# Introduction:
## Foreign Language Education in the Digital Age

How in the world can language instruction keep pace with technological change?

The rapid development of new technology and its worldwide application in education calls for innovative methods and approaches in teaching and learning language in the digital age. This introduction provides an overview of how technology has evolved over time and contributes to language communication alongside political, economic, and social lines.

## 1. UNDERSTANDING LANGUAGE COMMUNICATION AND TECHNOLOGICAL INFLUENCES

### 1.1 Language

Language is generally understood as the medium of communication of ideas and thoughts. Technological advances have assisted with language communication processes. When we speak about technology, we generally refer to computers and digital forms. However, technology refers to anything that is developed that makes life easier. Thus, technology can be a pencil with an eraser that makes writing and editing easier, or a candle utilized for evening reads by Abraham Lincoln.

Language communication has changed over the years in its audio form such as through word of mouth, oral storytelling and towards other modes. The historical development of asynchronous language communication over time is related to the physical, concrete, written purposeful, official, and historical communication on walls of Egyptian and Mayan pyramids as glyphs (Lawler, 2004) as well as in text form. There are even logographic symbols on bones in ancient China (Boltz, 1986; Lawler; 2004). Congruently, with the advent of more portable sources of communication matter such as hemp and paper, governments and business were able to communicate to one another through pamphlets, books, and bibles (Edwards, 2003; Gunaratne, 2001). These technologies sped up the dissemination of language through physical forms of technology, such as the advent presses developed across the world including block printing in China, Japan, in addition to the development of Korea's movable metallic type in 1377 (reaching its pinnacle in 1403) and the Gutenberg Press in Germany in 1440 (Friedman & Chartier, 1996; Gunaratne, 2001). Thus, official and formal business communication began with signs and later books, which increased the dissemination of ideas. Correspondingly, informal communication through letter writing similarly commenced and even signs such as graffiti sent more permanent text messages political and otherwise.

Technological advances in transportation, the building of roads, shipping as well aerial routes have contributed to the speed with which messages, ideas, and thoughts are delivered. Visual and oral synchronous communication emerged with the development of the telegraph and telephone. Similarly, online routes of communication have sped up the process of exchanging ideas across nations and across the globe at unprecedented speeds. Instant communication has fewer filters now as we are exposed to language and language ideas from other countries during internet and social media communication. Social media previously related through television sitcoms, movies, and commercial advertisement can now be easily accessed through mobile phones, computer devices, and video conferencing software. This visual, distant, and remote audio and video communication through technology is the closest we have come to having authentic conversations with the ability to interpret oral language but also gestures.

Immediate access to the internet provides us with opportunities to instantly access information and make connections with others and outside resources. Thus, virtual mediums allow us to permit more extensive research about language, including language words, phrases, logographs and other marks such as social pragmatics, captured and recorded online language interaction. For instance, language captured on streaming video permits our study of all aspects of language on grammatical as well as pragmatic levels about how learners learn language informally and in collaborative situations or how they might learn during online chat versus video. We can also delve further into the communication modes, strategies, and resources plurilinguals (as opposed to monolinguals) utilize during dual language learning and communication to acquire language (Winstead, 2013). Plurilinguals are individuals who know more than one language and can be considered polyglots. Educators can also determine how these interactions and ways of learning may contribute to formal learning situations.

## 1.2 Language Is a Comparable and Complex Term

Language is a comparable and complex term stemming from the different ways it is researched, learned, utilized in the digital age. Language reflects thought and can include any form of synchronous or asynchronous communication that leads to negotiation of meaning which may include not the only the words we speak, write or listen to but also language gestures, signs, and symbols in off-line or online communication in the digital age. Linguists examine the range of linguistic components including grammar, utterances, code-switching, or sociolinguistic discourse (Gumperz, 1982). Similarly, the paralinguistic aspects of language such as intonation and volume are examined for emotion and intent (Leeds-Hurwitz, 1990) and nonlinguistic forms of communication associated with the intended meaning of non-verbal behavior has also been explored (Baxter, 1984; Brown & Levinson, 1987). These modes of examination have been utilized in language as well as foreign language study to study various language learner discourses and speech patterns including the study of phatic digital text communication on Twitter (Schandorf, 2013) or segmentation of audio in nondigital vocalization (Pammi, Khemiri, Petrovska-Delacretaz, & Chollet, 2013).

How language, as well as foreign language, is understood depends on perspective. Foreign language and teaching has evolved in the digital age as we move from single language to an understanding of learners' language layer levels in a more plurilingual society. Foreign language similarly takes on new meaning in the digital age. Foreign language can be perceived as the outside language. In many societies, "foreign", in Chinese and in Japanese (外国), means outside. Thus, foreign language can be equated to the outside language. Note the same Chinese and Japanese logographs for a foreign person or alien: 外国人. This distinction of the "other" or "outsider" has a long history in the world and different terms are utilized to

distinguish between citizens and others. Foreigners have often been considered barbarians or aliens in the past. Even in the present day, the term "illegal aliens" is utilized as a reference to some immigrants.

The scope of "foreign" is in comparison to what language counts as native. To understand what counts as foreign language, educators need to consider how contributions from first language (FL), second language (SL), heritage language (HL), as well as dual immersion (DI) and bilingual programs can contribute to a more holistic understanding of language learning. Similarly, in constructing our understanding of language categorizations, researchers should also consider language status, subordinance, and dominance in the field and in global societies as well as the consequences of such hierarchies in the digital age.

The first language is the inside language or the language of the community in which we live or are born. It is generally understood as the maternal language. However, plurilinguals can often speak more than one language that is learned and utilized in a neighborhood - early on. And it is possible that both parents may speak different languages and/or dialects that are learned simultaneously. Having plurilingual capability is not uncommon in some countries such as India or Spain. Individuals growing up in the Catalan area of Spain might consider their first language Catalan, and their second language Spanish. Although Catalan is an official language in Spain, the dominant language is Spanish. Catalan has a subordinate position and status despite measures recent to include Catalan on an equal level in schools. If the child from Catalonia moves to the United States, the first language may incorrectly be categorized as Spanish. Since Catalan is less well known, opportunities to receive primary language support would be limited in that language. As such, Catalan is again marginalized as a first language since it is less commonly known, used, or understood.

Thus, it is important to clarify what it means to be a second language, foreign language, heritage language or bilingual learner. Foreign language learners study a language outside of their own in the country of origin. For instance, an English foreign language (EFL) learner studies the target language as a foreign language in Japan, Peru, or another country. Second language learners, on the other hand, speak their maternal language first, for instance Spanish, in the country of origin, such as the United States. The second language is the language learned in the host country. It is generally, a language that a child may not want to learn, but has to because their parents immigrated to, say, the United States, France, or Japan. Thus, a native Spanish speaker who is a newcomer to the United States would be an English as a second language learner (ESL) in schools. In the United States, these students are also called English language learners (ELL). Thus, the designation depends on the context of the learner's situation as a foreign language or second language learner.

Similarly, a heritage language learner may be in the process of maintaining their primary language which could be their maternal as well as one of their heritage languages. The primary language and the heritage language may be one and the same, or they may be entirely different based on heritage language populations in schools with increasing linguistic and diversity. For instance, a Mexican immigrant to the United States picks up English in the context of living in the country. The Mexican student is not only a second language learner of English whose heritage language could be Spanish or possibly an indigenous language, e.g., Maya. Comparatively, an American student taking a Chinese Foreign Language (CFL) course in the United States is not studying the language in China. Thus, he or she is a CFL student, not a Chinese second language (CSL) student. Again, the context of the learner plays a role in language learner designations as well as pedagogical approaches. The second language learner, unlike his/her FL learner counterpart, has more possibilities of authentically using language on a daily basis. The foreign language learner who had little access to this type of authentic exchange before, can engage in language and collaborative practice with target language speakers. Unlike the second language learner, the FL

learner does not have opportunities to be immersed in the country of the target language and must designate time for that purpose. More shaming occurs with second language learners than foreign language learners. Second language learners are often pushed to relinquish their primary language and learn the dominant language in the host state (Winstead, 2013; Helot & Young, 2005).

Government policies that globally promote official languages over others create language hierarchies either overtly or covertly. English only propositions, for example, can invalidate and devalue heritage and minority languages in mainstream society. For instance, Proposition 63 in California made English the official language of California (Padilla, Lindholm, Chen, Duran, Hakuta, et al. 1991). Similarly, other English-only initiatives in the United States include California's Proposition 227 and Arizona's Proposition 203 restrict and devalue native language use in states with high numbers of Latinos (Barker, 2001; Moreno, 2012). This type of language dominance is also seen in places such as France as well, where language hierarchies exist (Beardsmore, 2008; Young & Helot, 2003).

However, recent policy measures in countries around the world are promoting heritage and minority language revitalization. The European Union is promoting a more plurilingual approach that also recognizes regional languages (Beardsmore, 2008; Winstead, 2013). Policies in South America, such as the Declaration of Linguistic Rights in 1996, intend to preserve and maintain the preservation and maintenance of indigenous languages (Haboud, 2009), and policies in Australia include less commonly taught languages, preserving indigenous languages (Dunne & Palvyshyn, 2013). Despite worldwide efforts to preserve and value multiple languages, dominant versus subordinate language hierarchies continue to exist based on prior colonial situations and issues of territorial conflict, acquisition, and transnationalism.

The world has become a lot smaller through online communication, and our populations in schools and cities around the world have become more linguistically and culturally diverse. Researchers need to delve into various contexts and backgrounds of learners to understand the appropriate pedagogical approaches for learners that may fall under the multiple headings of not only foreign language learner but heritage and minority language learners as well. Congruently, the boundaries that researchers and educators have created between foreign language (FL), second language (SL), heritage language (HL), and dual language (DL) become blurry and often overlap. A student may be categorized under more than one heading.

In the field of foreign language, placement tests have been developed to assign students of diverse backgrounds into the appropriate levels of foreign language classes at universities. For example, with Chinese as an FL, surveys, interviews or proficiency assessments are used to determine the learners' native, or heritage language, or whether the student has participated in a dual immersion program. Examples of the possible backgrounds of the learner that can complicate appropriate instruction in the classroom include (1) a mainstream student from the host country who desires to learn Chinese as a foreign language, (2) an American-born Chinese student who speaks a Chinese dialect at home but studied in a Mandarin Chinese immersion school, (3) a student who was adopted from China and raised by an English-speaking couple, (4) a Cantonese-dialect speaking student who finished high school in Hong Kong as an English-speaking British colony prior to its transfer of sovereignty to China in 1997, (5) American students raised by English-speaking parents but who studied Chinese at international schools in China, and (6) Chinese-born ethnic minority students who studied Chinese at bilingual schools.

In understanding and recognizing the diverse language learner contexts, educators can become more informed to employ appropriate and differentiated pedagogical approaches associated with learners' plurilingual experiences and capabilities. Correspondingly, the gaps between various fields of study and approaches such as computer assisted language learning (CALL), which is geared toward communica-

tive competence, might be shared and benefit disciplines such as ESL and EFL (Al-Hashash, 2007). It is imperative that digitally-oriented pedagogy is geared to enhance multiple literacies in face-to-face, hybrid, and online classroom learning environments.

## 2. TECHNOLOGY-ASSISTED FOREIGN LANGUAGE LEARNING (TALL) IN THE DIGITAL AGE

### 2.1 The Digital Age Is the Learner's Age: Teachers and Students as Digital Language Learners (DLLs)

In the United States, pre-school to high school language instruction and learning has declined in the last decade due to budget and other issues, causing a foreign language proficiency achievement gap (Pufahl & Rhodes, 2011). However, a report of opinion polls and surveys indicate increased U.S. interest in the value of learning world languages as part of 21$^{st}$ century goals (Rivers, Robinson, Harwood, & Brecht, 2013).

Free access to portable, global, cross-cultural, individualized and multilingual modes of chat, audio, and visual language interaction exist in most of the world. Similarly, multiple learning modes contribute to formal and informal language learning environments.

Broader and more equitable access levels the playing field for individuals who might otherwise, during non-digital times, have less contact with physical libraries and classrooms. Broader access to knowledge enables learners to learn independently from formal school education. Self-educated technological innovators, such as Microsoft's Bill Gates, Apple's Steve Jobs, and Facebook's Mark Zuckerberg reached their levels of success by following nontraditional career paths counter to those prescribed by the norms of society. Their successes in discovering, creating, and innovating prompt researchers, educators, and learners alike to consider whether schools are taking the appropriate approaches towards cultivating tech giants in the field of education.

