chinese instruction (even with small enrollments), given economic and geo-political realities. In a different category are indigenous languages, often taught through anthropology or area studies departments, as well as languages like biblical Hebrew or Tibetan, often associated with religious studies programs. In the United States, the principal living spoken LCTLs—according to the most recent Modern Language Association report—are (in order of student enrollments) Italian, Japanese, Chinese, Arabic, Russian, Portuguese, Korean, and modern Hebrew (Furman, Goldberg, & Lusin, 2010). For most LCTLs, there is a struggle to maintain enough of an enrollment for courses to be run, particularly at a time when American universities are tightening budgets and implementing minimum enrollment targets for all classes. Secondary schools in the United States have had difficulty as well starting and maintaining classes in LCTLs. In my own county of Henrico, Virginia, Japanese has been taught for a number of years, but only through closed circuit television broadcasts, due to enrollment considerations as well as to the difficulty of finding local Japanese teachers. The STARTALK program, which sponsors intensive summer courses in LCTLs for high school students, has been a successful effort to promote new language options at that level. An indication of the problem in higher education can be appreciated from an online project for enhancing the

teaching of Finnish in five North American universities, which together had a total enrollment of 18 students (Lehtonen & Tuomainen, 2003). In 2011, the total number of students studying Pashto at universities in the United States was 128 (Webley, 2011). Beyond the top ten languages, we are talking about very rarely taught foreign languages.

In the aftermath of the 9/11 events, there has been US government support for learning particular "critical languages" in the interest of US national security, with enhanced government resources—including student scholarships—for studying languages such as Azerbaijani, Korean, or Turkish. However, the difficulty for would-be learners of these or other LCTLs is finding an instructional program. Even for Chinese and Arabic, it is a challenge for US institutions to mount programs, given the ongoing scarcity of qualified teachers. Often the only applicants for LCTL teaching positions—almost always part-time—are native speakers with little to no training or experience in language instruction. As a result of small class sizes and the inability to find qualified instructors, a number of US universities have programs which offer individualized instruction in a variety of languages. The format for these classes is self-instructional but also includes regular meetings with a native informant (usually once or twice a week individually or in small groups). At the end of the course an outside evaluator (normally an instructor of the language at another institution) comes to campus to administer a final exam. The emphasis in these programs is largely on developing a practical communicative ability, with a minimum of grammar and somewhat reduced emphasis on reading and writing.

The University of Arizona offers self-instructional programs in 15 different languages, including Kurdish, Nepali, and Ukrainian. Self-instructional language programs (SILPs) are in place as well at the University of Pittsburgh (12 languages), University of Maryland (11 languages), Vassar College (eight languages) and many other North American universities. The Five College consortium has a quite extensive program, offering "mentored courses," "independent plus," and "supervised independent" formats depending on the skills emphasis and the nature and frequency of conversation sessions. CARLA (Center for Advanced Research on Language Acquisition) at the University of Minnesota maintains a database of LCTL courses in North America and includes listings for over 300 languages. Some larger language programs at American universities offer face-to-face classes in a large number of languages, particularly in intensive summer sessions. The University of Michigan, for example, offers instruction in over 65 languages. Due to recent budget cutbacks, more universities are collaborating electronically to offer regular classes in LCTLs. Cornell University, which has traditionally taught many different languages, recently has arranged to team up through video conferencing with Yale University to offer Modern Greek and Dutch and with Columbia University to teach Romanian, while Cornell offers Bengali and Yoruba.

Most SILPs in the United States are associated with a national organization that supports and coordinates such individualized instruction in LCTL, the National Association of Self-Instructional Language Programs (NASILP). Originally SILPs used a textbook along with a tape program. This was the case when I took Norwegian as an undergraduate, using the Assimil series (the "with ease" texts, still available in over 40 languages), which came with cassette tapes. Today, traditional textbooks are still being used, but electronic delivery of resources is now widespread. NASILP makes some resources available, including videos, and helps in locating learning materials. The Language Materials Project at UCLA offers information on and (when possible) links to both teaching aids (textbooks, Web courses, readers, script tutorials, etc.) and authentic language materials (audio, maps, schedules, TV broadcasts, etc.) for 151 languages. The project also maintains a helpful list of Training and Resource Centers which includes a number of projects which target particular cultures and languages, such as the resource list maintained by AATSEEL (American Association of Teachers of Slavic and East European Languages) or the SEAsite for southeast Asian languages.

