Second Language Acquisition: Implications of Web 2.0 and Beyond

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Introduction

It has become commonplace to observe students texting, using iPhones, iPads, smart phones, netbooks and other devices to communicate with their friends and classmates. Educators realize these mobile technologies "…can provide pedagogically useful functions in education, especially foreign language instruction" and as this technology continues to develop, "it affords second or foreign language learners and teachers ever greater opportunity to practice the target language" (Jee, 2010, p. 162).

Oral practice in the target language is not only more widely available through the use of technology; it may also be more authentic. Students are able to focus on English conversation skills and content with native speakers of the target language, regardless of their location, rather than repeatedly engaging in oral language drills and writing exercises. This interaction with native speakers via technology is particularly beneficial for students who do not have other language learners with which to practice or who are actively developing reading comprehension skills but are afraid to speak in the target language due to fear of not being understood. Shyness or embarrassment when practicing oral language skills is not uncommon, particularly among adolescent learners. An additional benefit of technology for foreign language learners is that the computer provides pronunciations and definitions over and over without becoming frustrated or making negative judgments about the learner's skill (Young, Wang, & Jang, 2010).

Along with oral language development, reading and writing skills are also enhanced through the use of technology. Interaction with native speakers where language learners successfully engage in authentic exchanges not only builds literacy competence but also increases confidence and motivation to continue making attempts to communicate (Wu, Yen, & Marek, 2011). Web 2.0 tools, as described in this paper, allow language learners to repeatedly engage with multiple native speakers in different contexts where they must make themselves understood in order to take part in collaborative projects and discussions.

The constructivist framework developed by Piaget (1886-1980) shows the value of collaborative learning that encourages learners to use their prior knowledge and experiences to construct new knowledge (Piaget & Inhelder, 2000). Technology and Web 2.0 tools are supportive of knowledge construction, immersion in a foreign language, and interactivity across sites. Through technology experiences, language learners are able to interact with others, confront virtual reality collaboratively, expand their knowledge, and establish personal communications (Shih & Yang, 2008). This concept of working with, and gaining knowledge from, a community of learners is also found in Vygotsky's (1986) sociolinguistic theory where cognitive development is enhanced through social interactions. The learning of language is both social and inter-

active in that oral language is learned through social interactions and reading and writing are learned through exposure and guidance from others literate in the target language. Shih and Yang, (2008) suggest the "most effective way to learn a language is to participate in a community in which the target language is used to communicate in a real context" (p. 56). Technology makes collaborations between communities of native speakers and language learners available in an authentic social context.

Among these technologies, Mobile Assisted Language Learning or MALL technologies and educational technology in general, capable of accessing the World Wide Web, have opened up new avenues of learning for foreign language students. In fact, Newstead (2007) states,

> Much of recent research into second-language acquisition (SLA) has moved away from traditional, behaviourist theories to focus on the importance of input and interaction in the target language, the idea being that interaction and immersion simulate the environment in which native languages are learnt. (¶1)

All this is made possible, to a large extent, by Web 2.0 and the technologies that have emerged since its inception.

What is Web 2.0?

One of the primary ways the abovementioned 'interaction and immersion' is facilitated in language classes today is through the use of interactive web-based technologies such as Web 2.0 tools. One might first ask though, "What exactly *is* Web 2.0?" Briefly, Web 2.0 is an online computing platform. This term, which is now a popular buzzword, was coined by Tim O'Reilly at the O'Reilly Media Web 2.0 technology conference in 2004. The idea of Web 2.0 has completely changed our thinking about Internet usage and teaching modalities supported by the Internet.

