Language Learning in an Era of Ubiquitous Computing: Pedagogy, Students, and Teachers

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Abstract
As the Internet has matured we find ourselves immersed in a multiplicity of content, communities and communication tools. These developments offer new possibilities and challenge us to reflect upon our language teaching pedagogy. Many technologies have found their way into ubiquitous use in our daily lives, yet they are often overlooked, or even avoided, in the classroom. Maintaining a focus upon the role of teachers and students, the presenter explores how we might proceed to rethink pedagogy in an era of ubiquitous computing.

This presentation was intended to provide perspective on the wealth of digital technologies and their influence upon language, as well as their potential for use in language teaching and learning. The emergence of digital media, collaborative tools and social networking has resulted in extensive and largely unexplored potential for teaching the English language. One goal of this talk was to raise awareness of these trends. This talk began by demonstrating how various technologies offer opportunities for us to represent and reflect upon language and language use in new ways.

I argue that teachers should learn to exploit the potential that technology offers us to represent language in varied ways. It is likely that these are not familiar or obvious to many language teachers. Students are faced with a growing diversity of symbols and symbolic use of language in technological contexts. Many of these incorporate cultural or conceptual information that represent a form of contemporary linguistic literacy.

One example of this emerging representation is word clouds. Word clouds present textual information in varied ways, often in a manner more consistent with mapping design. Wordle (http://wordle.net) can be used to construct such word clouds from an uploaded text, website, blog, or other feed. Prominence within this type of word cloud is based upon frequency of word use. Thus, the largest words are most frequent while the least frequent are smallest. This juxtaposition, along with the variety of vocabulary, can provide a preview of a text. A sample of this word cloud technology, utilizing the 2012 Michigan TESOL conference program, can be seen in Figure 1.
This word cloud could serve as a pre-reading resource. We can see that Schnieder, Fetzer, paper, workshop, and language are the most frequent words. If we are not sure why this is the case, we could be asked to predict the role of these words in the text. Of course, there are numerous other ways that we could incorporate this kind of material. I anticipate that we will see teachers sharing more pedagogical practices for these kinds of tools. Some recent investigation has explored the potential for Wordle use in language teaching (Baralt, Pennestri, & Selvandin, 2011). While this word cloud can be used to represent text in a cloud, we can use other tools to construct textual representation of aggregated information on individuals as well.

Even language about each of us as individuals is represented on the Internet in varied ways. The Personas Project (http://personas.media.mit.edu/) is an art installation by Aaron Zinman that illustrates how the Internet sees you. As information is gathered from across the Web it is categorized and a summary of information is presented. These summaries are limited to three to five lines of text. They are presented in a manner that allows the reader to keep pace; thus, students can work on reading speed while they gather summary or introductory information about a topic. Figure 2 provides an example of what Personas looks like as it is processing.
When the aggregation is complete the software presents a final profile of categorized sources. This can be seen in Figure 3.

This visual representation of aggregated language could be used in the classroom as a prompt for a variety of activities. Perhaps students are working in groups conducting a webquest type activity about a famous person. By using the Personas output as a source they may identify less well-known cultural details or facts about the individual in question. This could be followed up by further investigation.

These are just two examples of the ways that we can use technology to re-conceptualize language and help students make sense of language, as well as the symbolic representations associated with its use. I also discussed the need to recognize the potential for incorporating social networking in the language classroom. Social networking can help us provide students with opportunities to collaboratively construct language and knowledge as they interact. In an attempt to introduce some ways of thinking about this topic, I discussed the variety of perspectives on the influence that social networking and other emerging technologies will have upon our language use and societal behaviors. It is undeniable that social media and technology are altering our use of language. I argue that these contexts provide us with more opportunities, and more varied potential, for using language. These are emerging realities that we ought to attempt to bring to the classroom. Unfortunately, there is much evidence that even teachers who use these tools in their daily personal lives do not often transfer them to their teaching. I
suggest that whether you are inclined to text rather than speak or refuse to communicate at all through computer mediated means, consider the potential it may afford your students who are immersed in a world of social media.

Computer assisted language learning (CALL) is a relatively young field with a somewhat checkered past. Many early expectations of CALL were exceedingly grandiose. For a long time we have faced unreasonable expectations that technology would serve as some sort of magic bullet for language learning. When outcomes have not been miraculous the language learning community expressed dissatisfaction. Rather than recognizing the wealth of opportunities and potential for constructing authentic language learning contexts, naysayers argue that little has been accomplished in spite of the financial resources squandered on technology.