Thus, a movement towards alternative patterns of learning and doing should be employed in order to move learning away from rigid boxes and enclosed spaces. Digital language learners (DLL) similarly should have opportunities to move beyond traditional and rigid barriers of traditional language teaching and learning. Instead language should mirror their informal learning modes as experienced via internet technology, computer games, social media, and mobile devices.

Advances in technology change and so does what counts as language learning and acquisition. The speed of this technological innovation makes it difficult for individuals to keep pace with novel technology, some of which becomes outdated before audiences can adapt to it. The role of the instructor is being challenged in academia (Jianli, 2012). Moreover, instructors across the globe feel less prepared and supported to teach with technology in classroom environments (Bilbatua & Herrero de Haro; 2014; Gallardo del Puerto & Gamboa, 2009; Jianli, 2012). Comparatively, instructors who feel more comfortable with digital media are more likely to utilize it (Bilbatua & Herrero de Haro; Wang, 2012).

Key aspects that promote a successful learning experience for the language student in a technology-enhanced environment, especially a web environment, include the following: (1) institutional support with appropriate technology to meet a learner's needs in the language learning environment (e.g., software and hardware requirements, high speed internet); (2) specific instruction and learner training to ensure continuous learning (e.g., technology software, trouble-shooting ability), (3) authentic digital opportunities for student-to-student language interaction; (4) student training and support to troubleshoot

software and hardware technology failures. These aspects not only enhance the learning for the student but also are of benefit to the instructor. Additionally, institutional support should be available as well as release time for instructors to engage in digital language learning professional development that supports instruction and research in foreign language education.

## 2.2 Redefining Language Education in the Digital Age

From preschool up to university settings, technology is changing the way language is taught and learned as well as our perceptions and conceptual understandings. Technological change in the routes of language learning calls for new definitions in the field of language education. Similarly, possibilities created by innovations for the ways foreign language learning might be juxtaposed against the backdrop of second language, heritage language, as well as dual language online learning environments.

The transition from analog to digital prompted what many call the digital revolution. This revolution is characterized, in part, by the initial transition of television platforms in the 1980s and usage of digital television platforms in the 1990s (Dawson, 2010; McHale, 1995). Influences additionally contributing to the digital revolution are also associated with an increase in electronic media (Neuman, Park, & Panek, 2012), a leap in cell phone use from the 1980s and 1990s to the present (Blinn-Pike, 2009). The mobile phone usage has increased at even a higher rate than the internet usage (Aponte & Pessagno, 2009), as well as the rapid development of high-tech companies in the Silicon Valley (Berlin, 2003). Highly trained individuals in developing countries were also recruited as engineers and developers to work in the United States. Expatriate return and transnational exchanges of information contributed to the growth of technology and digital revolutions worldwide, especially in Asian countries (Kenney, Breznitz, & Murphree, 2013; Neuman, Park, & Panek, 2012; Ning, 2009). Correspondingly, the growth of the tech industry prompted more common use of the computer in the home, the workplace, and education globally (Gualerzi & Nell, 2010; Guilani, 2008; Tang, 1999).

Computer-Assisted Language Learning (CALL) was an appropriate and prominent term in the field of computer-mediated language study, but the term CALL might not be inclusive of other forms of technology in the digital age. Although many digital devices have a micro-computer such as s smartphone depending on how "computer" is defined, it has been suggested in the literature that the CALL term does not provide an overarching frame for understanding innovative and more nuanced contexts of language learning (Otto & Pusack, 2009; Andrews & Haythronthwaite, 2007). The creation of interactive web 2.0 technology, mobile technology, along with a series of new technologies (e.g., hologram, artificial intelligence), drives education to a new realm beyond desktop/laptop designations. Paradigmatic changes in conceptual designations of terms, such as CALL, need to be reviewed and updated. Instead, Technology-Assisted Language Learning (TALL) might be a more appropriate term that is broader and encompasses an entire group of technological possibilities beyond the computer. Furthermore, there may be a need to differentiate between TALL, Technology-Assisted Foreign Language Learning (TAFLL), Technology-Assisted Second Language Learning (TASLL), Technology-Assisted Dual Language Learning (TADLL), Technology-Assisted Heritage Language Learning (TAHLL) and Technology-Assisted Heritage Language Maintenance (TAHLM).

## 2.3 Technology-Assisted Language Learning (TALL)

### 2.3.1 Traditional Face-to-Face Classroom Evolution: Digital Support

Traditional face-to-face classes can be quite interactive or less so depending on the instructor's educational philosophical stance. Thus, should the instructor have a more progressivist (learner-centered) philosophy, the course will include some lecture but also social language interaction for language development. An instructor that is an essentialist might engage in more teacher-centered learning approaches of lecture, such as the audiolingual method, or focus on grammar, while providing fewer opportunities for social language interaction. In the traditional face-to-face classroom, the instructor lectures, writing on a white board. Students engage in physical note-taking, paper and pencil tests, and handwritten or typewritten work or homework. Instructors could utilize language dramas, the audiolingual method, and the study of language and literature through reading and writing with paper and pen, then typing, followed by computer use. When utilizing traditional approaches of the past, there were fewer opportunities for authentic exchange. Study abroad programs were the best venues for authentic interaction. Dual immersion schools also emerged with great success, e.g., Miami Dade County Schools employed dual immersion programs to address the influx of Cuban immigrants in schools in the 1970s; likewise, French-English dual immersion was also offered in Quebec, Canada to preserve the French language (Malakoff & Hakuta, 1990).

Advances in technology during the 1990s allowed for computer supported instruction, learning and games could be accessed via CDs and discs. Access to online digitalized materials in libraries began in the 1990s (Arms, 2012; Tenopir, 1999). However, wide-spread access to information and greater ability to communicate online became more available to the public in the mid-1990s (Zarotsky & Jaresko, 2000) and coincided with increased cell phone usage in the 2000s and greater smart phone use in the late 2000s. Similarly, changes in learning have occurred such as a move away from the overhead projector to multimedia presentation.

With increased computer access and the ability to go online, face-to-face classroom practice has changed. Increased usage of technology provides opportunities for multiple learning styles, and multiple modes of communication, interaction, and understanding. Research reveals that students exposed to multimedia materials are more apt to stop, reflect and edit their materials (Nutta, Feyten, Norwood, Meros, & Yoshii et al., 2002). Innovative digital devices and platforms are enhancing foreign language teaching and learning in classrooms as well as creating new spaces inside and outside of the classroom (e.g., hybrid, flipped, online, homeschool). Authentic language exchange has become available through present-day digital media and devices that provide windows into virtual realms. Different from the traditional classroom, novel features of Skype and other virtual face-to-face formats connect world learners through internet exchange.

Digital devices and digital media applied to note taking elevated the importance of typing skills over the writing tradition. Instead of merely emphasizing hand note-taking skills at the beginning of the course, teachers suggest optional methods for note-taking such as laptops, smartphones, recorders, or iPads. Students utilize laptop computers for group projects, presentations, and demonstrations in classroom settings as well. With Web 2.0 technology, newly developed software and online chat room make telecollaboration possible (Richardson, 2007). By using Google Docs, students and teachers can edit the same document online simultaneously or asynchronously, saving time, energy and eliminating the need for physical meetings (Hubbard, 2009). With the affordability of digital and video cameras, as well as

mobile phone cameras, students are creating movies and dramas. Video editing software also furthers their New Literacies skills as they create audio, video, and graphics, and add subtitles, transitions, and animations. A variety of websites and software, e.g., nawmal, Animoto, allows students to become 3D cartoon figures, or create personal animations and movies, respectively. These types of technologies are, however, underutilized in the foreign language classroom.

The Smartboard, an interactive whiteboard, motivates students' learning through interaction and promotes willingness to engage in classrooms. Its interactive projection display creates scenarios for language learning (Saine, 2012). Digital markers allow multiple learners to collaborate during storytelling. Notes on the smartboard can be saved on computer in digital format (Al-Saleem, 2012).

Content management systems (CMS) such as Moodle, Blackboard, E-learning, BrainHoney are widely utilized for middle school up to university language courses in the United States. These CMSs extend learning time and allow students to organize their assignments and track learning goals flexibly outside of class (e.g., taking online quizzes, using discussion boards, journals, and audio-visual-text materials). Moreover, these CMSs allow students to use laptop and smartphone to access course syllabi, calendars, discussion board, and their gradebook anywhere and anytime (Wang, 2012).

Mobile devices such as the iPad and software apps make language learning portable. Using Pleco apps on a smart phone, Chinese language learners, especially study abroad students, can handwrite unfamiliar Chinese characters on a touch screen and look up the meaning in an online digital dictionary. Online dictionaries (e.g., Pleco, PowerWord) allow students to hear how a new Chinese character is pronounced, see animation of how it is written, read examples of how it is used in sentences, as well as watch videos of how it is used in real life situations. Language cellphone games (e.g., ChineseSkill) enable students to learn vocabulary, pronunciation and sentences, and entertain the learning experience. Game and quiz methods widely used in TV programs in the past are now being utilized to promote learning and assessment in language classrooms. Through smart phone text message polls and mobile voting (e.g., Kahoot), instructors can engage students in sharing their opinions about topics, quickly assess students' learning, and display percentage results on the screen for immediate feedback. With mobile voting, students can find out whether they answered the question correctly and the teacher can also review global classroom student performance results.

Social media (e.g., Facebook, Twitter, LinkedIn, Google Plus+), blogs, video-sharing websites (e.g., Vimeo, YouTube) and website builders enable students to absorb vast audio-visual information as well as display their creative work. The video chat and text chat function allows foreign language learners to partner with native speakers outside the country and practice speaking online. Wireless internet and smart phone camera also allows learners to stream video images.

Website content builders such as Weebly, Wixs, Worldpress allows instructors and students to easily develop websites without programing skills. Embedded functions and templates for video, document, audio, discussion board, and text display enable users to develop personal websites based on their own ideas. Moreover, these sites can also be connected to and display online course content in a variety of formats except for some particular content management systems.

These types of digital software devices and apps also permit individualized and differentiated language instruction at the student's pace as well as in cooperative and collaborative formats, especially in mixed-level FL classrooms. The spaces for language learning have similarly expanded to hybrid, online, distance learning, and outside language class learning frontiers.

## 2.3.2 Online/Distance Learning

In the digital age, geographic distances, which were once barriers for face-to-face foreign language classes, can be bridged through online and distance learning. Teachers, students, and technology support staff can attend the same class without being at the same geographic location. Given that "in front of your teacher" can be interpreted as "in front of your computer screen," technology changes people's sense of distance and draws one another virtually closer. Prior definitions of classroom, whiteboard, and vocabulary may be interpreted differently by newer and younger DL learners in the digital age as a transition from the physical to virtual.

Videoconferencing software (Adobe Connect, Zoom, Skype) have revolutionized foreign language teaching and learning. Videoconferencing provides virtual platforms that can be utilized to practice and reinforce what is learned collaboratively in the classroom. It permits authentic tandem language learning with peers and overcomes the limitation of the traditional foreign language classroom—the ability to invite learners unable to attend face-to-face learning class (Hubbard, 2009; Zarotsky & Jaresko, 2000).

Whether an online course is delivered via content management systems or through synchronous video-conferencing, distance learning technology breaks down physical walls that separate local as well as global learners. Learners outside of formal learning channels (e.g., schools) can increase their social language learning through chat as well. From a cosmopolitan city such as New York to the remote countryside in places such as Timbuktu, online classes bring together culturally and linguistically diverse learners. Thus, videoconferencing expands the scope of cross-language communication and human interaction as well as increases the speed of language transfer (e.g. novel word and expression development, language borrowing, and gesture cognizance). These immediate technological connections promote classroom diversity and offer new approaches for working with diverse global learners.

Massive Open Online Courses (MOOCs) have been developed for network learning associated with self-regulated study, peer sharing, and collaboration (McAuley, Stewart, Siemens & Cormier, 2010). MOOCs allow unlimited users to get free access to the course online to support study specific topics as well as "offer extensive diversity, connectivity and opportunities for sharing knowledge" (Mackness, Mak, & Williams, 2010, p. 266). Although some MOOCs are attached to institutional settings, they can be quite independent as well. MOOCs provide a faster way of learning about concurrent and emerging knowledge, especially in the constantly changing field of technology.

## 2.3.3 Hybrid/Blended/Flipped

Combining the merits of face-to-face and online classrooms, hybrid or blended classrooms provides flexibility for instructors and their students. Hybrid or blended courses are delivered partially in classroom and partially online. The percentage variation between content delivered online or in-class is up to the institution and instructor. Instructors commonly utilize content management systems to organize teaching materials as well as provide grades and feedback to students.