For decades, using the primarily passive Internet consisted of *one-way* searching for and retrieving of information from the Web—now retroactively referred to as "Web 1.0." Web 1.0 relied on installed software. Today, Web 2.0, which uses a web browser rather than installed software, has given a new meaning to Internet searching and use. Web 2.0 tools have shifted Internet users from passive recipients into active *contributors* (Wolcott, 2007). Any Web 2.0 user can share and contribute their thoughts/ideas with online communities by utilizing web-based software services and authoring tools that encourage users to become more involved in the creation and manipulation of data (*Web 1.0 vs. Web 2.0*, 2007). As Consalvo (2005) suggests "Individuals and groups are the constitutive elements of Internet activity, for whom and by whom the Internet exists. Signifying the 'user' reminds us that human beings are active agents, and the 'use' is never decontextualized, passive, or anonymous" (p. 9). Unlike before, Web 2.0 users today take over ownership of communications and information exchange. In the educational setting, research by Brown and Bussert (2007) found that:

> Student learning will increase due to personal engagement, use of preferred learning-styles, and application to daily life. Indeed, observations confirm that students were more engaged in the experimental lesson plan than in the traditional one. Although the findings of this study do not show that more learning occurred in the experimental group than in the control group, the researchers hypothesize that follow-up data might show increased

> learning, retention, and transfer of knowledge because 2.0 technologies bring relevance to the classroom by both relating to daily life and matching the preferred learning styles of today's students. (p. 3)

Historical Overview of the Internet

The Internet as we know it began in 1969 as the ARPANet or Advanced Research Projects Agency Network, a Department of Defense (DoD) research project with two goals: 1) to experiment with and develop a reliable networking environment; and 2) to link military research contractors (Stair & Reynolds, 2010). UCLA and Stanford were the first two nodes (computer connections) on this fledgling network followed by the University of Utah. At that time, many military research contractors were universities doing DoD-funded defense research, which is why academicians were among the first users of this network.

The ARPANet began to evolve into the Internet in the late 1980s. Tim Berners-Lee at the nuclear physics laboratory CERN located on the Swiss-French border, developed CERN's internal document management system to link company documents in 1989. Berners-Lee's system, applied to the Internet, became what is now known as the World Wide Web (*Tim Berners-Lee*, n.d.). A few years later, Netscape™, the developer of the original web browser, made its Initial Public Offering in August of 1995 and the Internet went from invisible to everywhere – Web 1.0 was born. Compared to the text-based ARPANet, the Web was visual, and very user-friendly. General users were able to search for information and read or download it. *Shopping cart* applications were developed that allowed purchases on websites instead of via mail-order catalogs – *e-commerce* had arrived (Getting, 2007).

The World Wide Web

While the terms "Internet" and "World Wide Web" are often used interchangeably, they are not the same. The Internet is hardware and wire; a vast global network of unrelated but interconnected networks. The World Wide Web (WWW) on the other hand, is software. It is an information sharing model based on HTTP or *hypertext transport protocol*, a communications standard which defines how messages are formatted and transmitted over the Internet. Unlike the original, mostly UNIX-based Internet, the WWW provided a user-friendly graphical interface, accessible to the average individual. By 1992, only two years after the development of the HTTP-based WWW, the number of nodes jumped to more than a million computers (Toothman, 2009).

By 2005, the total number of web pages worldwide exceeded 600 billion (Kelly, 2005). By then, much of the new Internet content was being produced by *users*, not corporate interests. This was the beginning of Web 2.0 – the "Architecture of Participation" had also arrived (O'Reilly, 2005). One of the core ideas surrounding this architecture of participation is that the more people who contribute, the better the content gets. Today, the Web is used *in place of* the desktop as the dominant platform. That is, users only need a web browser (not an operating system) to utilize a web application e.g., Google Docs. Some of the most prevalent Web 2.0 tools currently in use today are delineated in Table 1.