There are several repositories of resources that are available for SILPs. LangMedia from the Five College Center for the Study of World Languages features video clips of interviews and discussions for 41

languages and includes translations and/or transcripts. A recent project is the The Flagship Media Library (FML), intended to collect multimedia resources for the nine languages of the Language Flagship, a program to build exemplary LCTL programs across the United States. The FML, a collaboration between Brigham Young University's Center for Language Studies and the American Councils for International Education is building a system for storing, annotating, accessing, and developing pedagogical materials around Web-based audio and video. The authentic materials collected are being analyzed and tagged in such a way that they can be used through Web services and a publically accessible API (application programming interface) in a variety of applications and proficiency levels. Materials will include captions and transcripts. This approach offers a welcome combination of authenticity and flexibility, as it promises to provide ready-to-use materials for LCTL instruction, which are often difficult for individual instructors to create themselves. Because the transcripts will be semantically and structurally tagged—and I would assume time-coded to the media—they also offer a wonderful resource for CALL (computer-aided language learning) applications.

Many SILP programs today use the Critical Languages Series for LCTL programs from the University of Arizona, available in eight languages and featuring lessons built around dialogues or readings, with extensive use of video and audio. Originally developed as CD/DVDs with MaxAuthor, the courses are now available in Web versions, as the disc versions were Windows only. Unfortunately, the online versions use Flash, which makes them unavailable on most mobile devices. Another resource valuable to LCTL learners is the courseware created by the Defense Language Institute Foreign Language Center for use by the US military. The Headstart2 series provides introductory language lessons (beginning Pashto, for example) as well as a military language component. The lessons created at the Institute and available to the public are available through the Global Language Online Support System (GLOSS); around 40 languages have lessons, including Korean and "North Korean." A recent article in the IALLT Journal describes lessons in Dari, Pashto, and Urdu created for GLOSS by the Center for the Study of International Languages and Cultures at the University of South Florida (Thompson & Schneider, 2012).

Students enrolled in a LCTL tend to have different profiles from CTL learners. This emerges from information gathered in recent surveys (Brown, 2009; Magnan, Murphy, Sahakyan, & Kim, 2012). LCTL students are more likely to have studied another language, are older on average, and are more likely to be enrolled in the language course for personal reasons than to satisfy a curricular requirement. This learner profile provides valuable information in helping to guide the use of technology. Motivated, mature students can be expected to take on more willingly and more effectively responsibility for their own learning, hence the logic of the many self-instructional programs for LCTL. Having more experience with language learning, such students are likely to have a better insight into their only own learning styles and study methods. Given that situation, it is important for LCTL instructors to acquaint their students with the full range of available learning tools and services, to allow them to select those which best fit their needs and preferences.

LCTL students early on should, for example, gain familiarity with such basics as online dictionaries (and how to use them effectively), translation services (and their limitations), keyboard layouts/input methods, and spell/grammar checkers. Important as well in the early stages of language learning are concepts which get short shrift in textbooks but which are important as foundations for longer-term learning, particularly of languages radically different from English. These include language variation (so important in many LCTLs, especially Arabic), language registers (an important cultural as well as linguistic phenomenon), and pragmatics (including sociolinguistic areas such as politeness formulas). Discussing such linguistic concepts can provide an opportunity to introduce particular online language learning resources. Giving examples of collocations, for example, provides insight into a key element of real language use and also invites discussion and illustration of language corpora and concordances. For the more experienced and pragmatic LCTL learner, it makes sense to be explicit about what it takes (and how long it takes) to be a proficient speaker of the target language, including the ability to use idiomatically authentic language and

to adapt one's speech appropriately to the context.