Blended courses are generally intended to reduce instructor's workload in face-to-face time (Caulfield, 2011) in order to focus on course development of using synchronous and asynchronous media. Videotaped lectures, online resources, podcasts developed for outside-class learning, which are accessible online for student to preview or review (Educause Learning Initiative, 2012). The instructor, instead of introducing new content during class time, can better use class time for differentiating instruction and engaging students in meaningful collaboration on group projects. Thus, instructors can then re-allocate

saved time for other academic activities and differentiate for individual students' needs. Blended formats are beneficial for small language programs that aim to recruit more students while at the same time reducing the face-to-face workload of the faculty.

With the flipped model, greater emphasis is placed on learners to self-regulate their learning as well as to collaborate with other students either face to face or online in order to be prepared for problem-solving and improvement before attending class (Educause Learning Initiative, 2012). Instructors are available for facilitating their learning and expanding upon this knowledge.

## 2.3.4 Homeschool and Informal Learning

Homeschool language learning has been similarly affected by digital technology. Individuals who have promoted language learning through homeschooling had fewer access to language resources. Digital sources became available but the interaction was primarily one-sided. Outside of language education, homeschoolers had access to DVDs or discs that had games, or language practice (Zarotsky & Jaresko, 2000). The 1990s were the beginning of games (e.g., matching words with pictures) in Spanish such as *Jump Start* for basic Spanish, and *Triple-Play* for more advanced Spanish language practice. One learning novel or soap opera called *Destinos* that was oriented towards learning Spanish vocabulary in a situated context. It was popular in the 1990s and is still being utilized as a teacher language resource for teaching Spanish in context (Annenberg Learner, n.d.). Students followed the episodes at the end and were required to answer questions related to the situations. Since that time, online language learning has expanded opportunities for homeschooled learners. Rosetta Stone was also a much more basic language learning material used in the 1990s and the early 2000, but there were few opportunities to authentically interact. However, now those who utilize Rosetta Stone have opportunities to speak with an interpreter online and can engage in online vocabulary recognition and practice. Other recent advances include the ability to choose a language, and with speech recognition, gauge one's pronunciation accuracy (Pitta, 2009).

Online gaming and the virtual world provide other venues for engaging students in learning language. Real-time strategy games and online role-playing games (e.g., *Age of Empires, World of Warcraft*) provide learner with scenarios, story plots and many language options. Multiple players have to comprehend the language plot in order to play the game. Online gaming promotes a willingness to communicate and lowers anxiety (Reinders & Wattana, 2014). In virtual worlds, *Second Life* is an example of how users create roles such as residents or avatars representing themselves to explore the virtual world and socialize with other users (Gee & Hayes, 2011). The virtual world approach enables users to become who they desire to be but cannot be in real life and to communicate with other users in different languages. While some games appear to be developed to fulfill people's needs for entertainment, online gaming foments unintentional learning (Reinhardt & Sykes, 2014; Theisen, 2013) and influences the acquisition of other skills such as the learning of foreign language vocabulary (Chik, 2014; Muhanna, 2012).

Virtual games and worlds appear to promote dominant languages, norms, and ideas. These multiple platforms, modes, and types of digital devices similarly have the potential to promote the preservation of minority and less commonly taught languages despite their uneven development over time.

## 3. ALL LANGUAGE MATTERS DESPITE UNEVEN DEVELOPMENT AND STATUS

Despite the various advantages and potentials of technology, language valuation and status is not shared globally. This section highlights the gaps existing in foreign language education and research advocates that all language matters from global perspectives and points of view, and encourages various methods and approaches within global and local contexts. Challenges to language education come in not only pedagogical forms but political forms as well including the uneven development and status of language. Thus, major gaps in the literature include complex issues such as uneven technology development and transferability issues in language study, uneven world language status and power, and inequitable access due to numerous digital divides.

### 3.1 Uneven Development and Transferability Issues among TALL Pedagogy

A historical review of languages reveals uneven language development and how some transferability occurs. Even when comparing languages, uneven development occurs when one language can be acquired more easily than another leading to literacy at a more advanced. With Italian, "spelling is transparent: every letter maps onto a single phoneme […] This, gives Italians an enormous advantage" as their students' literacy skills advance much more quickly (Dehaene, 2009, p. 31).

In history, many languages have experienced some form of language transfer or borrowing with regard to writing. Koreans and Japanese have transferred and incorporated Chinese characters alongside the symbols that represent their written form of language because of the contact with China in the 4th and 5th centuries and the invention of metalic and block forms of printing in China (Zhang, 2010).

The language written in a nation's or culture's logographic forms is also representative of their cultural and linguistic identity. When symbols, glyphs, or other types of logographs are effaced, the evidence of culture is also eradicated. When reading Chinese and Japanese written languages, the combination of symbols creates new meaning and interpretations. The plural of trees 森 (forest) is more than one tree 木 (tree, wood). While that example is very simple, we can also see that the writing is also representative of the in depth social contextual understandings and meanings associated with pragmatics and the intent of the message. The significance of Chinese characters in Japan has changed historically and contextually over time from the original use of the logographs in China (Okimori, 2014).

In ancient China, literacy was a privilege of males and appears to reveal how the Chinese character woman when combined with other Chinese characters has taken on negative connotations. The representation for woman is 女 (woman) in its simplest form in both Chinese and Japanese. Should we take this same simple part of the logograph 女 and multiply the number of logographic representations of women? One would think that by doing so, the three characters 姦 would represent women; however, just combining these three female characters does not represent the plural of woman. Interestingly enough, this same logograph 姦 means women adulterers in traditional Chinese (Cherng, Chang, & Chen, 2009). The (1716) Kangxi Dictionary recorded the usage of 姦 (rape) in the Qing China (Zhang, 1933), which has been replaced by modern simplified Chinese character 奸 (rape) presently used in mainland China (Oxford Chinese Dictionary, 2010, p. 352). However, 姦 is still utilized in Taiwan and Japan for rape and adultery. Two characters for woman 奻 (quarrel) signifies argument in traditional Chinese but is no longer used by Eastern Asian countries (漢典, 2016). Changes of meaning over time reveal social positive or negative connotations but can also add to the richness of the dialogue and evolution of languages so important in understanding present-day communication. Specific language might die

in the motherland but retain original meaning in countries where language is borrowed. Technological sharing between similar written language backgrounds has emerged between the Japanese and Chinese digital pedagogical systems.

Language reflects how nations view themselves as well as how they are viewed by others. The character 国 kingdom or country defines the meaning of country. The three horizontal strokes 三 from top to bottom respectively represents: sky or heaven, king, land and people. The vertical stroke 王 connecting the top and bottom stroke indicates the king is the mediator between heaven and people. The dot in 玉 converts the king character into gade as jurals, jade as seals, representing supreme power and wealth. The square surrounds the wealthy king indicates the king's ruling power over his territory, thus this character is a kingdom or country 国. People and their language outside this kingdom are considered foreign, 外国. Unlike how Chinese view their own nation, "China" in some Slavic languages such as the Russian language is "Китай" (Khitan), a short-lived empire established by a non-Han Chinese ethnic minority after defeating the Han-Chinese majority. Western travelers introduced Khitan to Europe, which has been used by Russians to refer to China ever since. When a Chinese speaker introduces "I am from China" ("я из Китая" in Russian) he actually says, "I am from the kingdom of Khitan."

More recently, ancient Chinese characters, especially oracle bone inscripts, are often used as this basis for modern logo designs that integrate Chinese culture and art, such as Peking University's logo (Wusan, 2014). Ancient Chinese calligraphy also inspried Steve Jobs' innovative graphic design of icons and interfaces on Apple products, e.g., Mac, iPhone, iPad (Isaacson, 2011).

The rise of digital technology further drives language digitalized reformation. Due to unique features of world languages, technology-based pedagogy initiated by western notions may or may not transfer smoothly from one language to another. Seeking an easy input method, technology developers may choose to develop an alphabetic system or some sort of conversion method to input non-alphabetical written text into digital format. Few differences exist among alphabetic features of western languages such as English, Spanish, French, German, and Italian. These phonetic languages and their letters are quite similar with some variations. These variations affect the types of keyboards that are constructed within these countries; however, one can adapt fairly easily from one keyboard to another when learning and utilizing language. This Roman adaptation is not so evident for many eastern languages that employ different writing orientations, patterns, logographs or other types of symbols (e.g., Chinese, Japanese, Mayan). Western forms of technological pedagogy are considered a handicap for East Asians who utilize ideograms and generally have less familiarity with Roman alphabetic keyboards until they are in high school (Liu, Jaeger, Nakagawa, 2004; Nakayama, 2002).

Similarly, adopting technology-assisted Roman-oriented systems in language education first poses challenges to those teachers teaching other languages than English in the digital age. There are distinctive features of the reading, writing, listening, and speaking domains of language, including syntax, morphology, semantics, and phonology. Differences between alphabetical language and logographic language cause difficulty with inputing non-alphabetical symbols into computers (Liu et al., 2004, Nakayama, 2002).

Through language simplification of logographs or symbols, typing Chinese characters on an English keyboard becomes possible. Today, the most popular Chinese written text input methods is developed based on the Pinyin system, a Chinese alphabetical system created a half century ago in which the sound of Chinese characters can be spelled out by largely using English letters (Wong, Chai, & Ping, 2011).

Researchers have suggested that there be a delay in learning of writing Chinese logographs. Some researchers have considered a focus on reading and symbol recognition (Allen, 2009) and other ways to delay the learning of writing Chinese logographs (Allen, 2009; Ye, 2013) to ease the cognitive load

of the Chinese language learners. Pinyin provides a foundation for Chinese language learners to transit from learning the basic verbal phonetic pronunciation to recognizing the actual Chinese characters. Just as the first- through third-grade native Chinese speakers learn Chinese, this approach is beneficial for new Chinese language learners, such as English and French speakers. The Pinyin approach helps them gain confidence in verbal practice and vocabulary knowledge before embarking solely on the written logographic form.

Since the written form of Chinese characters is associated with meaning while Pinyin is associated with sound, they can be viewed as two systems which require different skills to master. To type Chinese characters through Pinyin input method, learners need to be familiar with the Pinyin symbols. However, this method does not require learners to know Chinese logographs. While Pinyin contributes to simplified communication, it can be cumbersome due to numerous symbols. Being able to read Pinyin doesn't mean the learner can read online Chinese news written in Chinese characters.

Thus, teaching character writing online is a more formidable task for individuals who teach languages that are inherently different from western alphabetic languages. The writing is more complicated due to writing orientation and the multiple symbolic values and interpretations that emerge when combining characters. Therefore, teaching writing online is another example of uneven pedagogical transferability.

While using videoconferencing for verbal language learning across languages may be similarly effective for authentic language practice, videoconferencing software used for teaching writing is challenging. Unlike English FL peers, Chinese FL teachers face the challenge of teaching how to handwrite non-alphabetical symbols, take notes and use calligraphy brushes (Ramsey, Ong, & Chen, 1998). However, the newly developed online learning of Chinese characters can be more representative of how that language is learned, penned, painted, and/or communicated authentically through online pattern recognition (Liu et al., 2004).

## 3.2 Uneven World Language Status and Power

World language has nothing to do with the number of speakers. If so, Chinese would reign as the world's top language, especially with the rise of China economically. Almost 1,197,600 million people speak Chinese as compared with 355 million English speakers (Infoplease, 2014).

At this point in time, English has the highest status in the world and role as a dominant global language of communication (Dornyei & Ushioda, 2009; Lamb, 2004; Norton, 1997; Shimizu, Yashima, & Zenuk-Nishide, 2004). English is the language utilized worldwide for international business and consulting (Kordon, 2011) in the medical field in China (Zhang & Wang, 2015). Officials in Japan submitted a proposal to adopt English as the official language in 2000 (Kawai, 2009; Matsuura, Fujieda, & Mahoney, 2004). Although the proposal did not pass, it is an indication of the English language's dominance in the world.

Historically, the education systems of Japan and Singapore have been highly influenced by English (Sasaki, 2008). English has become the lingua franca in a number of intercultural contexts, e.g., intercultural counseling in Germany (Kordon, 2011) and interethnic communication with immigrants who work as transnationals in Singapore (Rubdy & McKay, 2013). Those who speak English have greater access to power of the written word, as much of what is written or developed digitally online and published in English. Voices of individuals who do not speak or write English fluently are silenced. Thus, there is an advantage for native speakers of English in a number of academic fields and businesses. Professors from other countries who may not read, write or speak English at highly proficient levels become disadvantaged

in getting their work published. Moreover, research reveals that students with limited English language proficiency find themselves anxious and lack confidence (Wang, 2014; Winstead, 2013).