Table 1

Web 2.0 Tools Currently in Use

AJAX	Asynchronous JavaScript And XML—web development techniques used for creating interactive or "rich" Internet applications rather than static Web pages; this technology allows dragging elements across the page
Atom	a syndication format, or publishing protocol for Web feeds; like RSS (see below) but in a newer format
Blog	short for 'weblog'—a web site that enables anyone who accesses it to add commentary, graphics, or other content via simple self-publishing tools
HTML	Hypertext Markup Language – the standard page description language for the creation of Web pages; a "tagging" language that formats the page and tells where images, sound, and other elements should be inserted
Mashup	a web application that combines data from more than one source into a single integrated tool e.g., Google Maps
Podcast	a digital audio file distributed via the Web for playback on portable media players, smart phones, and PCs
RSS	Rich Site Summary or Really Simple Syndication – a family of Web feed protocols (formats) that automatically deliver selected content to the user's desktop
Social Media	the use of electronic and Internet tools to share information/experiences, allow group interaction and collaboration—examples include MySpace, Facebook, Twitter, Flickr (personal); LinkedIn (professional); Second Life (virtual world)
Tags	short for metatag—a non-hierarchical, user-generated keyword assigned to a piece of information allowing it to be found more easily by a search engine
Wiki	a dynamic Web document designed to enable anyone who accesses it to contribute to and *modify or edit* the content; which distinguishes it from a blog and makes it an excellent tool for group projects
XML	eXtensible Markup Language—a mark-up language specification that is stricter than HTML which allows users to define their own elements; preserves the formatting and structure of a digital document regardless of what application is used to read it

(Kuchinskas, 2007; Stair & Reynolds, 2010; Web 2.0 Reference Center, 2009)

Language laboratories, developed in the 1970s under the influence of the Audiolingual Method, were superseded several decades later by computer-assisted language learning (CALL) work stations (Gündüz, 2005). And, as mentioned, the World Wide Web was developed shortly thereafter.

From this introduction and the well-documented and staggering growth of the Internet and WWW, it is clear that the use of web-based instructional technology tools will continue to proliferate. Their use in foreign language or English as a Second/Foreign Language (ESL/EFL) instruction is no exception. Simon (2008) tells us "… many Web 2.0 applications are powerful socialization and communication tools. As such, they will have an incredible educational potential for foreign language instruction" (¶3.)

What follows is a discussion of several of the most widely used Web 2.0 tools by K-12 foreign language teachers, ESL/EFL teachers and higher education language departments. These tools continue to influence how today's educators perceive, define, and teach second language acquisition.

Web 2.0 Tools Widely Used in Education

Blogs

Blogs, short for weblogs, have become widely used as an instructional technology, as evidenced by over 400,000 educational blogs hosted by *edublogs.org* alone (Downes, 2009). Blogs can foster the development of learning communities, give students a world-wide audience, and provide opportunities for language teachers to engage students in authentic ways. In addition, blogs can increase student motivation to produce quality work, give students' ownership of their learning, increase digital literacy, and encourage the development of skills to critically evaluate online resources. These are just a few of the very popular Web 2.0 tool's educational applications (Downes, 2009).

Blogs also provide students with a flexible platform to share thoughts and ideas within the learning environment as they explore new concepts and topics in the classroom and continue discussions outside of class. For language learners, Pinkman (2005), in a study of Japanese students learning English, found that blogs increased learner motivation and interest because of the interaction with and feedback from classmates and teachers created by the blogging environment. There was also some indication in the research that blogging improved reading and writing skills.

Collier (2007) states "There is a fallacy that kids aren't reading and writing anymore. They are, but they are just reading and writing differently than what we've traditionally done in schools" (p. 8). Technology in general and Web 2.0 in particular, have created a different format for communication that has changed some of the literacy rules. The reading and writing activities are still happening. Sometimes however, these activities may not happen in the traditional ways we are all familiar with. The *digital natives*, the generation that grew up *with* digital technology (Prensky, 2001a), find their comfort zone in expressing themselves *virtually*. In addition to being a reading and writing activity, blogs engage students in collaborative learning and communication. Leslie and Murphy's (2008) findings state that blogging

> …relates to the social and collaborative construction of knowledge and suggests that an additional purpose for blogging may be to support, contribute to, and provide opportunities or means for collaborative, cooperative and community-centered sharing, building, contributing, outlining and asserting knowledge, ideas, opinions, different viewpoints, interpretations, perspectives and common goals. (p. 4-5)

Campbell (2003) delineated three specific types of blogs that support learning in an English as a Second Language (ESL) classroom:

1. **Tutor** blog: run by a tutor or instructor for the learners which provides daily reading practice; online verbal exchange using comments; provides class information and documents such as a syllabus; and a resource of links for self-study.
2. **Learner** blog: run by individual students which support writing practice; develop a sense of ownership, encourage further research; promote personal expression; and further the exchange of ideas.