Basic knowledge of how language works and how to learn new languages is especially important for LCTL learners, who are likely to learn multiple languages. This may be particularly true for those interested in indigenous languages. For African languages, John Mugabe points to the importance of learning how to learn languages, with the greater likelihood that such students will become polyglots (2010). Mugabe stresses the importance of a degree of learner autonomy that goes well beyond what one would expect of CFL learners:

> Learning how to learn a language, then, includes the ability to take charge of one's learning in determining the sequencing and elaboration of content. While established language programs have professional people to teach and guide the learner, students learning a language with limited or no resources must be prepared to be content designers, ardent seekers of information, perennial documenters, and keen observers facilitated by native speakers, linguists and other language professionals. (2010, p. 66)

As Mugabe points out, the typical way SILPs are set up is not likely to work for largely undocumented languages, due to the lack of teaching resources. In such cases it is all the more important that students have the knowledge of how to go about finding resources that will enable them to be effective independent learners.

READING AND VOCABULARY DEVELOPMENT

For languages that use a writing system unfamiliar to learners, one of the early challenges is likely to be learning how to read and write in the target language. This may be a fairly quick and painless process, as is the case for Russian, or long and arduous, as is true for Chinese. Fortunately for LCTL learners, the display of non-Roman systems on computers has become much better, with the current wide support for Unicode in all major operating systems, including mobile devices. Vastly improved as well is Web browser support for non-Roman languages. Not so long ago, to display non-ascii characters on the Web, graphic files had to be used. In fact, there are still a number of widely used Web resources that were built in that way, such as Zhongwen Zipu, an essential tool for Mandarin learners. Now Web pages written in Unicode and encoded in UTF-8 or UTF-16 will display correctly in browsers, assuming the necessary character sets are available. For languages which use character sets not likely to be available by default (Pashto, for example), the @font-face feature in CSS 3 can be used to specify a downloadable font needed for text display. Using that CSS feature also has other benefits, including making text more available to assistive technology like screen readers, enabling translation services, and allowing for the use of advanced CSS properties to tweak the display. A recent innovation in type fonts, the Web Open Font Format or WOFF, makes it easier to supply users with any needed font sets, as it compresses the font data into much smaller downloads. It is widely supported in current browsers. SIL International, which provides fonts for a variety of LCTLs, has begun to make its fonts available in WOFF.

The current ability to encode texts in virtually any writing system as well as the wide penetration of the Web today have resulted in a rich set of authentic texts in many different languages. This situation helps immensely in the ability of learners to find and work with texts actually used by native speakers. This has until recently been one of the major problems in LCTL instruction: the lack of current materials in the target language. This is important not only for exposure to the linguistic data authentic materials contain, but also for providing direct access to the target culture. We know from surveys of LCTL learners that they tend to have a higher degree of interest in the culture they are studying than is the case for CTL learners. Culturally relevant learning materials can be an important motivating factor.

It's likely that learners of LCTLs will need to turn to the Web for engaging and up-to-date materials rather than to their textbooks. Although the recent increase in interest in learning LCTL has resulted in more publications that help learners of those languages, they tend to be more in the nature of dictionaries

and phrase books rather than serious textbooks. The market is too small for publishers to be eager to bring out textbooks that will have such a reduced potential audience. The disadvantage of having students work with authentic texts is the difficulty in finding materials that are both linguistically accessible and culturally appropriate. Teachers and language professionals have used a variety of approaches to make authentic texts available and understandable to learners or to extract from collections of text data that helps learners with particular aspects of language learning such as vocabulary development. In some cases, these are ad hoc local efforts, in other cases, they result from CALL projects, sometimes geared to specific languages. Using all online resources for a language class has a number of advantages, but also may run up against the preference many students still have (despite the advent of e-books) for the security and reference value of a print textbook.