I suggested in this talk that our acceptance of and willingness to use technology in language learning is largely influenced by our attitude toward the larger societal use of computer-mediated tools. Many observers have noted that there are often three general perspectives toward new technologies, including early adopters (techies), potential later adopters (cautious techies), and non-adopters (non-techies). Recently there has been much popular attention to the most critical of these perspectives. In order to illustrate the nature of these larger societal perspectives, I selected a few recent books from the New York Times Bestseller list.

Numerous recent major bestselling books have presented a variety of perspectives about the influence that technological change is currently having upon society. The best selling rely upon a variety of dystopian concerns. The Net Delusion argues that the world’s totalitarian states are not vulnerable to the social networking threats facing them, but are in fact likely to rely on the crowd sourced information to further impose restrictions upon those engaged in such activity (Morozov, 2011). This dark vision of social networking is based upon activities in Iran prior to the Arab Spring activities that appear to contradict these observations. Like many of these dark perspectives, there is a valid concern raised that we need to be aware of, but I would argue that this kind of realization is inherent in the kind of critical awareness that we ought to have as members of society. The technological context magnifies our access to resources as well as our accessibility to manipulative and deceptive practices.

In The Shallows, Carr (2010) argues that gathering information digitally rather than from printed books is making us less intelligent and less able to think critically. The author fails to acknowledge that his claims echo those made by opponents of the printing press when observers claimed we would no longer need to memorize important information because we could just have it written down. The argument is centered upon a bibliophilic obsession that the printed and bound book is somehow the ultimate means of delivering information. Since we have only used books to serve this purpose on a large scale for a very brief portion of human history, it is hard to imagine us not finding a new method of distribution. I believe the epistemological assumptions tied to this agenda are inherently linked to a teacher-centered, book-based form of pedagogy. This is not necessarily wrong, but it certainly does not address the varied learning styles of students and the potential for knowledge to be co-constructed in meaningful and engaging activities that take place outside of book-based learning. The kind of learning that we cannot help but see is taking place all around us in our emerging collaborative digital society.
In *The Googlization of Everything: And Why We Should Worry* (Vaidhyanathan, 2011), the author warns against the increasing control that Google has over all forms of digital information, including much of our personal information. This topic has received a great deal of attention recently with the increasing number of resources that Google offers its users completely free, with the one caveat being that they have an opportunity to use certain information for marketing and other purposes. These tools have become so popular that there are currently 350 million Google account holders today. This does not take into account all those additional users who do not have an official Gmail account, but use a number of Google tools (such as Search, Maps, etc.). I am not alone in concluding that all of the useful resources offered by Google far outweigh any concerns I have. However, this should be tempered with the understanding that, as engaged members of these digital communities, we ought to exercise cautious and critical practice.

The final popular recent book that paints a bleak picture is *Alone Together* (Turkle, 2011). Turkle supports her discussion with years of research and illustrates a world in which we are all further isolated from one another due to our increased expectations from our technology. Turkle’s argument deserves a bit more attention than the others. It presents us with a perspective that can actually influence our technology use in our own institutions in order to avoid the society described in this book. While its grim views mirror those of Tocqueville’s prediction of isolated and alienated modern American life, a few years ago Warschauer (2003) discussed the Web as an almost magical integration of the meeting hall and newspaper, the two necessary components of a democratic society, according to Tocqueville. In fact our understanding of the influence that these technologies will have on society is largely based upon our own assumptions about humanity. Throughout human history technologies have been evolving alongside us. And, there is evidence that with each technological innovation, there have been individuals eager to immediately embrace emerging tools while others are more reluctant and focus upon the threat these new tools present to society. I think it is most prudent to seek a position somewhere between these extremes, focusing on a critical awareness of the threats and potential.

If we believe that books stacked in orderly rows represent the best we can offer for the organization and distribution of knowledge, then why not keep students confined to orderly rows as well? While many have recognized the potential for incorporating constructivist and collaborative activities in the language classroom, our longer tradition is based on extremely teacher-centric distribution of knowledge. The language labs that we developed in the heyday of the audio-lingual method (ALM), and have only recently altered to be digital replicas in the western world, are still commonplace in much of the world.