3. **Class** blog: run collaboratively by the entire class where students can post messages; participate in project-based language learning; access an international classroom language exchange; and develop a publishing group. (¶3-12)

Wikis

Wiki is the Hawaiian word meaning "fast" or "quick." One of the primary differences between a wiki and a blog is that while bloggers can contribute to a blog, they cannot edit the author's (the blog owner's) or a contributor's postings. Contributors to a wiki, on the other hand, *can* edit any other contributors' content.

Unlike a website, a wiki is not designed for web users who just want to receive information; rather wikis are an effective Web 2.0 tool for *collaboration*. Peterson (2009), in his study on cooperative learning states "wiki technology made it a natural fit for collaborative student projects. Students writing projects also benefitted from being able to see each others' work, and from having an efficient way to bring additional Internet resources into their projects" (p. 27). Wikis have the capacity to allow multiple users to contribute to and edit a file. This tool can be used not only in a writing class but any class that requires students to work together and contribute to a group assignment or project. This is especially useful in a language course. Jee (2010) found wikis to be "a very good tool for collaboration or collaborative writing in a foreign language classroom" (p. 167).

While research indicates that the time students spend on a collaborative task is equivalent to the time spent on an individual one, the learning outcomes for collaborative projects are superior (Guzdial & Carroll, 2002). Wikis help to shift the responsibility for learning to the students and engage them by providing more interaction among their peers. Duffy and Bruns (2006) delineate a number of collaborative educational uses of wikis that include research project development, creating summaries, brainstorming, and building annotated bibliographies. Wikis can also be used as a forum for group authoring and as a presentation tool where students can revise content. Teachers can use wikis to share teaching practices, facilitate versioning and documentation, publish course resources, create concept maps, and as an editing resource.

It is possible the technology in-and-of-itself may play a role. For example, research by Schuetze (2007) investigating the use of wikis in first-year German as a second language class found "the advantage of using a wiki is that students expressed interest using this technology thereby confirming other studies … that showed a motivational factor using CMC [computer-mediated communication] tools" (p. 103). This study did not find a significant correlation between wikis and the learning of grammatical structures (the focus of the study) but did indicate the positive benefits of wikis revolved around, as mentioned, "benefits of motivation and participation" (p. 102).

Wikis also allow autonomy among students (with or without instructor intervention) as found in a study by Kessler (2009) about non-native speakers of English and EFL teacher candidates. "One obvious benefit of technology for language learning is the creation of opportunities for students to use language in authentic contexts. Such activities encourage students to strive for autonomy in the target language" (p. 79). Thus, this Web 2.0 tool will very likely continue to increase in popularity as a flexible, collaborative educational technology for years to come and continue to redefine our current ideas regarding literacy and language acquisition.

Threaded Discussions

While blogs and wikis have enjoyed rapid acceptance and popularity among foreign language teachers, one must keep in mind that educators have had threaded discussion forums available as an Internet-based communication tool for at least 20 years (Cameron & Anderson, 2006). These discussion boards are integral to all course management systems (CMS) in use today such as Blackboard™, Desire2Learn® and Moodle, and are an asynchronous communication tool that allows threaded discussions to take place. There are also 'free-standing' threaded discussion tools that exist outside the context of a CMS, such as Webboard™ and threadbuddy.

The primary difference between a blog and a threaded discussion is that a threaded discussion emphasizes a type of post-response relationship that exists within a top-down tree structure similar to a directory tree. It is very easy to follow the continuity of the discussion in this format. A blog on the other hand, is in reverse chronological order, with the most recent postings always at the top. This can sometimes become problematic when trying to follow the discussion in a blog if a contributor replies to a comment a substantial time period after the comment they are referring to was originally posted.