Thus, beginning with English, there is a hierarchy of world, minority, and regional languages. And even within countries, hierarchies exist based on historical positions of power of what language is considered official and is less commonly taught in schools. Minority language, regional language, and heritage language use has often been historically oppressed based on perceived status or importance in societies. Social Dominance Theory (SDT) provides a basis for understanding how historically one group can have social power and dominance over another group in a host society (Pratto, Liu, Levin, Sidanius, & Shih et al., 2000; Pratto & Stewart, 2011) such as Japanese over Koreans or French over North Africans.

### 3.2.1 Historical Influences Behind Language Status and Language Power

The ebbs and flows of language interest and status can be seen over time. Thus, in a global context, language status is related to perceptions of economic might, neighboring skirmishes, and exchanges of ideas through trade. Uneven language development is due, in part, to the military might such as encroachment on territories or due to economic exchange between neighbors. Some ethnic groups or nations might develop their written forms at a particular point in history. The exchange of ideas through trade and missionary exchange in Asia prompted the Koreans and Japanese to adopt aspects of the Chinese language beginning in the 6th century (Okimori, 2014).

Diplomatic and economic use of a particular language is related to military, economic, or more recently, technological might, and sometimes the numbers of individuals that speak the language globally. England, France, and Spain had colonies in the Americas and around the world, and these languages reigned globally from the 1500s until colonial independence. By the 18th century, French became the diplomatic language of the world (Giovanangeli, 2009). While French might be seen as slipping as a diplomatic language in the world, it is recognized as one of three working languages still utilized by the European Union alongside English and German. However, its diplomatic use around the world has diminished as more and more countries such as former French colony Vietnam, note their preference to utilize English as the diplomatic language of choice (Crosette, 2001).

Holocausts have also influenced language status through population elimination or policies, which have affected the use or study of particular languages (e.g., Armenian, Yiddish, indigenous languages during the WWII Japanese invasion). Thus, languages can be endangered and die through oppression, assimilation, or isolation (e.g., Native American languages in the United States and Canada as well as Quechua in Peru, and Maya in Guatemala). Extinct languages may no longer be spoken, but dead languages such as Latin may still be utilized in academic contexts.

Some ethnic minorities and indigenous cultures have passed down their legends and ideas from generation to generation over thousands of years only through oral storytelling. Valid methods of communication of indigenous cultures including drawings, cave paintings, and Native North American smoke signals should not be ignored. The Navajo language, utilized as a code for synchronous American communication during World War II, was undecipherable by the Japanese and Germans. Despite this contribution to the war effort in the 1940s, Navajo remains a low-status and less commonly used language in the United States.

Territorial conflicts between rising powers and with neighbors of less economic might have influenced how not only one's national status is viewed but one's language status as well. Thus, an individual's language status is often derived from historical antecedents including post-colonial notions about particular

groups behaviors and characteristics (Holland, Fox, & Daro, 2008), which has been described in the literature as linguistic imperialism (Modiano, 2001; Phillipson, 1998). Immigration and transnationalism have contributed to worldwide plurilingualism. These dominant and subordinate, oftentimes colonial, relationships are recreated in the countries that host this labor force. Prior conflicts lead to transnational exchange as those from third-world countries supply first-world countries with generally unskilled and cheap labor (Vertovec, 2001; 2004).

Hierarchies developed based on one's national and economic status also affect an individuals' language learner status in a host state (Beardsmore, 2008; Helot & Young, 2005; Winstead, 2013). Thus, while the host language is dominant, there is an often socially accepted understanding of the hierarchies of immigrants and their languages. Foreign transnational workers in Singapore provide unskilled labor. Yet, while English is used as their lingua franca, they are criticized by citizens of the host for their ability to use the language properly (Rubdy & McKay, 2013). In the examination of language categorizations and statuses worldwide, researchers should also consider issues of dominance and subordination of nation states and the consequences of language hierarchies among and within countries in the digital age.

## 3.2.2 Within-Country Language Status: From Language Dominance, Shame, and Loss to Revitalization?

Uneven transfer of language pedagogy is evident in recommendations for technological language innovations. To suggest that languages should be simplified and/or westernized becomes a political contention reflective of the status of world languages. Official country languages world-wide and within-country language hierarchies emerge based on perceived language status. Most countries push for homogeneity and assimilation which has led to language death (Khan, Humayun, Sajjad, & Khan, 2015). Issues of preserving linguistic integrity are related to language status hierarchies associated with language dominance, subordination, and oppression and guilty feelings of shame and language loss.

Territorial conquest of indigenous people's lands has led to conquering power language dominance across the world. The Cherokee language as well as a number of indigenous languages globally have become extinct or are near extinction (Crawford, 2004; Ostler, 2005; Zuo, 2007). Some indigenous groups have never developed the written form and, thus, any record of their linguistic contributions and legacies are lost. In North America, some Native Americans groups adopted the dominant language as a way to belong and fit into American society. In the 1800s, the Cherokee, who despite all of their efforts to belong in the United States, developed a writing system and a bilingual newspaper to communicate their ideas and economic success bilingually. However, they were shunned, lost their lands and successful cotton plantation businesses, and were forced to migrate to reservations thousands of miles away from their homes in Florida to live on reservations in Oklahoma (Crawford, 2004).

Similarly, in Latin America, Spanish is the dominant language based on prior colonialism. The Spanish burnt the codices of the indigenous populations of Mexico and Central America in order to promote new language and cultural world orders (Ostler, 2005). Native Americans such as the Maya have similarly lost their status. Indigenous languages are on the verge of extinction and rarely reach the status of less commonly taught languages (Hawkins, 1994; Yoshioka; 2010). Spanish has the highest status while minority languages such Inca or Mapuche are marginalized and close to the point of extinction.

Issues of homogeneity and national ideals and discourses of solidarity and assimilation made it difficult to ignore the dominant-subordinate language status paradigm within and across global societies. Thus, reasons for language status come from national discourses. A national goal of homogeneity can

affect the positionality and success of minority groups such as multiple generations of Koreans in Japan (Matsunaga & Torigoe, 2008). France, which promotes the idea of oneness and being part of the whole, similarly affects the positionality and success of post-colonial non-European immigrants and transnationals in France. In France, first-world languages such as German and Spanish maintain higher status in the hierarchy of languages (Beardsmore, 2008, Young & Helot, 2003); however, the status of Arabic is lower (Winstead, 2013).

National English-only discourses in the United States similarly promote the theme of individual homogeneity, relinquishing home and heritage languages in societies as a way to belong. Language shame and loss has similarly been documented among bilingual individuals who speak a majority-minority language, such as Mexicans who also speak Spanish in the United States (Fitts et al., 2008; Flores & Murillo, 2001; Flores, 2005; Winstead, 2013). While numbers of Latinos have increased in the United States, so has the number of English-only policies that limit English use in the classroom (Barker, 2001; Valdez, 2001). Similarly, the status of Spanish-speaking heritage speakers in the United States is often associated with being a temporary migrant labor force that could be easily deported. Mexicans who were U.S. citizens during the 1930s, some of whom did not speak Spanish, were unconstitutionally deported in the Great Depression (Valenciana, 2006). In France, Arab-speaking North Africans make up a large part of the unskilled labor force who are still considered immigrants despite their citizenship status (Brinbaum & Kieffer, 2009).

Dominant and subordinate positioning in host societies appears to be related to minority achievement in schools. Subsequent generations of Latino children in the United States as well as later generations of North Africans in France have comparably lower achievement and greater dropout rates when compared with their mainstream counterparts (Alanis, 2010; Brinbaum & Bebolla-Boado, 2007). In addition, European immigrants, such as the Portuguese and Spanish, in France are perceived to have higher status than their non-European North African immigrant counterparts who speak Arabic (Brinbaum & Cebolla-Boado, 2007; Brinbaum & Kieffer, 2009). Stereotypes about minorities and their languages in society also contribute to their lower status, for example, Arabs pre- and post-9/11 who are depicted as terrorists (Derderian-Aghajanian & Wang, 2012) or when Latinos are similarly depicted as gangsters in movies (Mayer, 2004). Despite China's policy of minority language use, ethnic minorities in the vast republic still fall behind academically (Lam, 2007; Lundberg, 2009). Home-school language gap creates non-Chinese speaking children (e.g., Tibetans, Uyghurs) are have great difficulty understanding mainstream Mandarin instruction which results in low achievement and a corresponding low sense of well-being (Hansen, 1999; Lam, 2007). Post-colonial generations of Koreans in Japan are still not allowed to vote (Hanada, 2003; Ryang, 2012; Hayashi & Lee, 2007). The ethnic identity of children of Korean residents in Japan cause them to feel marginalized and have a sense of neither being from Korea or belonging to Japan (Matsunaga & Torigoe, 2008).

Acculturative approaches allow language learners to retain heritage languages while learning the dominant language in host societies. Researchers and educators globally push for additive approaches such as bilingualism, heritage language programs, and policies that protect ethnic minority rights as well as cultural and linguistic diversity (Helot & Young, 2005; Lundberg, 2009; Wang & Postiglione, 2008; Winstead, 2013; Zhu, 2014). Policy and efforts in South America to promote indigenous languages are commendable in maintaining as well as revitalizing heritage languages. The Universal Declaration of Linguistic Rights in 1996 is one such document intended to preserve indigenous and other languages and their cultures through bilingual minority language study alongside the mainstream study of Spanish, valuing both languages and multiculturalism (Haboud, 2009).

Ecuador follows the Intercultural Bilingual Education Model in Ecuador called MOSEIB which challenges mainstream curriculum and how it impinges on native indigenous populations' history, culture, and languages (Oviedo & Wildemeersch, 2008). In Europe, plurilingualism is being promoted to ensure that regional languages are similarly recognized (Beardsmore, 2008). Native American revitalization movements are supported by Native Americans and not necessarily by the government in the United States which has predominantly promoted assimilationist approaches in the curriculum (Vecsey, 2007; Warhol, 2011). However, to date, there are no policy statements or proposals to revitalize minority communities in ways that promote their cultural and linguistic integrity (Cohen & Allen, 2013; Warhol, 2011). Thus, the privilege of the dominant language and language marginalization are linguistic outcomes of economic and political conflicts associated with globalization. Interest in less commonly taught Asian languages has risen due to economic growth and the opening of their business markets to the world.

### 3.2.3 Recent Economic Growth and the Rise of Asian Language Statuses

The history of Asian countries and prior conflicts also affected language statuses in the Far East. In the grand global scheme, Asian countries and their languages have not been particularly popular with Westerners until the recent waves of economic growth that began after World War II. When particular Asian countries gained wealth, business increased globally due to trade relations and products sold which correspondingly influenced language status and global interest (Hyun, 2008).

Increased interest in Japan coincided with its economic rise in the 1980s. The United States influenced social and economic reconstruction occurred to boost the economy after World War II which also increased continued ties and trade between the two countries (U.S. Department of State, n.d.). Japan was best known initially for fuel-injection and small car manufacturing of fuel-injection cars at low prices at a time when gas prices were soaring in the 1970s (Wall St. Cheat, 2015), which led to greater popularity worldwide and their rise in the 1980s (Hyun, 2008). The *anime* (cartoon) *Speed Racer*, aired in the late 1960s, revealing a fast and furious car, which may have propelled Japanese car fame as well.

Japanese reliability became a global reputation. From car manufacturing and to speed racer types of car popularity, to technological innovations, e.g., camera making, and video games, Japanese culture also became popular world-wide as well (Toyoshima, 2008; Consalvo, 2009). The Japanese have contributed to video and digital entertainment, beginning with the videogame *Pac-Man* in 1980, then digital games such as *Dragon Quest*, as well as popular anime such as *Sailor Moon*. These among other popular titles that have emerged with recent global (Consalvo, 2009). The success of Sony was notable as well.

A reputation for quality and accuracy in building automobiles influenced consumer impressions and consumption of Japanese-made auto products, social media (e.g., anime and mangas), and technological devices and software contributed to the Japanese wave of global popularity in the 1990s. As neighboring Asians over the years became similarly enthralled with Japanese social media, South Korean melodramas became popular with the Taiwanese in the 1980s and the Japanese in 2004 (Hayashi & Lee 2007). International discussion between Asian members of various nationalities led to positive exchanges about the stars in online discussion boards with "real-time translations" (p. 210).