While I tend to lean toward optimism when it comes to technology and humans, I consider myself a critical optimist. I suggested that many early promises of CALL were met with suspicion. Due to a small number of commercial attempts to sell revolutionary technology-based solutions, many in the field failed to notice the numerous CALL professionals who were working toward realistic and promising objectives. I argue that much like an over-prescribing medical industry, this is unlikely to efficiently and accurately address institutional or individual teacher and student needs. Rather, what we need is to develop an understanding of how to diagnose our maladies and opportunities. We need teacher preparation that is specifically focused on CALL knowledge, skills,
integration, implementation and decision making. In order to emphasize the importance of this type of preparation I shared a portion of a popular YouTube video titled Shit Happens that was created with information gathered from the Economist Magazine (http://www.youtube.com/watch?v=TZjRJeWfVtY). This video illustrates the technological realities of the world our students live in today, including that the most sought after jobs today did not exist ten years ago and that the continuing technological development that we are experiencing today demands that they embrace strategies of digital lifelong learning in order to remain competitive.

I sought to demonstrate the ubiquitous nature of technology in our personal lives today by sharing a story about a recent trip I had made from southeastern Ohio to the Black Hills of South Dakota. While my wife drove, I was able to stay connected across rural two-lane highways in Nebraska and South Dakota. These places are about as remote as we can get in this country. Yet, often we have difficulties getting an Internet connection on some parts of our campuses. This is an unacceptable situation and like many CALL related issues, it can be remedied by striving for institutionally integrated and supported use of CALL across a curriculum. Such integration requires participation among administrators, instructors, students and other stakeholders. I would also argue that such integration, when coupled with pedagogy and technologies that support collaborative construction of knowledge, can overcome many of the restrictions inherent in a teacher-centered learning environment.

This teacher–centeredness is well aligned with many of these dystopic views of technology in that they maintain the hierarchical status quo in education: students in orderly rows, books on shelves, and teachers in control of each and every interaction that takes place in the classroom. In spite of the vast amount of attention paid to communicative language learning, we still often find ourselves in a top down reality. However, there are many pedagogical practices and technological resources that offer us new ways to reflect upon this reality. One example is the TESOL Technology Standards (Healey, Hanson-Smith, Hubbard, Ioannou-Georgiou, Kessler, & Waire, 2011). The TESOL Technology Standards provide benchmark expectations for language teachers and learners in all language teaching contexts. With illustrative vignettes across a range of technology access situations, this book can help guide effective technology–enhanced classroom practice. Many of the practices outlined in this book can be supported with the following examples.

I provided a number of examples of students learning in different ways: incidentally, casually, and in communities of practice. While some technologies may seem to isolate students (such as iPods), they have great potential to assist students in collaborative learning when managed properly. In fact, students are quite likely to be engaged with others through social media or other means of maintaining connections to possible collaborators or interlocutors when the topics or tasks are designed in a way that is compelling, authentic and meaningful. Some examples that were shared included FaceTime, which allows individuals to benefit from all the flexibility of mobile technology while engaging in real time high quality video conferencing. iChat offers another way to freely engage in video, text and audio exchanges with others. The potential for this technology became evident to the author a few years ago. Thanks to a highly dedicated, creative, and perhaps most importantly, well-prepared team of CALL colleagues, we were able to replace the functionality of our traditional (and exceptionally
expensive) audio lab with freely distributed software. Moreover, the introduction of this digital alternative provided us with more options and control over the exchanges. Students were able to engage in synchronous exchanges from anywhere in the world. The rise of web 2.0 social media has returned the excitement of the collaboratively constructed democratic web. The Arab Spring of 2011 served as a significant milestone in the recognition of social media in our future social lives, what Warschauer (2009) referred to as the “Digital town hall.”

The recognition of these emerging technologies, along with the pedagogical practices that are likely to accompany them, has guided some toward new ways of thinking about the relationship between the two. Kessler, Bikowski, and Boggs (2012) suggest that pedagogical practice, collaborative tools and collaborative use are in an intertwined state of change. This can be seen in Figure 4.

Figure 4. A framework for the co-evolution of collaborative autonomous pedagogy.