An advantage of using threaded discussions in language instruction, as delineated by Rizopoulos and McCarthy (2008), is that these forums

> …give English as a Second Language (ESL) learners an opportunity to participate in conversations that they may not have felt comfortable contributing to in class during face-to-face interactions. ESL students can be paired up with someone in the class with the same language background, and they could collaborate to create the responses in both their first language and in English. (p. 377)

A two-semester study by Lee (2009) suggests three necessary elements are needed in order to "…maximize the potential benefits of discussion board for language teacher training: (1) use of carefully designed tasks that engage critical thinking, (2) scaffolding strategies for monitoring group discussions, and (3) inclusion of online etiquette to avoid confusion and reduce personal conflicts" (p. 212).

Which of the Web 2.0 tools discussed thus far is better? While many consider asynchronous discussions the 'heart' of an online course, there are advantages and disadvantages to each of them. Cameron & Anderson (2006) suggest that "…it may be time to move past the debate – each have specific strengths" (p. 47). Often, it simply comes down to which tool the instructor is most familiar with and/or comfortable using. Potential adopters of this (or any) technology for foreign language instruction should choose the tool(s) that best supports, pedagogically, their learning objectives.

Skype

The previous Web 2.0 tools are geared toward activities for reading and writing. Skype adds the video and audio components to the communication process, which helps accommodate different learning styles in the classroom, as well as overcome geographic distance for real-time language acquisition activities. The only requirements are a PC with an Internet connection, speakers, and a microphone.

What is Skype? Skype is a software-based Internet telephone and video phone service for making computer-to-computer voice calls over the Internet to anyone who is also using Skype, regardless of their location (Pcmag.com Encyclopedia, ¶1),. Once the user accounts are set up, then P2P online texting, voice, and video communication is possible.

Skype is Voice over Internet Protocol (VoIP) software that can be downloaded for free. VoIP is a collection of technologies and communications protocols that enable users to make voice and/or video calls by digitizing an analog signal and sending the data as IP packets using the Internet rather than using the traditional telephone circuits (Stair & Reynolds, 2010). As mentioned earlier, Skype not only provides audio, it also has a video feature. Users can hear and *see* each other when both a webcam and a microphone are used. While first-hand, authentic language leaning sometimes is limited by physical distance, travel expenses, time restrictions, and so forth, the technology that Skype provides overcomes these obstacles and makes these learning activities possible. In a foreign language classroom, students can benefit greatly from using this tool. Students can talk to and see native speakers in real-time and can even have long distance language and culture collaborative projects with another classroom anywhere in the world, at no cost. Skype truly can create a global village for foreign language acquisition. The benefits of Skype's synchronous, immersive language capabilities are obvious.

Web 3.0 is on the Horizon

We have seen how Web 2.0 has affected communication, information sharing and interoperability for everyone, including those of us in education and, particularly, language education. What is the next phase? When will Web 3.0 arrive? Many experts believe it already has.

Currently there are thousands of web services – usually in the form of an Application Programming Interface or API—that already exist (Getting, 2007). For example, Flickr provides a web service whereby developers can program the interface to search for images, and educators can use it to teach content (Bussert, Brown, & Armstrong, 2008). In the context of *Web 3.0* these web services "…take center stage. By combining a semantic markup and web services, Web 3.0 promises the potential for applications that can speak to each other directly, and for broader searches for information through simpler interfaces" (Getting, 2007, p. 3). Some of the functionality already associated with Web 3.0 is delineated in Table 2.

Table 2

Web 3.0 Functionality

Semantic Web	An extension of the current web; the abstract representation of data on the World Wide Web, based on the RDF[1], OWL[2], and other standards
Media-Centric Web	An extension of the current web with 3-D capabilities where users can find media (graphics and sound) using other media; imagine a Google search using an image instead of a keyword or phrase

[1] Resource Description Framework – an infrastructure that enables the encoding, exchange and reuse of structured metadata (tags). RDF is an application of XML that imposes needed structural constraints to provide unambiguous methods of expressing semantics (Miller, 1998, p. 1).

