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The Role of Technology in Language Learning in the Twenty-First Century: Perspectives from Academe, Government, and the Private Sector

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RESPONSE

The Importance of Creating Theories of Practice in Online Language Learning

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Abstract: Since the end of the 1990s, teachers of all disciplines have been experimenting with content delivered in a hybrid/blended[1] format and entirely online. In the general education field, research—whether empirical or action—has been conducted for a number of years on different aspects of blended and entirely online learning, the term "online learning" typically encompassing both.[2] This essay will provide an overview of developments in online learning at the K–16 levels, in government, and in the private sector, closing with information about technology trends that offer a glimpse into what the language learning field might look like five years from now.

Keywords: acquisition/acquisición, innovation/inovación, input enhancement/mejoramiento de la materia presentada al estudiante, online/en línea, pedagogy/pedagogía, technology/tecnología

Developments in Online Learning at the K–16 Levels

General Education

Many K–16 programs are now offering some variation of blended and entirely online courses. Teachers are observing that one key "benefit of the online delivery method is that the associated anonymity can result in greater participation from all students, including 'shy' ones" (Appana 2008: 9).

One study in particular about online learning at the K–16 levels by a Department of Education team of researchers and analysts attracted considerable attention in 2010: "Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies" (Means, Toyama, Murphy, Bakia, and Jones 2010). The group examined more than one thousand empirical studies between 1996 and 2008 on online learning—both blended and entirely online. The major finding: "on average, students in online learning conditions performed modestly better than those receiving face-to-face instruction" (9).

Since 2012, the "Year of the MOOC" (Massive Open Online Course), academicians such as Nishikant Sonwalkar (2013) at the University of Massachusetts have studied aspects of this new type of course. Recently, a Harvard–MIT research team conducted one of the largest investigations of MOOCs to date ("Massive study on MOOCs" 2015). The report is the second by the team; the first (Ho, Reich, Nesterko, Seaton, Mullaney, Waldo, and Chuang 2014), which appeared in January 2014, examined the first year of open online courses at the secondary and post-secondary levels launched on the joint MIT–Harvard edX, a free non-profit, open source, collaborative learning platform. The second describes sixty-eight certificate-granting courses, its 1.7 million participants who contributed over 10 million participant hours, and the 1.1 billion

participant-logged events. Following edX's lead, a number of learning institutions and enterprises (e.g., Khan Academy, The University of the People, and Coursera) now offer free online courses. Other institutions deliver entirely online courses for a fee.

At the K–12 level, Michael Corry and Julie Stella (2012) proposed the development of the Framework for Research in Online K–12 Distance Education that could serve as the foundation for the development of theoretical frameworks.

Language Learning

In the field of language learning, a considerable amount of research has been conducted on different aspects of blended and entirely online learning since the end of the twentieth century. Between 1999 and 2010, the National Center for Academic Transformation funded a series of projects in a variety of disciplines, one being Spanish, aimed at converting face-to-face (F2F) curricula to blended. Feedback about the blended curricula was positive. In 2000, Bonnie Adair-Hauck, Laurel Willingham-McLain, and Bonnie Earnest Youngs pioneered the evaluation of the blended language program at Carnegie Mellon.

A number of researchers have scrutinized blended and entirely online learning primarily at the post-secondary level (e.g., Blake 2002 and 2013; Blyth 2013; Cerezo 2013; Ducate, Lomicka and Lord 2013; Goertler 2013; Rossomondo 2011 and 2013; Rott 2013; Rubio 2013; Rubio and Thoms 2013; Thoms 2013; Young and Pettigrew 2013) Some have focused on the benefits of the use of social media tools such as Twitter (Borau, Ullrich, Feng, and Shen 2009; Castro n.d.; Mork 2009) and Facebook (Blattner and Roulon 2009; Mitchell 2012). Others have looked at the effectiveness of integrating a particular online tool into the F2F classroom (Fogal, Graham, and Lavigne 2014; Work 2014). A smaller group (e.g., Chenoweth, Ushida, and Murday 2006; Rubio 2013; Thoms 2013; Young 2008) has conducted in-depth empirical studies on the effects of blended learning on language proficiency.

Concerning entirely online courses, Robert Blake created a Spanish course using materials from *Tesoros* in 2002 and *Arabic Without Walls* in 2012, both for first-year post-secondary learners.