South Korea was not far behind Japan and began to develop its own car industry, camera, and video products in competition and often at lower prices than Japanese items in the United States; however, they have had less success in European markets. Koreans have successfully exported Korean-pop (K-pop) music videos and K-dramas around the world. Reasons for more dissemination of program are more accessible since all "major publications are digitalized and archived online" for easy retrieval (Hayshi

& Lee, 2007, p. 199). Korean television programs and social media have risen in stature in the United States and globally (Jung & Shim, 2014). One can see Mexican school girls dancing rhythmically to Gangnam style on Univision Spanish television. Korean programming is part of basic cable in places such as France. In California, Korean programming was offered as part of basic cable but that has now changed, and to get Korean programs costs more, possibly due to greater demand. Increased exposure to this Korean entertainment phenomenon has also prompted interest in Korean language study (Jung & Shim, 2014). And, although Korean is still considered a less commonly taught language alongside the numbers of individuals studying Japanese and Korean enrollment numbers have increased significantly over the last 10 years (Goldberg, Looney, & Lusin, 2015). The "Korean Wave" similarly came to China during the late 1990s which also reveals the exchange of culture and information between Asian countries in the digital age (Hayashi & Lee, 2007; Shim, 2006).

China, one of the world's most ancient civilizations, with written records of language over 3,200 years old (Dong, 2014), largely influenced neighbors such as Korea and Japan with their language, writing, and religion (Louie, 2008). Gunpowder, papermaking, block printing, and the compass are a few of their ancient technological inventions and contributions (e.g., compass, block printing) that have influenced advances in other ideas globally. Despite a decline in contemporary China's sphere of influence, it began opening its doors to the world in the 1980s with economic reforms despite some political hiccoughs. China's economic reform policy has contributed to the stimulation of high-tech products and the industry in general (Ebrey, 2006). Many technology companies established in the west (e.g., Adobe, Microsoft, Apple) have made inroads in the Chinese market, stimulating domestic innovation in language learning and communication technology. As such, the Chinese language has also become more influential in the digital community with a total of number of 649 million Internet users as of 2015 "outnumbering the entire U.S. population two to one" (Mckirdy, 2015). The rapid economic growth and increased rapprochement with western countries paralleled their ongoing business development, multilateral trade with western countries, and government supported international exchanges (Dillon, 2009), such as Obama's One Million Strong Initiative to encourage and support Chinese-American exchange and to achieve one million Americans engaged in language study by 2020 (Feldscher, 2015).

## 3.3 Inequitable Access to Technology: Implications of Socioeconomic, Corporate, and Other Digital Divides

Access to and the ability to disseminate language is power. Egyptian texts over thousands of years old are analyzed and read long after the language has died. Ancient nomadic cultures, e.g., Xionnu, are studied and preserved through Chinese written language scrolls (Ebrey, 2006). When no record exists for a particular language group in a historical period, such as the Huns, it is more difficult to reconstruct what happened historically. Just as "writing is not simply a storage device for speech; it is also a power technology" (Peters, 2013, p.4). Digital technology is power which affects the voices and messages that are delivered and heard in the digital age. However, national government restrictions, geographic isolation, or socioeconomically disadvantages limit opportunities to access Wi-Fi and social media.

Divides in technology development and dissemination are related to issues of access. Access to the internet in the United States is based on socioeconomics, demographics, ethnicity, and inequitable broadband access, as well as spatial divides (Warf, 2013). Other factors also associated with socioeconomic and spatial remoteness include government regulatory policies, corporate-created divides and class divides and voluntary non-involvement in technology due to religious or cultural beliefs that extend the

gap between high-access and low-access groups. Religious and traditional beliefs and practices may cause low technology application even in technology-advanced countries. Religious groups such as the Amish have retained their traditional life style without cellphones, internet, cars, or electricity, and they kept a limited use of some modern amenities such as battery operated machineries and, thus, are not anti-technology (Brady, 2013).

Distance divides are also prominent and lead to inequitable access to technology-assisted learning which further expands the gap between fluent, less fluent, and non-fluent technology users. China has the largest population and rising middle class which creates a huge market for mobile technology in Chinese-speaking areas (Louie, 2008). In China, for example, corporate technological investment creates divisions based on socioeconomic status and due to geographic remoteness (Zhou, 2003). Due to small number of users and geographic isolated areas, technology investment in these languages is limited (Zhou, 2003). Comparatively, those who are multilingual, multiethnic and who live in more remote areas have limited access to cell phones or computer systems in their villages (Louie, 2008). Moreover, the access is often not in their primary or heritage language (Hansen, 1999; Lam, 2007).

Government policy divides also contribute to differences between the haves and have-nots. For instance, there are a multitude of people in India who do not have access to basic apps. Most recently, India's government decided against utilizing Facebook as a source for access to basic apps and information via mobile phone devices (McCarthy, 2016; O'Brien, 2016). This decision may appear as censorship or possibly a question of control over whether Facebook should supply those ideals and norms that may run counter to Indian government policy and goals. Recent consolidations of information reflect privacy concerns. Google's convergence of information shared on its products, including one's web history or searches and visits happened in 2012 (Wall St. Cheat, 2015). Mobile and computer censorship in countries such as North Korea prevents populations from accessing worldwide information. Although improvements to provide greater accessibility in China exist, nevertheless current Internet censorship in mainland China, excluding Hong Kong and Macau, prevents certain western social media and search engines (e.g., Facebook, YouTube, and Google) from reaching broader Chinese audiences (Louie, 2008). A Chinese native in the mainland can enroll in an online course hosted in the United States but has no access to online resources which the American instructor might post on YouTube. Non-Chinese citizens such as visiting professors from the U.S. may be allowed to access broader TV channels and web-information and also some western Internet sites depending on the institution, region and citizenship. Similarly related, language dominance divides exist due to national language dominance over minority languages. Some minority languages lack language terms to describe new technological innovations in the west (Wang & Phillion, 2009). Thus, in some ways minorities not only have low status due to their lack of dominant language literacy but also their lack of access to digital literacy (Derderian-Aghajanian & Wang, 2012).

Subject matter divides and privilege exist in the realm of academic language study. For instance, English is the dominant language, thus more digital technology and other types of technological resources are available to support English language learning, yet this is less so for less commonly taught languages such as Korean in the United States. Low class sizes, especially for indigenous less commonly taught languages (LCTLs) is prominent, and schools with low budgets only manage to retain courses through online and self-directed language learning approaches (Dunne & Palvshyn, 2013; Godwin-Jones (2013).

## 3.4 TALL: Creating Access but Respecting Differences

When language classes become global through Internet technologies, course designers and instructors need to take accessibility factors in curricular design. Online technology has the potential to provide equitable access to language, heritage language, and dual language for remote and disadvantaged learners; access to learners in remote places via wireless network or Internet narrows the divide between those in privileged circumstances and others from disadvantaged situations. The mobile phone is the tool that is providing more access to people and information than other sources, such as computers (Blinn-Pike, 2009). Thus, a goal for educators would be to utilize this approach in formal face-to-face and online learning situations since the phone is generally the most accessible and affordable device for language learners. Informally, the cell phone connects learners with one another to maintain heritage language or learn others through free apps such as Skype.

Congruently, educators need to consider students' prior linguistic and cultural knowledge as potential and free resources for language maintenance and authentic interaction, which can supplement formal foreign language learning in and outside of the classroom (Young & Helot, 2003; Winstead, 2013). Heritage language speakers of Spanish may be able to contribute in Spanish in a foreign language setting in ways not previously imagined and possibly work in tandem on or offline with peers.

High demand for not only linguistic but cultural knowledge is being recognized in corporate industry (Grosse, 2004, 2010; Kramsch, 2005). Foreign language educators, correspondingly, need to recognize diverse students' prior language and cultural background knowledge as potential resources for language opportunities (Derderian-Aghajanian & Wang, 2012). Technology enhanced environments have expanded the way language learners background can be utilized as potential resources in technology-enhanced learning environments. Educators can create online liaisons, utilizing mobile devices, between these individuals to enhance language exchange. Providing native language speakers with online communicative practice leads to more accessible and more equitable opportunities for learners who are socioeconomically disadvantaged but want to learn a foreign language with a native speaker. Online technology provides tandem formats for dual and plurilingual language exchange that can even the playing field and provides opportunities for authentic interaction among native speakers. For instance, heritage language speakers of Spanish may be able to contribute in Spanish as a foreign language setting in ways not previously imagined and possibly work in tandem or offline with peers.

In order to facilitate all students' foreign language learning in the digital age, the trend of new technology development in the 21st century requires educators to be fluent in the use of technology but also in the knowledge and background of their learners (Wang, 2012; Wang, 2015). Technology should be a tool to enhance not a means to enforce how students learn.

## 4. THE RISE OF DIGITAL CULTURE AND LANGUAGE CROSS-POLLINATION: TRANSNATIONAL INFLUENCES

The digital age has sped communication to the point that information which may not exist in another language is adopted. Information is circulating at an unprecedented speed through the internet, leading to language evolutions and cross-pollination. From the creation of a new word in one language (e.g., internet phenomena) to the application of this word to a different language spoken on the other hemisphere, this

neologism/newly-created word can skip several traditional steps (e.g., publication, translation, journalism, television) and become a popular word in another country through social media.

## 4.1 Digital Culture (D-Culture)

D-culture refers to *deconstructing* the old physical culture of socialization through *digital* technologies and *developing* a newer realm of online interaction and virtual reality that bypasses traditional gatekeepers of information. The D-Culture can challenge traditional modes, which avoids boycott by authority if the Internet and information remains accessible and is uncensored. The D-culturing process, thus, interferes with more traditional modes of communication as well as the traditional authoritative power.

In this model, technologies directly connect the knowledge creator (left) to the audience and the consumer (right) almost immediately. Through technologies (e.g., social media, MOOC, personal website, blog, mobile network), information flows from the creator to the audience without the interference of a traditional authority or gatekeeper of information (top). The model of D-Culture reveals the de-constructive and re-constructive power of technology in the circulation of information which challenges traditional channels of communication. The dotted arrow pointing from Authorities indicates how the gatekeepers try to block, interfere, control, or censor information. Creators of information have the choice of either going through authority channels to audiences or sending their information directly to audiences through free-access internet. Information that flows from the creator directly to the audiences is reflective of D-culture communication.

The power of authority can be reflected in many ways such as: a professor requires a student to revise a project prior to a public presentation, a journal reviewer rejects a manuscript for publication, a TV producer calls off a program to be aired, a video/image used for a news report gets cut off prior to broadcasting, or a parent sets a password to prevent a child from playing video games. In D-Culture, the virtual world has become a visionary place where knowledge creators do not go through authorities' regulated routes to gain fame.

Prensky (2001) who introduced the digital world to *Digital Natives, Digital Immigrants* caused an uproar in the learning community about the way we think and connect the conceptual understanding of the fluidity of technology-assisted learning with learners. This non-empirical publication with free downloadable copy reached 12,747 citation hits by early-March 2016 and this number is still growing.

*Figure 1. The model of D-Culture*
*(Copyright The_Model_of D-Culture_Congcong Wang 2016, used with permission)*
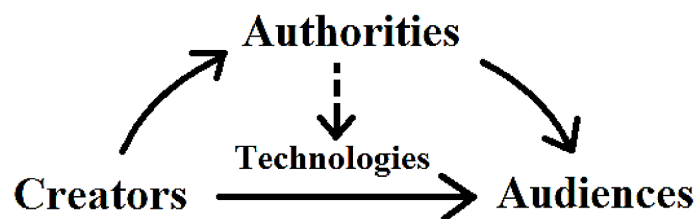


**The Model of D-Culture**

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The Prensky phenomenon is an example of how the digital culture emerges in which digital natives and digital immigrants are not constrained to only use authoritative sources. By positioning new generations of students and old generations of educational authorities into this polarized-system, Prensky's claim challenged authority and revealed deeper language power issues, which will be analyzed in detail below.

Even in the realm of pop culture, music artists can become blocked from releasing their music. Cun Xue uploaded his Flash Music Video which became an internet sensation. With the success online, Cun Xue was then recognized by the China Central Television, the major Chinese television network. Similarly, the Chopsticks Brothers gained fame with the viral hits of a self-made film placed on the Internet. They wrote their own music and became Internet stars through primarily their own means. The Internet recognition and fame led to their recent American Music Award for *Little Apple* song that "[…] has generated more than 280,000 cover versions, in total racking up over 900 million views on Youku, China's largest online video portal" and is heard in public venues all over China (Sun, 2014).

While the ability to virtually bypass the conventional routes to stardom and disseminate ideas through digital means exists and the digital users appear to be grassroots (Gee & Hayes, 2011), questions remain about the power of virtual grassroots' sensation. One wonders whether a digital march or virtual protest would have the same effect? Could the advances gained in the U. S. civil rights movement have been achieved through virtual protest? What does a virtual world bode for the future of human's ability to gather, organize, and protest?