[2] Web Ontology Language – a high level, abstract syntax written in XML, built on top of RDF that is designed for processing information on the web to be interpreted by computers not read by people (*Introduction to OWL*).

3D Web	The ability to view a true three-dimensional representation of any object or location e.g., Google Earth™, virtual reality, real estate properties
Pervasive Web	Access to the web by devices other than just PCs: PDAs, smart phones, home appliances, vehicles, clothing (embedded RFID[13] device), etc.

Most everyone has seen and been amazed by Web 3.0 tools such as Google Earth and many educators are now using them in the classroom. Additionally, educators now have access to tablets and smart phones which can receive email, text messages, images, full-motion video, sports and browse the Internet, among other things. One can readily see why most experts make the argument that Web 3.0 has already arrived, evolving standards notwithstanding. For second language acquisition, the use of Web 3.0 tools will be virtually unlimited. Imagine a Spanish class searching for a school building in Mexico City using a picture of the school rather than its text name. Then envision the class using Google Earth to visit the school in 3D and using Skype to see and talk to students in a classroom in that school in real time!

How far might all this technology go? Most everyone has heard of a LAN or local area network, a WAN or wide area network, the "cloud", and wireless connectivity; but what about a BAN i.e., *body area network*? (see Figure 1). Consider the implications for education of never, ever being *dis*connected. BAN technology had its beginnings in health care monitoring but is rapidly expanding to all areas of communication. Imagine how foreign language instruction as we currently understand it will be changed by these emerging technologies.

Figure 1. Body Area Network
Source: http://www.tronshow.org/2009/showcase/uc/C6C7.pdf

[3] Web Ontology Language – a high level, abstract syntax written in XML, built on top of RDF that is designed for processing information on the web to be interpreted by computers not read by people (*Introduction to OWL*).

Conclusion

As mentioned, our students today are what many educators refer to as digital natives or those who grew up *with* these technologies, to distinguish them from digital immigrants or those who grew up *before* these technologies. The nature of learning paradigms and learning styles of the digital natives are significantly different (Prensky, 2001a, 2001b). Our definition of literacy is forever changed by the incorporation of social networking sites, blogs, wikis, podcasts, discussion forums, Skype, CD-ROM books, electronic books, wireless reading devices such as the Kindle™, and other technologies. These technologies offer unprecedented opportunities to involve students in *multiliteracy* experiences in the classroom and beyond (Borsheim, Merritt, & Reed, 2008). Students today are very comfortable using many communication technologies and are capable of, and very amenable to, adopting new technologies as a part of their learning process. The rapid integration of technology has altered students' literacy skills in a way Borsheim, Merritt, and Reed (2008) refer to as "the shift:"

> This shift includes the monumental paradigm shift from traditional literacy to twenty-first century multiliteracies – and reflects the impact of communication technologies and multimedia on the evolving nature of texts, as well as the skills and dispositions associated with the consumption, production, evaluation, and distribution of those texts. (p. 87)

Finally, when we consider the pedagogical implications of using Web 2.0 and 3.0 tools in foreign language instruction, Jee (2010) suggests there is "…increased authenticity, reduced anxiety with higher motivation, opportunities for learner-centered instruction, enhanced ownership and personal responsibility, significant flexibility in learning preferences and styles" (p. 171). Additionally, Simon (2008) believes foreign language faculty will find these tools "…better prepare them to face the challenges of foreign language instruction in the age of Web 2.0" (¶9). Embracing these technologies has practically become a requirement for 'doing business' for foreign language teachers.

Foreign language teachers, and every educator for that matter, must now consider how their current teaching paradigms will be improved or could possibly be supplanted because of a pervasive web. These are questions and challenges all educators will be dealing with in the not-so-distant future.

References

Borsheim, C, Merritt, K., & Reed, D. (2008). Beyond technology for technology's sake: Advancing multiliteracies in the Twenty-First century. *The Clearing House, 82*(2), 165-174.

Brown, N., & Bussert, K. (2007, May). *Information literacy 2.0: Empowering students through personal engagement.* Paper presented at the International Educational Technology conference, Nicosia, Turkish Republic of Northern Cyprus.