Regarding MOOCs, the most requested language is English, followed by Chinese, Spanish, Arabic, and French. *Spanish MOOC* offers adaptive, twelve-week post-secondary courses that include a variety of live exercises, grammar instructions, open-ended assignments, and quizzes and tests using authentic materials (Spanish MOOC, n.d.).

At the high school level, in 2014, The National Foreign Language Resource Center (NFLRC) at the University of Hawai'i at Mānoa processed a four-year grant (2014–18) entitled "Professional Development for Online Foreign Language Teachers as a collaborative effort with the North Carolina Virtual High School." According to Sykes (2015), this project may become a model.

Developments in Online Learning in Government

The Defense Language Institute Foreign Language Center (DLIFLC) has been integrating technology to enhance learning for the last 10 years, starting with the purchase of interactive SmartBoards in 2003 that allowed immediate access to authentic materials in the four skills. In 2011, DLIFLC started the Paperless Classroom Initiative to promote collaborative learning in a blended environment where learners used Web 2 tools such as Glogster (2007–15), Lino (2015), InterVu (InterVu® n.d.), and VoiceThread (2015). For the past five years, DLIFLC (2015) has been incorporating a variety of online tools, all of which are available to the general public at www.dliflc.edu/products, into its curricula both as homework and as content preview following the flipped classroom model. One such product is Online Diagnostic Assessment (ODA), a support tool in 17 languages that provides an estimated level of proficiency and a learning profile that provides specific diagnostic information for the learner and teacher about the learner's linguistic strengths and weaknesses.

Since 2006, the National Security Agency (NSA) has offered blended and online language and culture STARTALK programs for K–12 learners in collaboration with the National Foreign Language Center at the University of Maryland (STARTALK 2009).

Developments in Online Learning in the Private Sector

The private sector has been experimenting for years with blended and entirely online courses. For example, Udacity is a company that offers entirely online "Nanodegrees" (i.e., courses in high tech subjects such as Front-end Web Developer and Android Developer, all designed and developed by leading tech organizations such as Google, Facebook, and Amazon Web Services [Catalog on website 2015]).

A number of language learning companies market blended courses for the K–16 levels (e.g., Heinle Cengage, Middlebury Interactive, and Vista Higher Learning). iLrn Heinle Learning Center is "an all-in-one course management system developed to engage students and elevate thinking through listening, speaking, reading, and contextualized writing activities" (iLrn 2015). Middlebury Interactive Language curricula includes activities grounded in real-life scenarios that incorporate "immersive gaming, social networking and multimedia interactive learning" (Middlebury Interactive). Vista Higher Learning produces pedagogically sound blended courses such as the Intermediate Spanish Program *Enlaces* that are organized around the national standards and exploit authentic materials.

Current Trends: Indicators of the Future of Technology in Language Learning

In 2007, Michael Wesch stated that "our walls no longer make the boundaries of our classrooms." Today, most learners expect access to learning 24/7 across a variety of mobile devices that allow them to move in and out of several environments—academic learning sites, the non-academic workplace, and social life. Ever striving for autonomy, learners are now creating their own learning spaces, be it the conventional or virtual classroom, private or public transport, or the living room. Both teachers and learners are communicating on academic matters ever more freely through the use of learning management systems such as Sakai and Blackboard Collaborate.

In 2014, the New Media Consortium (NMC) and the EDUCASE Learning Initiative (ELI) published a report of the research conducted over a decade with "more than 850 internationally recognized practitioners and experts" on key trends in educational technology (Johnson 2014: 4). The findings indicate that the flipped classroom, gamification, and virtual assistance technologies are areas of focus over the next five years. In 2015, the NMC was commissioned by the newly-established Language Flagship Technology Innovation Center (LFTIC) at the University of Hawai'i at Mānoa to produce a Strategic Brief on the topic of Innovation in Language Education. The publication, *Innovating Language Education: An NMC Horizon Project Strategic Brief*, came out on 26 February 2016 and is available through the NMC website. Recommendations from the report include: Integrate design thinking into curricula; build smart partnerships; enhance the user experience; foster more authentic exchanges through collaborative tools; adopt data-driven approaches. Below is information on these and other trends that are indicative of what the future of technology in language learning holds.