## 4.2 Language Status and Power: The Pyramid of Digital Language Status in D-Culture

Throughout the history of human civilization, language became power and literacy was the privilege of the elites as well a means of political control over the masses (Ebrey, 2006; Peters, 2013). China kept their logographic writing system despite exposure to phonetic languages (Ebrey, 2006). In this way, the Chinese government retained the ancient script among those privileged and educated who worked in government positions and aided to disseminate official ideals (Lung, 2008). Similarly, dominant religious ideals were disseminated throughout Europe via more affordable printing modes and increased literacy among its members.

Knowledge has become cheaper and been more easily accessed in the digital age. New Literacies (e.g., visual literacy, digital literacy, information literacy, media literacy) have been associated with a broader range of formats and ways to create and disseminate information whether it is with pen and paper or through digital means (Egbert & Hanson-Smith, 2007; Knobel & Lankshear, 2006; Leu, Kinzer, Coiro, & Cammack, 2004).

New Literacies as defined in this book refers to the skills of decoding and constructing meanings via digital language effectively for communication in the D-culture/digital world community (See Figure 2 for the Pyramid of Digital Language Status in D-Culture). Three key points should be considered with New Literacies: (1) proficiency levels, e.g., language proficiency, computer language proficiency; (2) individuals who access multiple literacies ranging from programmers and hackers to music downloaders and bloggers; and (3) multiple skills involved in information creation, digital movie/video editing, 3D modeling, animation, programming, video gaming, and digital music composing.

In the hierarchy/pyramid of D-culture, the highest proficiency of digital language provides programmers, hackers, technology giants (e.g., Apple, Google, Intel, Microsoft, Facebook) supreme power and dominance in the digital empire. The 2016 debate on whether Apple should create a backdoor program

*Figure 2. The pyramid of digital language status in D-Culture*
*(Copyright The_Pyramid_of_Digital_Language_Status_in_D-Culture_Congcong Wang 2016, used with permission)*
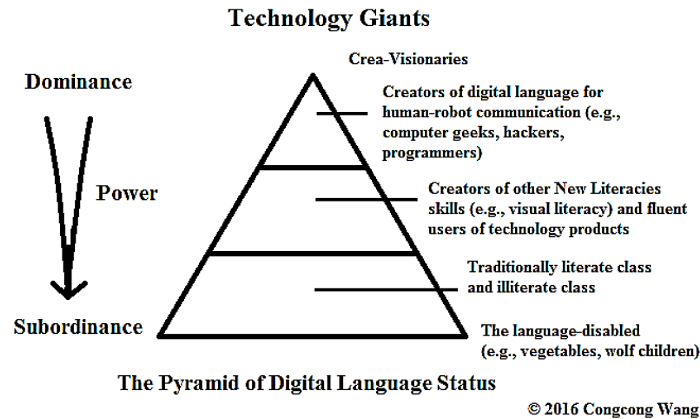


for authorities to extract data from locked iPhones is a good example (Selyukh & Domonoske, 2016). Comparatively, those who merely master lower-status New Literacies skills other than the digital language (e.g., visual literacy) seem to lack power (e.g., protecting their digital privacy from hackers). From a digital language power-influence perspective, the literate (e.g., reading and writing) in the non-digital world, to some extent, cannot be said to be "literate" and face marginalization as well as isolation in the digital age (e.g., deliver voice, acquire information, and protect their cultural integrity). Much as oral language was empowered by writing in ancient China and Egypt (Peters, 2013), or as high-status colonial languages had broader influence over population in physical colonies, advanced digital language skills empower high-status digital language groups to amplify their voices, colonize larger digital territory in global network and virtual world, attack low digital language status groups, as well as filter, mute, and erase certain voices in D-Culture communication.
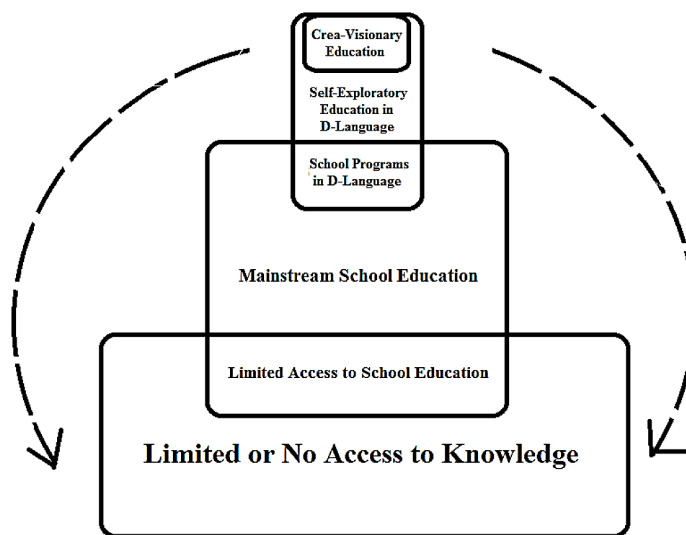
## 4.3 Crea-Visionary Education

Access to technology and the ability to disseminate messages means power. From Bill Gates's vision of "computers in every home" to Steve Jobs's vision of "do what you believe is great work and love what you do" to Mark Zuckerberg's vision of "connect the world" (Beaumont, 2008; CBS News, 2014; Stanford Report, 2005), their quick elevation in the digital age reveals how digital technology can shift power from the privileged to the grassroot start-ups who become tech giants. In other words, riding a high-tech vehicle leads to a decline of traditional modes of communication, such as, television and print publications.

Language education in the digital age reflects a paradigm shift in which learners are given the tools to become visionaries and creators who foresee issues of the future and realize their vision through practice. Digital access allows these crea-visionaries to bypass the traditional gatekeepers of knowledge and create new knowledge. From mathematical modeling, 3-D animations, games, to whatever one can dream of, there is no limit to a creator's potential except his/her own intelligence in building a virtual empire. Technological awareness and knowledge expands visions such as a D-language. This language can be "foreign" to most populations as well as reflect a trend of world language and culture emergence.

*Figure 3. The Venn diagram of crea-visionary education*
*(Copyright The_Venn_Diagram_of_Crea-Visionary_ Education_Congcong Wang 2016, used with permission)*



The Venn Diagram of Crea-Visionary Education

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Currently, much of the world's population has limited access to formal schooling and resources due to remote geographical locations despite official goals of mandatory education. Some have cultural knowledge and traditions that can be valued and transmitted. Additionally, mainstream students in dominant schooling systems are not necessarily fluent in D-language, but some can develop digital language through self-exploratory learning. Among many self-explorers, some would not only develop profound D-language skills but create visions. These crea-visionaries have huge potential to influence the world by skipping the mainstream school systems and delivering their knowledge to the population with limited/no access to school knowledge.

With greater access to technology, third-world populations and those in remote areas can also participate in becoming crea-visionaries in their own communities. Access can empower learners to engage in self-exploratory types of learning even in situations where children have limited access to formal schooling. Gaining D-language through such access are steps towards becoming a crea-visionary.

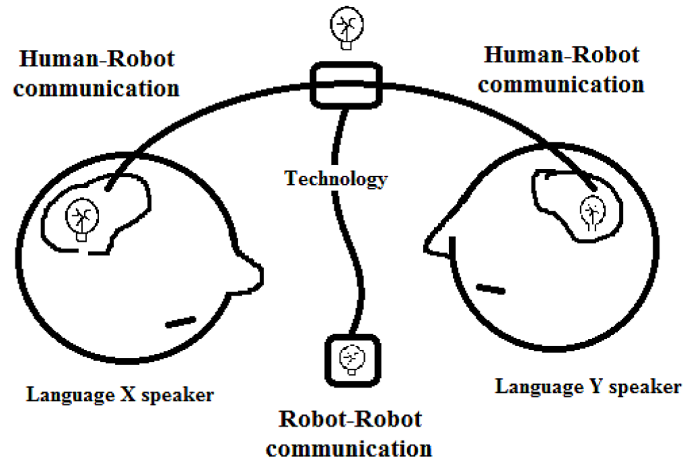## 4.4 Digital/Virtual Universal Language (D-Language)

The Digital/Virtual Universal Language or D-Language refers to a language that is effective for human interaction in the virtual world as well as a language that is easy, effective and efficient for human-robot and robot-robot communication, which includes but is not limited to current programming languages. This D-Language communication model below shows a conversation among four speakers: A speaker of human Language X, a speaker of human Language Y and two robots. The technology or D-Language (shown as the line) makes communication possible among different human speakers as well as robots.

Like D-culture, D-language may deconstruct and merge essences of many human languages. D-language can feature English as the current champion in a world language race and highlights its potential

*Figure 4. The D-Language communication model*
*(Copyright The_D-Language_Communication_Model_Congcong Wang 2016, used with permission)*

**Human-Robot**
**communication**

**Human-Robot**
**communication**

**Technology**

**Language X speaker**

**Language Y speaker**

**Robot-Robot**
**communication**

**The D-Language Communication**

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to be further simplified (e.g., "lol" means "laugh out loud"). D-language can also merge logographs and emoticons. Images empower D-language by increasing the quantity and accuracy of information delivered in ways that traditional oral or written forms cannot. Future image-transformative technology (e.g., chips built in the human brain for faster information transcription), may allow one (e.g., human or semi-robotic person) to visualize others' situational feelings without oral description. Programming humans may sound crazy; however, at a micro level, humans may have already been "programmed" in a natural language environment (e.g., a child's language acquisition through social language cultural immersion). While some researchers may think it impossible, history makes human language transition transition/emergence visible/observable.

At a macro level, the history of language simplification movements across continents reveals that technology has already reshaped human language, e.g., the 1900s simpler English terminology on American newspapers (Simplified Spelling Board, 1920), the 1930-1950s Chinese language simplification and Romanization in mainland China and Singapore (Perez, 2004), and the creation of Japanese Katakana for spelling western words such as "tennis" (テニス). More recent goals of simplification have emerged to make English writing more easily understood and acquired. A common complaint has been the French influence on English and varied pronunciation in addition to letters that can have multiple sounds, such as "c" and "s." Measures to adopt English for European communications in the European Union as well as simplify the language within five years to create Euro English (Dehaene, 2009).

Urgent demand for effective and efficient global web-communication speeds up human language evolution. Creation and updates of Google Translate and web-dictionaries, have challenged linguistic authorities. On February 24, 2016, the American Council on the Teaching of Foreign Languages (ACTFL) circulated the YouTube video *Why can't technology replace human teachers?* on social media. This video shows how several Google Translate attempts make Adele's song *Hello*, which do not make sense or reflect original meaning (Reese, 2016; ACTFL, 2016). However, the goal may not be to "replace"

*Figure 5. Technological universals, digital colonization, and digital cultural integrity*
*(Copyright Technological_Universals,_Digital_Colonization,_and_Digital_Cultural_Integrity_Congcong Wang & Lisa Winstead 2016, used with permission)*

**Technological Universals, Digital Colonization, and Digital Cultural Integrity**

**Technological universals** refer to technologies innovated in different areas but share similar functions (e.g., YouTube and YouKu as equivalent video sites in the U.S. and China) or any type of technology that is utilized universally (e.g., popularly branded products). It includes digital universals and virtual universals.

**Technological colonization** occurs when dominant ideas are digitally/virtually disseminated through technological universals. This digital/virtual information has the potential to replace and chip away traditional cultures and social ways of being.

**Digital cultural integrity** refers to moral/social obligation to preserve traditional cultures and languages for posterity. It is not just the recording of these minority cultures but also providing a breathing space which permits them to retain their authenticity in the digital age (e.g., Amish).
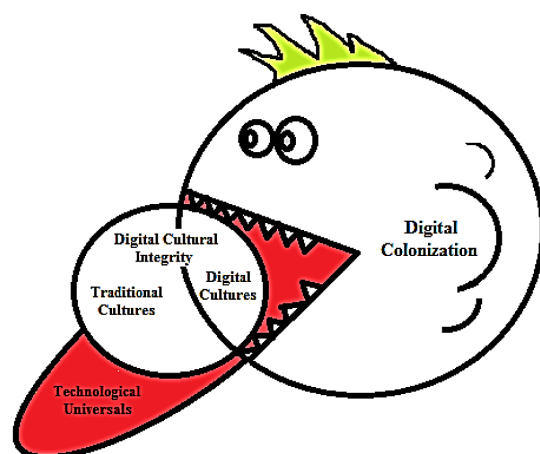
© 2016 Congcong Wang & Lisa Winstead

but "bypass" human routes. Thus, the status of human language in literature and communication is being challenged by "computing language" in engineering. Technology, not yet human's rival in artistic translation, but it may bypass official language gatekeepers by creating a currently unknown language. Alongside language emergence, indications of this rivalry can also be seen in digital cultural universals.