For instructors wanting to annotate authentic materials for their students, a number of tools are available. An instructor of Portuguese reported recently on the modules created with Gloss Maker to provide comprehension help for short cultural texts (Vasconcelos, 2012). In line with studies showing that multimedia glosses may enhance comprehension, he also included media such as pictures, audio files, and YouTube videos. He used the freely available tools Exe and Hot Potatoes to create comprehension questions and interactive learning activities. The modules were made available to students through a Moodle LMS and were designed to be flexible enough to be used in classes with different proficiency levels. A recent example of a project on a larger scale are the CERCLL texts (Center for Educational Resources, Culture, Language and Literacy) at the University of Arizona (Catalano, 2011). Hypertexts are being developed in Arabic, Italian, and Portuguese. In this case, glosses are textual (coded blue) or extra-textual (graphics or explanatory notes, coded green). In contrast to other programs however, the existing CERCLL texts were created by local staff. There are a number of free tools for annotations such as FLAn (Foreign Language Annotator), Gloss Maker, or Annotext.

From the multitude of studies in recent years, use of glosses appears to help motivate and interest students, but what type of annotation or glosses (translations, target language explanations, images, audio, video) are most effective for reading comprehension is not clear (Chun, 2007). One meta-analysis of text glosses has pointed to a consensus view that text glosses are likely to improve reading comprehension at the intermediate and advanced levels (Abraham, 2008). Given the uncertainty over which glosses work best for reading comprehension, it would seem advantageous to have a flexible annotating system which provides a variety of options, allowing the user to maximize the effectiveness on an individual basis. It would also be preferable to give users the choice of links or glossed items being visible or not, as study results are mixed in terms of effectiveness and user preference. With the power of today's combination of JavaScript and CSS, this kind of customization could be done nicely in a Web app.

Studies do show that glosses can be valuable in incidental vocabulary learning (Chun, 2007). For targeted vocabulary learning, authentic texts can be a valuable learning resource as well. It's possible of course for teachers or individual learners to create themselves vocabulary lists based on online readings. Some of the flashcard sets on exchange sites such as flashcardexchange.com in fact are taken from readings, although most often these are from textbooks or from elementary readers. To use current texts for this purpose, tools are available which crawl the Web or particular Web resources and automatically extract items for vocabulary study. The Linkit tool, for example, provides a means to look up Chinese characters encountered in online readings (or in a textbook) and to display rich information on the use of that character in words and phrases (Shei & Hsieh, 2011). It includes an "explorer" function—for viewing character use in context—as well as a "practice" feature. The tool is specifically designed for Chinese, for which the concept of words is problematic. The system searches the Web to find examples of multi-character phrases to determine if that particular "morpheme stack" is a frequently used idiomatic expression (important for learners) or an incidental grouping of characters. Very helpful to language learners would be the ability in such search and explore programs to be able to save particular items into a personal word inventory or to-learn list, perhaps available on-line through a service such as Dropbox.

As language corpora increasingly become available for LCTLs, CALL tools based on the data they provide are becoming an ever more valuable resource for teachers and learners. It's sometimes argued that having learners access language corpora directly—whether through a basic KWIC display (key word in context) or through a more user-friendly interface—is too difficult or too confusing. This may be less a factor for the more motivated and mature LCTL student. What Alex Boulton states in reference to language learners in general applies, I believe, strongly to LCTL learners in particular, "it would seem disingenuous to coddle learners with simplified language, disempowering them and leaving them unprepared for the realities of the authentic language we are presumably preparing them for" (2009a, p. 89). Boulton advocates creating small, homemade corpora that can match particular needs. In an experimental use of corpora with beginning learners, Boulton found that even without training, students at an early stage of language learning were able to use a concordance effectively with better results than students using a traditional dual-language dictionary or students consulting the textbook (2009b). There are a number of tools that can be used for creating concordances, including Wordsmith (commercial) or AntConc (free). One tool that has attracted quite a bit of interest lately is Sketch Engine, which has been used to create collocation dictionaries in eight different languages including Bulgarian and Maltese. A valuable tool for teachers and learners is WebCorp, which allows for on-the-fly concordance creation based on Web documents. It works on top of the user-chosen Web search engine and extracts the desired data (from a word or phrase search) from the URLs of the sites found. A similar free tool is TextSTAT, available in a variety of languages.