This figure illustrates the co-evolution of pedagogy, tool and practice. While we have long discussed the changing nature of tools, we have often continued to use these new tools in traditional pedagogical practices. The authors argue that this may not only be inappropriate, it also may not harness the potential of the tool. Further, this shared evolution offers much potential for the language teacher who is prepared and aware. The relationship between the three can also be seen to support what Kessler and Bikowski (2010) referred to as “collaborative autonomous language learning” (p. 54). Collaborative practices are becoming increasingly incorporated into language learning as well as other aspects of society. I suggest that this increased collaboration has allowed us to do some remarkable things. Some examples include Wikipedia and recent humanitarian relief efforts. Wikipedia is a collaboratively constructed alternative to conventional encyclopedias. It is relied upon by millions of users for basic information about virtually any topic. While some have expressed concerns about using Wikipedia as an academic source, this is generally true of any encyclopedia. Further, a number of information science studies have found that Wikipedia is at least as reliable as its traditional counterparts (Kittur & Kraut, 2008). Another example includes the worldwide volunteer response to the earthquake in Port Au Prince, Haiti. Online volunteers collaboratively constructed maps for on-the-ground volunteers to use in their rescue efforts.
On a related note, today we can see a visual comparison of the devastation of this event. A New York Times “Interactive Feature” allows visitors to interact with a map that compares the Haitian landscape currently as it is being rebuilt as well as before and after the devastation. Such information and interaction provide for enhanced understanding of events around the globe and help to better empathize with people from whom we might otherwise feel removed. Such tools may encourage more people to get involved in international aid projects. They might also encourage or assist them to learn a new language.

While I am generally inclined to promote the use of more general technology tools that teachers can adopt and adapt for their teaching, there are occasionally commercial options worth mentioning. Livemocha (http://livemocha.com) is an exceptional commercial site that offers opportunities to participate in online exchanges with native speakers in engaging language learning opportunities. This program also incorporates authentic materials and tasks. This product is impressive in large part due to the participation of Dr. Carol Chapelle. The guidance of an informed teacher will certainly improve the effectiveness of any learning technology.

Virtual worlds, such as Second Life, have been in the periphery of education for some time. Developers have devoted years of their lives to synthetic immersive environments. Many have anticipated the benefits of such environments. There are a number of authentic language activities that creative teachers have constructed within Second Life. During the presentation I shared two examples of exchanges that demonstrate how these environments can provide an effective sense of context, including this example for medical school English (http://www.youtube.com/watch?v=TkuLAOzL0zU). Until recently we saw a spike in interest in the use of the commercial environment Second Life. However, participation in this environment has declined significantly in recent years. It is likely that we will see a resurgence of interest in virtual worlds, particularly using open source options. These non-commercial virtual environments can be constructed by users with minimal skills using tools that include OpenSim (http://opensimulator.org/), and RealXtend (http://realxtend.wordpress.com/). Further, some environments have been specifically designed for language learning, including Croquelandia (http://sites.google.com/site/croquelandia/).

The final category of tools includes those within the ever-increasing realm of Google. Many of the tools provided by Google have potential for use in language teaching. Google Voice allows teachers to disseminate and gather spoken information with students. These messages can be different for different groups of students, allowing information gap and jigsaw activities. Mailboxes can be available to different users so users can organize voicemail much like we have grown accustomed to organizing email with filters. One opportunity for language learning that this presents is the creation of groups and offering automated listening materials for students. Groups could follow up this information retrieval with an information gap activity requiring them to reconstruct the entirety of the information. Information could also be made available in a consecutive manner requiring students to perform some tasks between messages. Students can also leave messages for an instructor or other students. These voicemail messages are automatically transcribed, providing a preliminary means of assessment of oral proficiency. We can see an example of a Google Voice transcription in Figure 5.
Figure 5. Google Voice Transcriptions

Perhaps the most exciting feature of Google Voice is the nature of the transcription itself. The automated speech recognition (ASR) conations of Google Voice identify those words that are clearly understood in dark black, while those words that are very poorly understood are light gray. Words that fall between these two extremes are presented as dark gray. This presents opportunities to use this tool for preliminary speaking proficiency. ASR in other systems has also reached impressive heights. We should all be conscious of the developments as they overlap increasingly with the intentions of language learners and teachers.

