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Web 2.0 for Language Learning: Benefits and Challenges for Educators

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ABSTRACT

This literature review study explores 44 empirical research studies that report on the integration of Web 2.0 tools into language learning and evaluate the actual impact of using those Web 2.0 tools in language learning. In particular, this review aims to identify the specific Web 2.0 tools integrated in the educational settings, theoretical underpinnings that are commonly used to frame the research, methodologies and data analysis techniques that scholars employ to analyze their research data, the benefits and challenges scholars spotted in their research findings, the pedagogical implications in using Web 2.0 for language learning and future research directions that scholars offer from their research.

Keywords: Web 2.0, Computer-assisted language learning, Technology, Computer-mediated communication, social networking

INTRODUCTION

Since 2004, a variety of Web 2.0 technologies have been rushing into people's daily lives. The concept, Web 2.0, comprises a multitude of different connotations resulting in an increased emphasis on user-generated content, information sharing, collaborative and cooperative effort, learner-to-learner and learner-to-instructor interactivity, and informal and formal learning, which altogether potentially formulates a newly-emerging paradigm of Web 2.0-based online learning, as compared to traditional Web-based or e-learning paradigms (Brown, 2010; Craig, 2007; Greenhow, Robelia, & Hughes, 2009; Olaniran, 2009; Selwyn, 2008). In the language learning domain, it is patent that to date, the fad of using Web 2.0 tools for language learning has been more widespread. Web 2.0 tools, interchangeably named social media or social technologies, are penetrating all aspects of language classroom activities. Although there exists continued awe and apprehension about their effects, it is inevitable to find that more and more language educators are using Web 2.0 tools in their teaching (Thomas, 2009).

The wedlock between Web 2.0 and language education does not exist in a vacuum. As Thomas (2009) posits, the underpinnings reside in the fact that only through the medium of language can the web make all the acquaintances we have and all the communities we build possible. In other words, the practices of learning a language can be carried out on the web, which builds a naturalistic connection between language learning and Web 2.0 integration.

Other innate characteristics of Web 2.0 also echo the essence of language learning. As a social tool that provides numerous opportunities for language learners, the web fundamentally “decentralizes the role of the language classroom” (Thomas, 2009, p. 21). Specifically, the process of learning that conventionally takes place in-classroom has been replaced by the web, a student-owned territory that has a much larger, more engaging and more inclusive power than a traditional classroom setting. This is evident in language learning as it is essentially a process in which a target language is often practiced and acquired within communities and group settings that are commonplace on the web.

It is only in recent years that researchers have started to conduct empirical and exploratory research studies to assess and evaluate the actual impact of using Web 2.0 tools in language learning, both in and outside of classroom settings (Lomicka & Lord, 2009). This literature review particularly aims to delve into research revolving around Web 2.0’s integration into language learning and teaching settings, seeking to answer the questions of why and how Web 2.0 tools are being adopted by language educators and the implications that can be extracted from the scholarly studies for future research endeavors. The specific research questions of this literature review study are:

1. What are the theoretical underpinnings that scholars use to frame their research?
2. Which Web 2.0 technologies were examined in these studies?
3. What methodologies and data analysis techniques did scholars employ to analyze their research data?
4. What are the benefits and challenges of using Web 2.0 for language learning and teaching as identified in these studies?
5. What implications and recommendations did the current research have for future research directions in Web 2.0?

METHOD

Selection Criteria

To answer the research questions, a series of selection criteria were established and followed strictly in this review study:

1. Research must focus on using Web 2.0 tools in the context of language learning and teaching. Published research on using Web 2.0 tools in other disciplines or areas of study was excluded in this review.
2. Research must consist of empirical studies reporting data derived from actual observations or experimentations. Published research that was solely focused on conceptual framework, personal opinions or anecdotal experiences was excluded.
3. Research must explicitly identify the one or multiple Web 2.0 tools examined in its studies. Studies that examine the full courseware, such as Moodle or WebCT, or that report on any types

of academic online learning program, without implicitly identifying the use of the Web 2.0 tool in such courses/programs, are also excluded in this review.

4. Research must provide evaluative evidence of the Web 2.0-supported activities by reporting qualitative or quantitative data in one or more of the following dimensions of learning: affective learning (i.e, whether the use of Web 2.0 affects student motivation, attitude and perception); cognitive learning (i.e, whether the use of Web 2.0 affects student achievement and performance); and metacognitive (i.e, whether learners are more autonomous and self-directed in the learning processes). Papers that did not provide any evidence on the previous three dimensions were excluded.

Identification of Eligible Studies

The identification of eligible studies was conducted in three stages. Due to the voluminous body of research on using Web 2.0 tools for language learning and teaching, in the first stage the search was limited to the three well-recognized leading refereed journals, respectively, *Computer Assisted Language Learning (CALL)*, *Language Learning & Technology (LLT)*, and the *CALICO Journal*. In hopes to keep abreast of studies that concern the most up-to-date Web 2.0 technologies, a five-year (from 2008 to 2012) time frame on the publication date was applied to restrict the number of reviewed studies in the three journals. Later, the researcher conducted multiple rounds of searching separately within each journal's website, using keyword Web 2.0 and several specific categories of Web 2.0, including blog, microblog, wiki, Twitter, Facebook, and social networking. In searching articles in CALL, *Web 2.0* was used as a keyword to search in its publisher, Taylor & Francis' online databases, which yielded 32 results. After limiting the publication date and applying the selection criteria, five articles were finally selected from CALL. The same methods of searching were applied to LLT and the CALICO Journal; eventually nine articles from LLT and eight from the CALICO Journal were finalized to be included in this review.