Bussert, K, Brown, N.E., & Armstrong, A.H. (2008). IL 2.0 at The American University in Cairo: Flickr in the classroom. *Internet Reference Services Quarterly*. *Special Issue on Social software and libraries, 13*(1)*,* 1-13.

Cameron, D., & Anderson, T. (2006, November). Comparing weblogs to threaded discussion tools in online education contexts [Electronic version]. *International Journal of Instructional Technology & Distance Learning 2*(11), n.p. Retrieved February 5, 2010, from http://itdl.org/journal/nov_06/index.htm

Campbell, A. P. (2003, February). Weblogs for use with ESL classes. *The Internet TESL Journal, 9*(2). Retrieved May 24, 2011, from http://iteslj.org/Techniques/Campbell-Weblogs.html

Consalvo, M. (2005). User-centered experiences. In Consalvo, N., & O'Riordan, K. (Eds.) *Internet research annual* (pp. 9-10). New York: Peter Lang Publishing.

Collier, I. (2007). The shift to 21st century literacies. *Council Chronicle. 172*(5)*,* 4-8.

Downes, S. (2009, April). Blogs in education. *Half an hour*. Retrieved November 11, 2009 from http://halfanhour.blogspot.com/2009/04/blogs-in-education.html

Duffy, P., & Bruns, A. (2006). *The use of blogs, wikis and RSS in education: A conversation of possibilities*. Proceedings of the Online Learning and Teaching Conference 2006, Brisbane: September 26. Retrieved December 11, 2009, from http://eprints.qut.edu.au/5398/1/5398.pdf

Getting, B. (2007, April 18). Basic definitions: Web 1.0, Web 2.0, Web 3.0: What do they mean, and how do they impact my ecommerce business? *Practical Ecommerce.* Retrieved October 5, 2007, from http://www.practicalecommerce.com/articles/464/Basic-Definitions-Web-10-Web-20-Web-30/

Gündüz, N. (2005, October). Computer assisted language learning. *Journal of Language and Linguistic Studies, 1*(2), 193-214.

Guzdial, M., & Carroll, K. (2002). Explaining the lack of dialogue in computer-supported collaborative learning, *Proceedings of the Computer Supported Collaborative Learning 2002.* Mahwah, NJ: Lawrence Erlbaum Associates.

Introduction to OWL. (2010). w3schools.com. Retrieved February 5, 2010 from http://www.w3schools.com/rdf/rdf_owl.asp

Jee, M. J. (2010). Web 2.0 technology meets mobile assisted language learning. *International Association for Language Learning Technology, 41*(1), 161-174. Retrieved May 26, 2011, from http://www.iallt.org/iallt_journal/web_20_technology_meets_mobile_assisted_ language_learning

Kelly, K. (2005, August). We are the Web. *Wired.* Retrieved October 5, 2007, from http://www.wired.com/wired/archive/13.08/tech.html

Kessler, G. (2009). Student-initiated attention to form in wiki-based collaborative writing. *Language Learning & Technology, 13*(1), 79-95. Retrieved June 3, 2011, from http://llt.msu.edu/vol13num1/kessler.pdf

Kuchinskas, S. (2007, May). Learning from Web 2.0 (Without the Web). *BNet*. Retrieved September 21, 2007, from http://www.bnet.com/2403-13241_23-66095.html

Lee, L. (2009, May). Scaffolding collaborative exchanges between expert and novice language teachers in threaded discussions [Abstract]. *Foreign Language Annals, 42*(2) p. 212-228. Retrieved June 6, 2011, from http://onlinelibrary.wiley.com/doi/10.1111/j.1944-9720.2009.01018.x/abstract.