LISTENING COMPREHENSION

Part of the rationale for creating a language corpus is often to build a tutoring program that uses the data for natural language processing (NLP). For that to be possible, a significant amount of data needs to be collected. With the growth of material available on the Web, this is becoming increasingly feasible for a wide variety of languages. One project recently has reported on the ability to mine the Web (in particular Wikipedia and NationMaster) to build a corpus of Urdu resources (Mukund, Srihari, & Peterson, 2010). To create the corpus, the researchers had to solve problems specific to Urdu including the extent to which Hindi resources could be included, how to deal with word segmentation, and from where to establish a data set of named entities (i.e., proper names, geographical terms, etc.). In recent years similar Treebank projects have been built for Arabic, Chinese, and Korean (Mukund, Srihari, & Peterson, 2010). With appropriately analyzed and tagged language corpora, a variety of applications can be developed, from basic vocabulary drills to sophisticated automatic tutors using NLP. Examples of the latter for LCTL include Targarela for Portuguese and Robo-Sensei for Japanese. Such systems go well beyond grammar and vocabulary to include listening comprehension as well as speaking analyzed through automatic speech recognition (ASR). ASR is implemented in a variety of commercial language learning programs including Tell me more (nine languages) and Rosetta Stone (30 languages).

Finding sources for listening practice has become much easier with the proliferation of radio broadcasts, podcasts, audio blogs, and YouTube videos in multiple languages. Listening comprehension (and speaking) can be a particular challenge if the target language has specific sounds not present in the learners native language, such as clicks in Xhosa, for example, or tones in Chinese. Podcast series dedicated to language learning, such as ChinesePod, tend to focus on how the target language differs from English (used as the lingua franca in most cases) and can be very helpful in providing sample speech patterns. Resources for practicing listening comprehension are particularly useful if accompanied by transcripts, as is the case for many language podcasts. YouTube provides an automatic transcription service, but unfortunately only for English. An option for working with authentic audio is to use a tool or service which slows down the audio playback, often available for podcast playback, particularly on mobile devices. Marty Meinardi reports on the development and use of a system with new, more effective (i.e., less distorting) slowdown algorithms called DITCALL (2009). Another option for audio is the use of a text-to-speech (TTS) application. This could be a valuable resource in particular for languages where

there may not be a large number of native speakers available with whom learners could engage in conversation. Micheál Lochlainn developed a TTS tool for Irish for that reason (2010).

ENHANCING LEARNER ENGAGEMENT

One of the concerns among LCTL instructors in the United States is the low number of students who enroll in courses beyond the intermediate level, the designation almost universally used in this country for the second year of language instruction, even though for many LCTLs the proficiency level achieved by that point is hardly intermediate. The drop-off after two years seems surprising, given the typically higher seriousness of the LCTL learner, who most often has not enrolled merely to satisfy a requirement. The enrollment decline may be related to curriculum pragmatics—not enough students to make up an advanced course, scheduling difficulties due to the low number of options—or to students having achieved their language goals in completing two years of language study. In other cases it may be that students with a wide interest in world languages just want to sample a variety of languages. Other students may lack the patience to achieve the kind of proficiency that may take longer to develop in languages such as Japanese or Russian. However, there may be a more disturbing reason, namely that students are not having the kind of language learning experience they were seeking or not achieving the goals they had in mind in enrolling in the target language class. It would be interesting to see whether the retention of students is any better in the myriad of self-instructional LCTL language programs that exist today. If retention is higher, that might point to the greater success of the quite distinct approach used—centered on practical communication with grammar only as needed—and a heavy emphasis on development of oral skills.