More Blended and Entirely Online Courses

In 1987, Ray Clifford posited: "Technology will not replace teachers, but teachers who do not use technology will be replaced" (13). Every day, more blended and entirely online courses are appearing where both learners and teachers collaborate to construct knowledge by interacting in new and different ways with the content and each other (Bonk and Khoo 2014; Moore

and Keegan 2001). MOOCs, for example, are growing in popularity, the total number having increased 201% between 2013 and 2014 (Failde 2015). Online instruction allows learners to access information at any time and the instruction is "flexible enough to satisfy many different learning styles" (Lumsdaine 2003: 2).

More Blended Flipped Classrooms

In the flipped classroom, course content, typically online lectures and presentations, are provided to learners to preview before coming to class so class time can be dedicated to active processing of course content through class discussion. Lower-level cognitive tasks are performed prior to, and outside of class; higher-level cognitive tasks are performed in the classroom (Milman 2014). Learners take a more active role, spend more time on meaningful tasks, independent practice, and collaborative interaction; teachers are facilitators and advisors, helping and encouraging learners during the learning process (Milman 2014; Tomlison 2003; Westermann 2014).

Greater Interactivity through the Use of Gamification Principles in Lesson and Curriculum Design

Interactive instruction, including the use of games, permits presenting instruction in chunks, "breaking a complex task into manageable steps" (Driscoll 2005: 87). Games and simulation exercises in online learning tools provide "real-time participation"—the highest level of interactivity currently attainable (TRADOC 2013: 95–98).

Research in gamification indicates that learners, whether in general education or language learning, find activities based on game principles highly motivational (e.g., Reinders 2012; Shute and Ke 2012). Gamification principles can be incorporated into F2F, blended, and entirely online courses to increase and sustain motivation. Games provide the learner a sense of control, challenge the user, offer diverse experiences, give praise when earned, and encourage self-reflection. Additionally, they make learning fun, set high yet attainable goals, track progress, and provide opportunities for success (Prensky 2007; Shute and Ke 2012).

However, not all games can be used for education purposes or for second language acquisition (Reinhardt and Sykes 2012). The Taxonomy of Second Language Education Games (TLAG) "can help teachers to categorize games, integrate them into curriculum, and have students achieve certain proficiency levels" (Sarac 2013: 163). Blake (2012) recommends that games and the mechanisms of play be incorporated into teacher training and professional development.

Increase in the Number of Virtual Assistance Technologies

Kunnen (2015) reports on several advanced virtual assistance technologies that allow real-time collaboration in virtual reality: Oculus Rift, wearable computing with Google Glass; a telepresence-based robot from Double Robotics; gesture computing with Leap Motion; mobile devices such as the Swivl personal video "capture" solution. Leap Motions creates simulations where users interact with virtual objects in a game environment. Swivl collects and delivers content, such as group work in the classroom, as engaging videos through its "robot" that "turns your mobile device into a presentation delivery tool, a front-of-room assistant and automated video solution" (1).

While a number of companies are producing virtual reality products for gaming and social and mobile platforms, Oculus is considered by some to be the industry leader. In March 2016, it released Oculus Rift, a headset that immerses the user in virtual worlds. Using Touch controllers, the customer can manipulate objects in 50 such worlds, with titles like Galaxy Golf, Rec Room,

and Surgeon Simulator. Oculus has recently collaborated with Samsung to produce Gear VR, which offers the user the immersion experience on a Samsung Galaxy smartphone.

Microsoft is exploring the application of holograms to business and education. Its HoloLens headset "enables high-definition holograms to come to life in your world, seamlessly integrating with physical places, spaces, and things. We call this experience mixed reality" (Microsoft 2015). What is especially innovative about the HoloLens headset is that it allows the customer to interact, through holograms, with his/her actual surroundings. These developments have the potential to revolutionize the education field.

While predictions about the future of technology abound, Gartner's list of ten strategic technology trends for 2015 is worthy of note. Below, a summary:

- Among People: progressive merging of the real and virtual world through the massive use of mobile devices (computing everywhere), the Internet stream of data and services, and 3D printing.
- In Business: the proliferation of advanced, pervasive, invisible, analytic, context-rich systems and smart machines to enhance the business experience.
- In Information Technology (IT): cloud computing, agile programing that will accommodate content presentation in support of digitalized business, web-scale IT computing, and risk-based, self-protected security to allow uninterrupted information and work flow (Olcott 2014; Spender 2015).