## 4.5 Technological Universals Influence Social Language Interaction

Cultural universals comprise what global societies, ethnic groups, and nations share and may include food, clothing, and more abstract concepts such as shelter, technology, government, and communication. These cultural universals have often been themes of study in the social studies that allows deeper inquiry into the whys and hows of societies' communication, traditions and governments (Alleman & Brophy, 2001, 2002, 2003; Winstead & Gautreau, 2014). While technology and communication are universal, in societies, the development of these communication technologies is different based on culture and location. For instance, technology and communication modes may look different for the Amish but also be quite different historically when making historical comparisons with ancient civilizations such as the Mayan culture. The telegraph and telephone was developed in North America, the Gutenberg press in Europe, and other types of printing comprise some of the technological advances that promoted greater dissemination and sharing of culture, politics, and ideas.

Technological universals have emerged in the digital age and represented by similar forms of technology for learning language. While a keyboard is a technological universal, the way it is used in China or Japan may be quite different due to alphabetic or logographic type. Video-sharing sites such as YouTube and YouKu are technological universals that are utilized respectively in the United States and China. However, due to the connectivity in the digital age, the boundaries between the technology universals as well as commonly known cultural universals are narrowing. At one time societies could be identified by

their specific cultural and regional differences based on their diverse food, clothing, and communication modes. Digital bridges and access via online interaction leads to more common and dominant form of virtual communication that challenges traditional cultures and values.

*New digital culture and language can influence face-to-face as well as online social interaction.* Although netiquette exists, the speed of technology and the different modes, (e.g., Twitter versus face-to-face discussion), influence our interactions, and our formality in these types of learning situations. Children who have broad accessibility to technology (e.g., Warcraft, Wii, Facebook, YouTube, Youku) may spend most time socializing online instead of in real life (Gee & Hayes, 2011). From teenagers to adult couples, mobile devices allow users to enjoy digital intimacy near or far. Through the Internet, people may make friends globally with or without knowing the other party's identity. Technology allows shy learners to interact anonymously with humans and even robots in a virtual environment; addictions to video games, *anime* and social media may socially distance these users from family and friends. People from all cultural backgrounds may be fascinated by what innovative technology has brought to life yet may become bogged down in the ways digital culture overrides and sometimes replaces aspects of their traditional culture and socialization modes. How does technology impact language evolution?

*Translanguaging in addition to language borrowing over the internet and mobile platforms becomes very active and causes language cross-pollinations.* The shaping power of technology on interrelation in human society deconstructs our traditional cultural behaviors and interactions. Technology provides innovative means for communication and opportunities to mirror the cultural background of particular languages being learned. Translanguaging and code-switching languages have been utilized as a term to describe how speakers of two languages and bilinguals may insert words from two or more languages (Garcia & Wei, 2014). Code switching between Welsh and English was first described by Cen Williams as translanguaging as 'trawsieithu' in Welsh (The New York Times, 2010). Although described as writing in one language and speaking in another, translanguaging also reflects how bilingual and plurilingual speakers translanguage or interchange words, phrases, and complete interstitial sentences of one language with another

The English word "google" is originally a noun, but now can be used as a verb in "You can google it" which means "You can look it up on Google search engine." Since the English word "google" has been used by other language users before the company released an official translation, these non-English users often mix the English word "google" with words from their native languages. For example, in Chinese "你可以google一下" means "You can look it up on Google." After the company released their official Chinese name "谷歌", Chinese users still prefer to say "你可以google一下" to "你可以谷歌一下."

With the global popularization of K-pop Gangnam Style, its original Korean title "강남스타일" (the style from the Gangnam area) has been translated into many different languages. Interestingly, its English translation adopts a transliteration of "Gangnam" and an English word "style." The Chinese translation "江南Style" adopts two Chinese characters "江南" based on the meaning of "강남" (Gangnam) and a non-translated English word "style" as well. To say "Gangnam Style is so cool" in Chinese "江南Style 太酷了", the speaker uses two languages no matter whether he/she knows English. Often, the youth in Eastern Asian countries consider it fashionable to mix English words with their mother tongue as well as the symbols of pop-culture.

## 4.5.1 Emoticon Culture: Logos and Symbol Co-Construction

As a new word combining "emote" and "icons", emoticons on the Internet were first created in the U.S. in the 1980s and are part of the Internet culture. ☺ ☹ :-):-(are the most commonly used emoticons to express happiness and sadness among Internet and mobile users.

As an uncommon character in modern Chinese, 囧 (pronounced as jiǒng and original means "window" or "bright") can date back to oracle bone inscript (Li & Li, 2014). Due to its shape of a face, 囧 has been given a different significance "embarrassment" "gloom" and has become a most popular emoticon in blogs and online chat rooms in Taiwan (Hammond & Richey, 2014; Ru, Lu & Li, 2010). From Taiwan the character was disseminated through Hong Kong and then mainland China via social media (Hammond & Richey; Ru, Lu, & Li).

Notably, unlike any language symbol, an emoticon can be recognized and used among any language users. Somehow, the popularization of emoticon culture reveals that such universal and cross-languaging symbols bridge languages and cultures globally. It further reveals a trend of world language emergence. Digital learners may then acquire such universal language and incorporate it into everyday speech. The question to ponder is whether this internet language is foreign or native for the digital learner in another country. Defeating many languages in their original forms, the emerging D-language co-constructs a fashion of language borrowing.

## 4.5.2 Digital Cultural Integrity

The consequences of such borrowing may be/become apparent as the world becomes smaller through technological global exchange. Measures have also been taken to retain languages within societies as a way of guarding linguistic and cultural integrity. It is interesting to note that the English cognate "word" *computer* is translated as *computadora* in Mexico. However, the Spanish utilize the term *el ordenador* for computer instead of *computadora*. Similarly, the French utilize the term l'*ordinateur* for that same concept and have historically been known to police their language and English equivalent intrusions of loan words that do not clearly translate from one language to another (Conlin, 2014). The two Chinese characters "电脑" respectively means "electronic" and "brain". Is this an effort by Europeans to retain their linguistic and cultural integrity? The Spanish and French have been known to exercise their rights to develop and maintain their language integrity through such language policing.

*Language borrowing is a phenomenon of interaction.* When language is borrowed, it also expresses the ideas and philosophies from the country where the language is borrowed. And, while borrowing is common, over the past four decades, there have been suggestions that the very foundation of ancient languages change due to the need for speed and efficacy, e.g., the attempt in 2001 to change Japan's official language to English (Kawai, 2009; Matsuura, Fujieda, & Mahoney, 2004). Access to English and English learning has been uneven as those who speak more mainstream languages such as Mandarin have greater access than minority counterparts (Feng, 2009). English language incursion in China has also created tensions with regard to the use and status of Mandarin over minority languages, but also English influence within the region has created tensions among minority and majority groups and concerning what language matters (Feng, 2009).

- **Digital Cultural Integrity:** Cultural integrity as described by Jagers (2001) is the value of the resources and knowledge of particular populations or groups. Digital cultural integrity refers to valuing and preserving culture and the cultural assets of individuals and minority populations and their languages. Language reflects cultural and social ideals. Language is a vital part of culture. When the origins, language, and culture of minorities are valued, this promotes student well-being and confidence (Phinney, Horencyzk, Liebkind, & Vedder, 2001; Jagers, 2001). For example, cultural integrity can be maintained in schools through Navajo storytelling by Navajos (Eder, 2007), and appreciation of native arts, such as Native American drumming (Moore, 2007). Similarly, digital oral history projects exist around the world to record and relate historical experiences. Educators have a moral role to ensure that we also promote digital linguistic integrity (Ishihara, Itoko, Sato, Tzadok, & Takagi, 2012; Yap, 2013).
- **Digital Linguistic Integrity.** Digital linguistic integrity refers to the sovereign right of a nation state as well as minorities to digitally record as well as learn and preserve their language through digital devices. Efforts to efface, erase, or quash particular language formats can represent attacks on the culture. Assimilation measures similarly affect linguistic integrity, in general. For instance, international pressures cause individuals in some in some countries such as Japan, to consider making English the official language (Kawai, 2009; Matsura, 2004). Although English has not become the official language in Japan, these types of propositions reveal the issues associated with language status and marginalization. Thus, linguistic integrity is also directly associated with retaining cultural integrity.

Western incursions and trade awakened Chinese and other Asian intellectuals to the need to speed communication and increase literacy. In the 1930s, mainland China began Western-influenced modernization and language simplification. By the 1950s, a large number of Chinese characters were simplified in mainland China to increase literacy rates through the ability to acquire the language faster (Perez et al., 2004). These characters were adopted by Singapore as well (Kane, 2006; Perez et al., 2004). Traditional Chinese characters are still in use in Taiwan and Hong Kong. Creation of the Pinyin system was intended to Romanize the Chinese language. The demand for Western spelling and Western words led to language reformations. For instance, the Japanese utilize Katakana for the syllabic representation of foreign words for which there is, generally, no Chinese character equivalent. Computer is written as コンピュータ (computaa) in Katakana. The Japanese did not borrow Chinese characters that represent this word, but instead utilize Katakana to represent the computer phonetically and syllabically. Fettuccini, café, and other foreign terms are written in katakana as seen on menus in Italian and French restaurants in Japan.

Alternative forms other than Western forms for communication should be valued to maintain linguistic, cultural, as well as social integrity. Of course, all languages are influenced by other cultures and borrowed words. When one's language value is diminished, a sense of pride with which you are culturally as a person is diminished as well. Children whose language and cultural status is marginalized in society can lose their sense of well-being (Phinney et al., 2001; Jager, 2001). Well-being and pride can be diminished through dialogues in which the majority languages and cultures challenge minority domestically as well as globally. Thus, from a social justice perspective, in the digital age language educators have an important role to play within the struggle for language power and politics.

## 5. TECHNOLOGY AS BENIGN FACILITATOR OR HUMAN THREAT

*The ancient Chinese game of Go is one of the last games where the best human players can still beat the best artificial intelligence players. (Mark Zuckerberg, Facebook post, January 26, 2016 in Palo Alto, CA)*

However, in 43 days, history has been rewritten. On March 9, 2016, a Google A.I. beat Human World Champion Lee Sedol who said after the match, "I was very surprised. I didn't expect to lose. [But] I didn't think AlphaGo would play the game in such a perfect manner" (Sang-Hun & Markoff, 2016).

Currently, technologies are utilized as facilitators in various language learning and classroom contexts. In the future, will technologies replace the human language instructor? Where does technology drive humans' role in a technology-dominant society? With more human labor being replaced by machines to manufacture products, to help customers check out in stores, robots to monitor phone calls, software conducting translations, and virtual guides touring visitors at museums, concerns arise about how and where technology will drive the role of the human. Mark Zuckerberg's recently posted information (above) about Facebook AI researchers' advances in teaching computers to predict contextually.

*Language is one of the most complex things for computers to understand. Guessing how to complete a sentence is pretty easy for people but much more difficult for machines […] Mark Zuckerberg (Facebook post, February 18, 2016 in Palo Alto, CA).*

Artificial intelligence researchers have found that a computer's AI memory has the ability to predict not only low frequency words such as "on" but also people's names and nouns that are missing in particular stories based on context, such as *Alice in Wonderland* (Hill, Bordes, Sumite, & Weston, 2016). Since language teaching and learning involves advanced skills as well as complex cognitive and emotional processes, language is a unique feature of human interaction and learning (Jagers, 2001; Phinney et al., 2001) that has not yet been fully duplicated by computers.

### 5.1 Digital Colonization: Replacement of Human Learning

While technology has not replaced humans in language education, the next generation of technology is under research and has the potential to replace human instructors. Hologram technology portrayed in *Star Wars* appears to be an inevitability. The maturity of hologram development has the potential to convert school language programs to language fast- food stores where a manager can manage multiple projected virtual scenarios to allow many human learners to immerse in virtual-authentic learning contexts.

With awareness and self-education in technology, some language educators may feel hesitant to adopt technology due to fear about being replaced by it. Schools and universities provide benign opportunities for technological professional development so that professors can convert their current on-campus courses into online formats. This reveals a new feature of technology-driven education. Developing an online language course requires a lot of expertise and effort in not just language but also technological know-how. The course might be equipped with vivid videos and animations, free resources for self-exploratory education and other engaging technologies. Once the course is developed, it requires less from the instructor who may only be needed to facilitate and manage the course when technologies fall short of human intelligence or aspects of the program become outdated, or where human technologies

fall short of human intelligence, e.g., human interaction, problem solving, motivating, encouraging and comforting (Goodrich & Schultz, 2007; Goetz et al., 2003).