Leslie, P., & Murphy, E. (2008). Post-secondary students' purposes for blogging. *International Review of Research in Open and Distance Learning, 9*(3), 1-17. http://www.irrodl.org/index.php/irrodl/article/view/560/1140

Miller, E. (1998, May). An introduction to the resource description framework. D-Lib Magazine. Retrieved July 20, 2005, from http://www.dlib.org/dlib/may98/miller/05miller.html

Newstead, H. (2007, December). Retrieved May 24, 2011, from the Web 2.0 / Language Learning Wiki: http://web20andlanguagelearning.wikidot.com/about

O'Reilly, T. (2005, September). *What is Web 2.0: Design patterns and business models for the next generation of software*. O'Reilly. Retrieved March 10, 2009, from http://oreilly.com/web2/archive/what-is-web-20.html

Pcmag.com Encyclopedia (2010). Retrieved January 29, 2010, from http://www.pcmag.com/encyclopedia_term/0,2542,t=Skype&i=51443,00.asp

Peterson, E. (2009). Using a Wiki to Enhance Cooperative Learning in a Real Analysis Course. *Primus, 19*(1), 18-28.

Piaget, J., & Inhelder, B. (2000). *The psychology of the child.* New York: Basic Books.

Pinkman, K. (2005). Using blogs in the foreign language classroom: Encouraging learner independence. *The JALT CALL Journal, 1(1)*, 12 - 24.

Prensky, M. (2001a). Digital natives, digital immigrants. *On the Horizon*, *9*(5), 1-5.

Prensky, M. (2001b). Digital natives, digital immigrants, part II: Do they really think differently? *On the Horizon*, 9(6), 1-10.

Rizopoulos, L. A., & McCarthy, P. (2008). Using online threaded discussions: Best practices for the digital learner. *Journal of Educational Technology Systems 37*(4), p. 373-383.

Schuetze, U. (2010). Do wikis affect grammatical aspects of second language writing? *International Association for Language Learning Technology, 41*(1), 90- 107. Retrieved June 2, 2011, from http://www.iallt.org/iallt_journal/do_wikis_affect_grammatical_aspects_of_second_language_writing

Shih, Y-C. & Yang, M-T. (2008). A collaborative virtual environment for situated language learning using VEC3D. Educational Technology & Society, 11(1), 56-68.

Simon, E. (2008). Foreign language faculty in the age of Web 2.0. *Education Quarterly, 31(3)*. Retrieved May 24, 2011, from http://www.educause.edu/ EDUCAUSE+ Quarterly/EDUCAUSEQuarterlyMagazine Volum/ForeignLanguageFacultyintheAge/163095

Stair, R. M., & Reynolds, G. W. (2010). *Fundamentals of Information Systems* (5th ed.). Boston: Course Technology.

Thomas, M. (Ed.). (2008). *Handbook of research on Web 2.0 and second language learning*. Hershey, New York: Information Science Reference.

Tim Berners-Lee, Robert Cailliau, and the World Wide Web (n.d.). Retrieved November 30, 2009, from http://www.livinginternet.com/w/wi_lee.htm

Toothman, J. (2009). What's the difference between the Internet and the World Wide Web? *howstuffworks*. Retrieved December 11, 2009 from http://computer.howstuffworks.com/internet-versus-world-wide-web.htm

Vygotsky, L. S. (1986). *Thought and language*. Cambridge, MA: MIT Press.

Web 1.0 vs. Web 2.0. Retrieved November 30, 2009 from, http://www.sizlopedia.com /2007/08/18/web-10-vs-web-20-the- visual-difference

Web 2.0 Reference Center. (2009). *ProgrammableWeb.com*. Retrieved November 30, 2009 from, http://www.programmableweb.com/reference

Wolcott, M. (2007, May). What is Web 2.0? *BNet.* Retrieved September 21, 2007, from http://www.bnet.com/2403-13241_23-66094.html

Wu, W.V., Yen, L. L., & Marek, M. (2011). Using online EFL interaction to increase confidence, motivation, and ability. Educational Technology & Society, 14(3), 118-129.

Young, S. S-C., Wang, Y. H., & Jang, J-S. R. (2010). Exploring perceptions of integrating tangible learning companions in learning English conversation. British Journal of Educational Technology, 41(5), p 78-83. doi: 10.1111/j.1467-8535.2009.00989.x

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