There are several initiatives underway that hold promise for enhancing the quality of LCTL instruction in the United States. The National Online LCTL Teacher Training Initiative, a joint venture of the University of Wisconsin-Madison and the National Council of Less Commonly Taught Languages, is offering three new online course on teaching LCTLs including "Fundamentals of Language Teaching Methods" (which includes language learning and technology) and "Teaching African Languages." CARLA has created an extensive Web guide to developing classroom materials for less commonly taught languages. It also offers a summer institute dedicated to that topic. Such efforts are important for the success of LCTL programs, as beginning teachers may have less pedagogical and technology training than CTL teachers. The National Foreign Language Resource Center at the University of Hawaiʻi has created online language cafes, which are proposed to serve as models of online communities of language professionals in a number of LCTLs. This and other initiatives that foster the creation of communities of practice among LCTL teachers should be welcome resources for teachers struggling with the many practical issues in creating and running LCTL programs and courses.

For languages using non-Roman writing systems, there has been considerable debate over how to teach students to read and write at the beginning levels. Studies have shown, for example, that students become frustrated with having to learn the multiple writing systems used in Japanese and have a particularly hard time learning the kanji—the characters borrowed from Chinese (Geraughty & Quinn, 2009). Not teaching writing from the outset hardly seems a viable alternative, if we want students to experience the real language in its authentic cultural setting. It may be a delicate balancing act for LCTL instructors to introduce the complexity of the target language without scaring away the students. One recent study recommends exploring the option of introducing early on only a very reduced set of kanji (Larson, 2006). In my experience learning Chinese (from three native Chinese teachers), one of the difficulties native speakers tend to have in helping students learn characters is the method they likely used themselves as L1 learners—memorization through repeated writing. Chinese teachers tend to recommend that same method, but for L2 learners, a more analytical approach may be more effective, exploring the use and meaning of radicals and other constituent parts of characters, comparing similar but subtly different characters, and introducing mnemonic devices. Making students aware of tools, services, and apps which

supply this kind of information is a valuable service Chinese teachers can provide their students. The article by Chen et al. in this volume provides a helpful example of an analytical approach for learning Chinese characters, focusing on recognizing phonetic and semantic components. As much of the Chinese instruction in the United States currently is done by native speakers with limited training in teaching Chinese as a second language, it's important that they be able to guide students to resources that supply the kind of helpful information and practical tips that aid students in making sense of what can seem a bewildering writing system.

A nice resource for Japanese is SILK, the Strategy Inventory for Learning Kanji, which discusses a wide range of methods for learning characters, and features descriptions and examples of the many different strategies available. One study of using SILK in a beginning Japanese class showed that it made a substantial contribution to learner autonomy (Anderson & Bourke, 2007). SILK also includes a learner profile generated by a diagnostic test, which helps learners to determine which kanji learning strategies might work best for them. Developing an agreed-upon format for learner profiles would be a boon to language learners as well as to CALL developers. Included in such a profile could be information about the learners linguistic background, language learning history, content and geographic areas of interest, social media used, as well as links to individual portfolios, learner diaries, or other personalized learning information (current vocabulary learning list, for example). I am envisioning something akin to the "Learner Preferences and Needs" profile that is part of the new accessible assessment standard from IMS Global, APIP (Accessible Portable Item Protocol). Having this kind of information available to CALL applications would make possible the kind of system envisioned by Chi-Chiang Shei, which allows user-selected texts culled from the Internet to be richly annotated in a personalized way (2001). While she suggested giving users a vocabulary pre-test to measure their lexical knowledge in order to determine the level of items to annotate, pulling that information from an online learner profile would be preferable and would enable greater customization. Allowing learners to choose texts of particular interest or need and providing a system for making those authentic texts comprehensible on the fly would provide an invaluable resource for continued use of the target language beyond any formal educational experience.