Since well-developed courses can be shared as well as assigned to those that have less experience (e.g., teaching assistants), and the university's ownership of intellectual property of the course has the potential to cause barriers in the language instructor or language developer's job relocation, those who invest huge amounts of time and knowledge to develop courses may begin to feel used and underpaid for their efforts. Course developers' intellectual rights are not addressed or protected and they may be considered obsolete once the course and format is in place, losing their position and the course they built. Technology course building benefits institutions in a transition from education to business by reducing the budget of human labor. Since technology can be duplicated at low cost, time will only tell how positions might be eliminated.

The tech-industry dominated by corporation input and government decisions at the macro level drives education towards an unclear future. Artificial intelligence advances reveal, for the first time, how an AI machine can compete and even beat a human at a Go board game (Chappell, 2016; Shang-hun & Markoff, 2016) reflective of notions of more advanced robotic abilities as similarly suggested in the movie *Terminator*. While it takes humans many years to learn a language, it may take a robot just seconds to be programmed or reprogrammed. The learning speed of humans may fall behind that of future technologies. Robots are designed with efficiency, fast speed, and duration and even attractive appearance to overcome human shortcomings (Goodrich & Schultz, 2007; Russell & Norvig, 1995). From a robotic perspective, human time spent on rest, love, encouragement, and entertainment may be viewed as a waste or flaw in design. The danger of this machinery mindset is that society may become de-humanized when humans are expected to function efficiently as robots while robots function as autonomously and intelligently as humans. Should human and computer robots become rivals, a widening divide will emerge between TALL and human-facilitated language learning and technology-dominated instruction. The potential human-AI conflict is just a reflection of human society conflict. If humans cannot overcome their own shortcomings as a society, humans may carry the same mistakes to a new realm. When tension regarding resources and intelligence escalate, humans may lose more than they wagered.
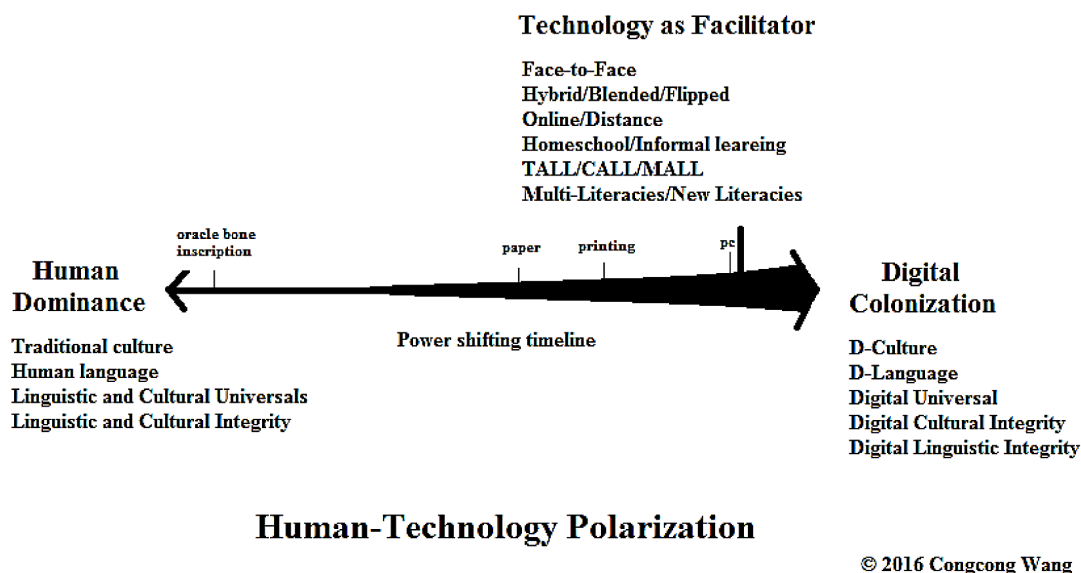
## 5.2 While Robots Are Becoming Humanized, Humans Are Becoming Robotized

In the digital age, technology is power, capital, trend, fashion, identity, and finally D-culture. From programming to foreign languages, children can develop a variety of skills through web-surfing, bypassing parents' authority at home. Digital monitors used for baby-watching and children's learning software applications may reduce parent-children interaction. Consistently investing spare time on knowledge updates as well as attempts to catch up with the technology speed, parental and social time is sacrificed. Human relations in society are being digitalized in this very capital-driven world. In a materialist world, young people obsess much about enjoyment brought by technologies and chase it as a fashion. Some consumers are convinced and even misled by commercials that promote consumer culture and human desire for the "next-newer" the "next-better" without a limit.

When Apple products become a symbol representing a digital identity of many teenagers globally, some blind digital fashion chasers paid their costs for their digital ignorance. A Chinese teen Wang Shangkun, who sold a kidney to buy an iPad, became too weak to face alleged harvesters in trial (Bennett-Smith, 2012). When action deviates from actual need and financial affordability, it ends up with tragedies. Other cases reveal potential harm caused by the capital-driven technology industry and the global society's

*Figure 6. Human-technology polarization*
*(Copyright Human-Technology_Polarization_Congcong Wang 2016, used with permission)*

**Technology as Facilitator**

Face-to-Face
Hybrid/Blended/Flipped
Online/Distance
Homeschool/Informal leareing
TALL/CALL/MALL
Multi-Literacies/New Literacies

oracle bone
inscription     paper   printing    pc

**Human Dominance**

Power shifting timeline

**Digital Colonization**

Traditional culture
Human language
Linguistic and Cultural Universals
Linguistic and Cultural Integrity

D-Culture
D-Language
Digital Universal
Digital Cultural Integrity
Digital Linguistic Integrity

**Human-Technology Polarization**

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lack of knowledge and humanity. According to the New York Times, "137 workers at a factory here had been seriously injured by a toxic chemical used in making the signature slick glass screens of the iPhone" (Barboza, 2011). In a CNET report, "Benzene and n-hexane are chemicals thought to cause cancer and nerve damage, and they both have been used in the final assembly of Apple's iPhones, iPads, iPods, and Mac computers—until now" (Kerr, 2014). Thus, the capital-driven tech-industry has begun to treat humans as machines. The D-culture commercial colonization and enslavement of individuals reveals the D-Human aspect of how cultures and people's roles as laborers are deconstructed in society.

As social creatures, humans fear falling behind, being marginalized or becoming isolated. World cultures are melting into a virtual world with narrowed or even one way of thinking valued over another. What perspectives will be chosen? Will they be Eurocentric? Will these perspectives run counter to cultures? Where does technology lead us? What is considered important? By whom? The question is really not about whether we need technology, but what we create it for and what we expect our future to be. Is a classroom packed with technological media necessarily better than a non-tech classroom? It depends, but those who say "no" to technology seem to be out of date and very much out of style. Whether that out-of-datedness is a liability or a strength still remains to be seen.

## 6. THE GLORY OF HUMAN LANGUAGE AND CULTURE: WHAT ARE WE LOSING IN THE DIGITAL AGE?

After celebrating the surprises that technologies have brought to human society in the 21st century, educators and researchers should look back at the glory of the less digital side of human society. When humans are too busy learning new things, there is little time to think about the human aspects that may disappear in the digital age. Without reflection upon how digital technologies re-shape human society it is difficult to understand how aspects of language and culture might be lost or replaced.

## 6.1 Rethinking the Role of Technology in the Digital Age: Challenges to Traditions and Values

*D-Culture and D-Language empower crea-visionaries in the virtual world. When virtual life dominates real life on a large scale, those whose voices are not heard in the virtual world appear to have lost their voices in the real world. But all voices matter. (Dr. Wang)*

The digital age does not mean that traditional approaches are not utilized or even not beneficial, such as face-to-face learning and non-digital modes of learning. Instead, it is an era in which traditional and digital culture co-exist. Some people may argue that there is a way to duplicate a culture to retain human heritage. People may film a video or conduct a project with hologram images or even clone. But, really, can humans clone a culture? Culture is continuously evolving in contexts. As technology becomes more advanced, we can make duplicates which mirror our culture through filming and reactivation. However, from a philosophical stance, a duplicate is at most a copy that can never become the authentic or the original one. This is the uniqueness of human culture.

Humans appear to push traditional and indigenous culture to the brink of elimination while digital cultures dominate the world. Just because many cultures have been passed down orally does not mean that those forms are any less intrinsically important than those digital ones. Lacking technology, indigenous cultures and traditional culture are often labeled as "out of date" or "backward." Wise seniors in these cultures may never learn to use computers, but their histories without a digital format or a written text should not be ignored. So many ballads and dances can only be passed down authentically through human performances. People should stop using discriminatory eyes to view indigenous cultures, traditions, and religious practices.

The Amish towns known for their horse carriages and buggies which are representative of their culture, traditions, and beliefs (Amish American, n.d.). Tour groups visit nearby Amish towns bringing their digital and video cameras to capture the customs inherited since the 1800s and take photos with those Amish people whom they sometimes believe are actors. Tourists become upset when their photo-taking requests are denied. This is not Disneyland but living historical museums of authentic Amish who retain their culture and traditional past without digital erosion or invasion. Their traditional culture and language has neither been Americanized nor assimilated, nor digitalized. Their non-digital life should be respected in the digital age, and thus serve as an example that just because a group is out of step with current tech does not mean that their existence or methodologies are any less valid.

Rethinking the role of technology in a human society means to leave breathing space for individuals and groups from all walks of life by setting up boundaries rather than pushing everyone to accept new technologies or digital demands. Although having facilitated all levels of communication (e.g., individual, group, public and mass) and promotion of individualism online, digital technology in its present form also has the potential to erase individuality and promote commonality. Cultural and linguistic heritage has been replaced and assimilated under the heading of Americanism in the United States. Ethnic cultural pasts such as Irish and Scottish and respective languages, e.g., Gaelic, are forgotten. Heritages, ancestry, languages and oftentimes the struggles that brought immigrants to America are read about in textbooks. In China, ethnic minority children who have lost their heritage language and culture may say zhōng guó rén (中国人) or literally means the "middle kingdom people." When translated into English it means a "person from the country of China." Thus, if the minority culture, language, or history is

retained, one is not of that nation. The underlying meanings are apparent and extend to one's sense of being an outsider or an insider, a true American or a true Chinese citizen that represents and speaks the dominant national language.

The name of the country becomes a symbol or a label that represents the brand of the product "human" who becomes digitally colonized. When humans are stripped off their cultural identities, awareness, humanity, they simply become empty vessels that can be filled with the new D-Culture. This reflects a form of human digital colonization. If humans only put forth replications instead of representing various aspects of human society, ways of thinking and whole cultures are marginalized. Thus, cultural and linguistic integrity is diminished or becomes extinct. Through this progression will insensitivity and apathy lead to a world where *Truman* exists, or that we wake up as duplicates as suggested in *Pendulum* or *Oblivion*? This is how human society is portrayed in Hollywood movies, but could these movies reflect a future reality in which eventually could humans lose control of themselves and the world they are living? Perhaps humans will gain an overreliance on technology-directed learning instead of human facilitation of instruction. Perhaps we will all speak one universal language and be just one and forget about our heritages, languages, and cultures. Yet again, perhaps one day the human empathy, and emotion will be most valued. If D-culture takes hold, maybe folks will have to buy tickets just to watch a real face-to-face human lecture.

## 6.2 What Can We Gain in the Digital Age?

Standing at the intersection of human language history, we readers should give language teachers credit for their time, effort, patience, care, love, and other emotional and intellectual investment in helping those who are disabled, newcomers, or just ordinary learners become who they did not dream to become. Those educators, teachers and language workers are the first people who welcome disadvantaged children such as refugees. Their effort to make those children feel home in a new community is invaluable, and, most importantly, human. These human aspects are what advanced technology can hardly surpass.

Eye-contact, a smile, face-to-face interaction, these simple moments bind the two individuals emotionally and nonverbally. The uniqueness of feeling cared and loved cannot be duplicated. This is the authenticity of human society as well as the originality of language learning.

Technologies can have the potential to promote human gain. The following chapters reveal how language teaching and learning supported by technology can provide authentic and real-time human-to-human scenarios that benefit and support language practice, development and acquisition. We just need to be mindful and not blind to the potential of technology to provide benefits to human learning, language preservation and maintenance. And, most of all, that we are still able to provide a human touch.

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