Google Maps (and Google Earth) have also been used in a variety of instructional ways. We can learn to navigate new environments through existing maps. We can also immerse ourselves in 3D environments that are embedded within Google Maps and Google Earth. However, in the spirit of collaboration, what is most useful is the ability to construct our own maps or to contribute to those that already exist. Such contributions can include embedding images, video, 3D views, and various text and non-text symbols. An example of a customized Google Map can be seen in Figure 6.

Figure 6. Google Map for the Ohio University CALL Conference

This Google map provides information for the annual Ohio University CALL Conference. User-generated symbols provide a guide to lodging, dining, information, and evening entertainment. This map was shared partly to encourage members of Michigan TESOL to attend this free one day conference that took place on May 4th, 2012.
The final Google tool covered in this talk is Google Docs. Google Docs functions as a collaborative online alternative to an office suite such as Microsoft Office, including word processing, presentation, spreadsheet, and survey form tools. This word processing tool allows users to collaboratively construct documents simultaneously. In fact, users can see others typing in real time. Each participant is coded with a different color that is accompanied by their name so that users can identify their collaborators. This ability to write simultaneously is likely changing the very nature of writing, allowing writers to negotiate sentences, words and even individual characters as they are writing (Kessler, et al., 2012). An archive of each iteration of the document, automatically saved every 11 seconds, allows teachers and students the ability to revisit and review the writing process. This revision history also allows users to replace the current document with any previous version in the event that revisions have not resulted in improvement. This archive is also useful for researchers of language learning practices.

Teachers have been encouraged in this presentation to not be restricted in their thinking regardless of the current trends of technology, pedagogy and information. The evolutionary trajectory of collaborative, cloud-based interactions is unpredictable. Developers, programmers, designers and all others involved in the creation of new technologies can rarely predict how these open and flexible tools may be used. Language teachers have always had immense creativity and if focused upon the opportunities and prepared to understand how to adapt, adopt, integrate and complement digital technologies, they are certain to recognize new opportunities and potential for their individual teaching contexts.

Every human today is a potential participant in the grand collaborative digital redefinition of humanity. Quite strangely, any single person’s lack of engagement or lack of interest in these digital domains does not exclude them from the landscape. Our information is out there regardless of whether we consciously choose to participate. We ought to learn how to not only protect or manage our own identities in these digital domains, but also to engage within them to our benefit. We should all think of ourselves as hackers. While hacking used to have negative connotations associated with those who do digital vandalism or worse, today hackers are often people who have solutions. Hackers are people who can make technology work for them often in unexpected and interesting ways.

When Microsoft released the Kinect (http://www.xbox.com/en-US/kinect), it was designed to detect body movements for use with the Xbox for proprietary games. Users began to experiment with it connected directly to computers in a variety of ways that suited their own needs. Some recognized the potential for using it to detect sign language. Microsoft claimed that there would be no support for sign language due to downgraded cameras. Within a week of release those with the skills and interest in the open source community demonstrated their use of the Kinect for exactly this purpose (http://www.youtube.com/watch?v=qFH5rSzmgFE). Hackers created Facebook. Hackers used existing mapping software and combined it with social networking capabilities and were able to assist in the distribution of emergency services in the wake of the Haitian earthquake in 2010. In a matter of hours the streets of Port Au Prince were mapped out by online collaborative volunteers. We are living in a world that has been hacked, is being hacked as I write this, and will continue to be hacked. If we are active members of the online world we are all hackers.
Similarly, we should not restrict our awareness or observations to the most obvious forms of media such as text and speech. Images, videos and maps have long provided rich language learning material. Years ago I was the academic supervisor at an intensive English institute at the California State University - Sacramento. My main goal was to guide the other teachers in ways that they might be most creative and create a fun learning environment. We had physical photo albums filled with interesting images organized by theme or topic. These were useful in a variety of activities. Today’s digital photo albums, image sharing sites, and video exchange sites offer an ever-expanding collection of resources for language teachers.

In closing, I can only encourage teachers to strive to identify ways in which they can utilize technology to increase efficiency, improve feedback, or promote collaboration in their classrooms. I would also encourage you to share your thoughts on these practices with colleagues or seek assistance from them when it is helpful. By creating communities of practice you will likely develop a stronger sense of the potential of these technologies. You will also be more likely to recognize how these practices can be integrated in systematic ways across curricula.

Note: The Prezi of this talk can be found at http://prezi.com/-kixpzdip-li/

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