Given LCTL learner demographics, it would seem important from the beginning to incorporate culture, not from a tourist perspective (as is often the case in textbooks), but as integral to the language. For students to have a positive and enriching learning experience, this seems even more important for LCTLs, as affinity with the target culture and its people is an important motivating factor for language learners. There is no consensus on how that can be achieved. It does seem evident that this should not be a separate activity, but rather introduced from the earliest stages of language learning. With the interest in social media among today's students, it would seem that having students learning a LCTL enter into contact with native speakers through CMC (computer mediated communication) would be the ideal vehicle for cultural exchange, as well as, of course, as providing valuable opportunities for real use of the target language. Opportunities for connecting are numerous, including such services as the tandem network, the Mixxer, or MyLanguageExchange. Commercial language learning services such as LiveMocha or italki also offer such opportunities. The connections and exchanges possible through these services can also provide valuable oral language practice.

Important as well for the students' decision whether to continue with language study is a sense that they are progressing in their proficiency. One strategy for students to gain that confidence is to provide them the means to document their language abilities as they develop. A possible method to achieve that goal is through a language portfolio, as is done fairly widely today with the European Language Portfolio. One other possibility is to use some kind of formal proficiency assessment such as the OPI (oral proficiency interview) or its less comprehensive siblings the SOPI (simulated OPI) or MOPI (modified OPI). An interesting alternative to a full-fledged proficiency assessment is to create a linguistic profile based on the acquisition of particular linguistic structures important in the target language. A recent study outlines how

this could work for Russian (Long, Gor, & Jackson, 2012). The idea is to test whether the learner has mastered particular structures important to functional Russian such as verbs of motion or verbal prefixes. This may be easier to implement in a heavily inflected language like Russian, but it seems that something similar could be done in other languages as well. The advantage of this kind of assessment is that it could be easily implemented online and made available to individual students. Benchmarks could be established that demonstrate progress towards proficiency, a crucial motivating factor, particularly for students studying on their own. Somewhat similar, but much simpler, online assessments are available for Chinese through ChinesePod or for German from the Goethe-Institut. Results from such assessments could become part of the language learner profile.

OUTLOOK

On the face of it, technology use would not seem to depend on the particular language being taught or learned. If a particular technology tool or approach works for French shouldn't it work equally well for learners of Indonesian? In practice, however, there are a number of factors that differentiate the teaching, learning, and technology use of LCTLs. Culturally, a LCTL is likely to be less known and more distant from the learner's home base. The relationship between culture and language may be quite different as well. Learning Japanese links learners to a specific historical and geographically defined, and largely homogeneous, culture; learning English is a much more culturally diverse experience, with a concomitant differentiation in how language is likely to be taught. For CTLs there are excellent textbooks with a host of ancillary materials, which include multimedia, cultural information, and practice exercises. Depending on the specific language this is less often the case for LCTL. It's likely that basic grammar manuals are available, but more engaging, culturally relevant, and up-to-date materials may be harder to find, making it important for learners to know about online resources and how to use them. Increasingly students are looking to use their mobile devices for language learning and this is certainly a direction that includes LCTLs. There are a number of apps that have been created for LCTL learning, such as those from the Defense Language Institute. These tend to be basic language guides or geared toward specific goals (military deployment). The Mansfield Center at the University of Montana has been creating similar apps for LCTL, for example, Practical Pashto. It would be wonderful to see apps and tools developed that would allow and encourage intermediate and advanced stage LCTL learners to interact profitably with authentic language and culture materials. If we are teaching language as a building block for a fuller life, then CALL applications should be available in formats that go beyond the educational setting, and provide opportunities for lifelong language learning and maintenance.

From that perspective, I would hope that we see the development of more sophisticated mobile CALL apps. It also makes sense to take advantage of the widespread penetration of smart phones (at least in many countries) to have their excellent audio and video capabilities be incorporated into CALL applications. Students likely are already using their phones for taking videos and know how to upload them to their computers. It's not a large leap to having students create video or audio blogs as part of language learning assignments. The looming ubiquity of smart phones makes even recent surveys asking if LCTL students are technologically ready for online language learning somewhat outdated (Winke, Goerther, & Amuzie, 2010). It's increasingly a mute point whether students have attached microphones or know how to use a WebCam, as their likely device of choice for audio and video will be a phone or tablet. Encouraging students to use their personal devices in this way has the added benefit of providing a ready means to engage in multimedia blogging when studying abroad.