Conclusion

In the postmethod era in language learning, where content delivery is F2F, blended, or entirely online, teachers are challenged to create what Kumaravadivelu (2003) terms their own "theories of practice" based on knowledge and experience (1). That knowledge and experience will guide teachers as they selectively choose from a plethora of technology tools and applications only those rooted in sound pedagogy. Ever seeking to maximize learner motivation, teachers will continue to explore new and different ways to enhance learning, (e.g., using game principles in lesson and curriculum design). As is evident from this overview of the technology research and developments in the language learning field, language professionals are every day integrating technology more in the classroom as they strive to determine how best to facilitate understanding of content based on learner needs.

NOTES

[1] The term "blended" will hereafter be used in this essay.

[2] Rubio and Thoms (2013) and the authors of this essay prefer the definition by Laster, Otte, Picciano, and Sorg (2005): "Courses that integrate online with traditional face-to-face activities in a planned, pedagogically valuable manner; and where a portion (institutionally defined) of face-to-face time is replaced by online activity."

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Keywords: acquisition/acquisición, innovation/inovación, online/en línea, pedagogy/pedagogía, technology/tecnología, theory/teoría

Christine Campbell and Branka Sarac provide a review of the literature as it pertains to developments in online language learning in various sectors of education. In the final paragraph, Campbell and Sarac call for the development of "theories of practice" (Kumaravadivelu 2003), based on knowledge and experience, among educators specializing in online instruction of languages. Campbell and Sarac cite two principal benefits of the creation of these theories of practice. First is the facilitation of choosing appropriate tools and approaches to teaching and learning, based on a theoretical base. Second is the fostering of a motivated dedication to carry out these endeavors.

Kumaravadivelu (2003) notes several innovations in the profession during the end of the twentieth century, which point educators in the direction of mindfully acting within a theoretical stance. Most notably, in considering the use of technology in the foreign language classroom, the profession should realize that "the artificially created dichotomy between theory and practice has been more harmful than helpful for teachers" (Kuramaravadivelu 2003: 1). In fact, the sudden development of a paradigm to integrate technology into the curriculum has oftentimes been haphazard. The reason is that said paradigms are often quite distant from more generalized "educational theory and practice." Subsequently, online learning programs can often be void of effectiveness.

A relatively dated study by the Pew Research Center (Smith, Rainie, and Zickuhr 2011) indicates that between 94% and 98% of college students—be they at the community college, undergraduate or graduate level—use the Internet regularly. Additionally, between 79% and 92% of the same group use wireless (laptop or cell phone) services regularly. Within this user demographic, 94% and 99% own a smartphone, while between 70% and 93% own a laptop computer. The study reports that the highest rates of use and ownership occur among graduate students, while the lower rates of use and ownership occur among community college students.

In a separate study done at the 7–12 grade levels, the figures decrease, but not drastically. Another Pew study indicates that approximately 89% of teenagers go online at least "1–2 days a week" (see "Millennials: A Portrait of Generation Next"). In spite of the divide among different ethnic and socio-economic groups, Internet use is still highly prevalent among teenagers between the ages of 12 and 17.

These numbers indicate that the majority of students make regular use of technology. In addition to this fact, studies indicate that they are using the Internet as a source for learning.

For example, a study conducted by Head and Eisenberg (2010) indicated that 95% of college students surveyed used Google searches in their research, while 85% used Wikipedia.

How do theories of practice and statistics regarding the pervasive technology relate to the future of technology in language learning? First, we need to realize that in 2017, *Hispania*'s one hundredth year of publication, the use of technology is ubiquitous. Not only is it ubiquitous, it is also synonymous with the learning process. For this reason, it is imperative that we think about how to best harness technology in light of second language acquisition theory and pedagogy. Similarly, we should always evaluate digital materials using the same rigorous standards used to evaluate those in print. For example, by March 2016, a very popular mobile phone application for language learning boasts approximately 110 million users worldwide (Velayanikal 2016). While its mobility represents an outstanding innovation, a careful assessment of this tool in the light of language learning theory and proper pedagogical practices would be enlightening. In other words, abundant access should not be the qualifying factor in the evaluation of language learning materials. The future of online learning provides opportunity and challenges; the profession needs to make careful choices in how to move forward.

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