The integration of technology into language learning and teaching might seem to have reached such widespread use that no arguments need to be made in its favor, with the challenge being to figure out which of the many technology options are most helpful to student learning. Yet there are still voices which, while acknowledging some role for technology, do not see it as an integral aspect of current language pedagogy. In a recent "state-of-the-art" article on materials development for language

instruction, for example, half a page of a 36-page article is devoted to technology use in language learning; none of the eight "innovative" projects in language materials development discussed involve technology (Tomlinson, 2012). The article focuses primarily on resources for teaching English, for which non-electronic materials are abundant. Even though traditional print media for CTL are plentiful, we are doing a disservice to our students in any language by not including online resources, tools, and services in setting out options and opportunities for language learning. If we don't focus on finding ways for language learning to be part of what has become an essential thread of our students' lives today, we are unlikely to be successful in positioning our students for success in a multilingual, multicultural world in which language maintenance and language learning aptitude have become so important. It is even more important for LCTL students to have their instructors from the very beginning incorporate technology in a way that makes it clear that this knowledge and these skills are essential to learning the target language.

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RESOURCE LIST

LCTL Resources and Information

- National Online LCTL Teacher Training Initiative
- STARTALK
- The Center for Advanced Research on Language Acquisition (CARLA) : Less Commonly Taught Languages
- GLOSS Global Language Online Support System
- UCLA Language Materials Project
- LangMedia: CultureTalk
- The Language Flagship
- The Flagship Media Library
- Critical Language Scholarship Program

- The Mixxer - a free educational website for language exchanges via Skype
- NFLRC - National Foreign Language Resource Center
- UCLA Language Materials Project: Links
- CAPL: Culturally Authentic Pictorial Lexicon
- Foreign Language Resource Centers
- Curricular Models for University African Language Programs

Self-Instructional Language Programs

- NASILP National Association of Self-Instructional Language Programs
- Critical Languages Program The University of Arizona
- Less Commonly Taught Languages Center University of Pittsburgh
- Self-Instructional Language Program Vassar College
- HWS: Self-Instructional Language Program
- Five College Center for the Study of World Languages
- Less Commonly Taught Languages Michigan
- Eleven Language Programs Face Uncertain Future | The Cornell Daily Sun
- Tongue Tied: How Budget Cuts to International Education Will Hurt the U.S. | TIME.com

CALL software and commercial products

- Critical Languages Series
- Arabic Encounters
- Headstart2
- Verbling
- Rosetta Stone
- Tell me more
- A Review of Living Language and Rocket Languages - App Smart | NYTimes.com
- The United States Army HeadStart2 Program
- Assimil

Writing Systems, Encoding, and Fonts

- What to study after Heisig - Chinese Characters - Chinese-forums.com
- All Japanese All The Time Dot Com: How to learn Japanese. On your own, having fun and to fluency
- Mandarin Chinese after ~3-4 months using Assimil - YouTube
- The Definitive Guide to Web Character Encoding - SitePoint
- Virtual Keyboard Online - Type in your language, anywhere!!!
- Welcome to Computers and Writing Systems

- Google Web Fonts
- Using SIL Fonts on Web Pages
- UIME
- Google lets you translate non-Roman languages
- CSS Fonts Module Level 3
- WOFF File Format 1.0 Submission Request to W3C
- Web Open Font Format for Firefox
- Kanji learning: Strategies, Motivation control and self-regulation. | Heath Rose - Academia.edu
- SILK | Strategies for Learning Kanji

Vocabulary Building, Annotating, and Language Corpora

- David Lee's Corpus-based Linguistics LINKS
- WebCorp: The Web as Corpus
- Sketch Engine: SketchEngine
- Concordance: software for concordancing and text analysis
- Concordance software: MonoConc and ParaConc
- TextSTAT
- Wordsmith
- AntConc
- redhotwords.com Info on FLAn, the Foreign Language Annotator
- Annotext
- Gloss Maker