The second stage of this search was extended to three major educational databases, Educational Research Information Center (ERIC), Education Research Complete (ERC), and Education Full-Text, using the same key words. After restricting the searching results meeting the selection criteria, 10 more articles were identified and thus included for further analysis.

The researcher also decided to add chapters from one book, *The Next Generation: Social networking and online collaboration in foreign language learning*, to this pool of reviewed studies. This decision was made to diversify and broaden the scope of Web 2.0 tools investigated in this literature review. Using the same selection criteria, only five chapters that empirically examined specific Web 2.0 tools were selected from this book. All the selected articles can be found in Table 1.

Table 1 Distribution of Selected Studies in journals and books

Journal/ Books Title	# of Articles	Authors
CALL	5	Ducate and Lomicka (2008); Ernest et al. (2012); Lee (2009); Martinez (2012); Vurdien (2011);
LLT	9	Diez-Bedmar and Perez-Paredes (2012); Elola and Oskoz (2010); Hafner and Miller (2011); Kessler (2009); Kessler, Bikowski, and Boggs (2012); Lee (2011); Sun (2009); Yang (2011); Yanguas (2010)
The CALICO Journal	8	Arnold, Ducate, and Kost (2012); Darhower (2008); Gebhard, Shin, and Seger (2011); Lee (2010); Mills (2011); Mitchell (2012); Reinhardt and Zander (2011); Sun (2012)
Other	18	Armstrong and Retterer, (2008); Borau et al. (2009); Chen, Chen, and Sun (2010); Harrison and Thomas (2009); Hourigan and Murray (2010); Huang, Lin, & Chiang (2010); Lee (2010); Liou and Peng (2009); Lund (2008); Matthew, Felvegi, and Callaway (2009); McWilliams et al. (2010); O'Bryan and Hegelheimer (2007); Perifanou (2009); Petersen, Divitini, and Chabert (2008); Soares (2008); Sun (2010); Woo et al. (2011); Zorko (2009)
<i>The next generation: Social networking and online collaboration in foreign language learning</i>	5	Antenos-Conforti(2009); Arnold, Ducate, and Kost (2009); McBride (2009); Román-Mendoza (2009); Williams and van Compernelle (2009)
Total	44	

RESULTS

Theoretical Underpinnings

The incorporation of Web 2.0 tools in language learning and teaching is grounded in a wide range of seminal theories across multiple disciplines, including education, communication, and linguistics. Among all the reviewed studies, 64 % explicitly stated the theoretical groundings of their research and made close association between the research investigation and the theoretical framework. This finding may suggest a rising connection made with the theoretical foundations, which is in discordance with Lomicka and Lord's (2009) prior claim that the research studies examining Web 2.0 tools in language learning lack a solid theoretical base. This may be due to the refined research base of this review, as the majority of the studies in this review are uniquely retrieved from the three most preeminent journals. It may also be due to an improved coherence between the empirical studies and theoretical bases in the CALL research domain. Table 2 presents the theoretical frameworks identified in the reviewed studies.

Table 2 Theoretical Framework identified in reviewed studies

Theoretical Framework	Research	# of articles	%
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Sociocultural approach	Darhower (2008); Gebhard, Shin, and Seger (2011); Lee (2009); Lund (2008); Reinhardt and Zander (2011)	5	11%
Situated learning	Elola and Oskoz (2010); Mills (2011)	2	5%
Community of Practice	Petersen, Divitini, and Chabert (2008); Yang (2009)	2	5%
Constructivism/social constructivism	Ernest et al. (2012); Petersen, Divitini, and Chabert (2008); Harrison and Thomas (2009); Lee (2010); Lee (2011); Matthew, Felvegi, & Callaway (2009); Kessler (2009); Lee (2010); Lee (2011); Martinez (2012); Woo et al. (2011);	11	25%
A framework of autonomy	Hafner and Miller (2011); Kessler (2009); Kessler and Bikowski (2012);	3	7%
Collaborative learning	Arnold, Ducate, and Kost (2012); Ernest et al. (2012)	2	5%
Interactionist model	Antenos-Conforti (2009); Yanguas (2010)	2	5%
Task-based learning	Sun (2012)	1	2%
Not identified		16	36%
Total		44	100%

In the current literature review, 25% of the studies chose constructivism theory to support their studies. This finding concurs with Thomas (2009)'s acknowledgement to constructivism theory being the backbone of voluminous research on Web 2.0 tools in CALL. Constructivism values students' prior knowledge, considering social interaction as the foundation of all learning experiences and the venue of all learning engagements. Learners achieve their learning goals by actively associating with their prior knowledge and experience, and constructing their own understanding and knowledge through the social interaction that a multitude of social technologies affords. The use of Web 2.0 technologies largely increases the possibility of bringing social interaction into learning environments (Lee, 2009; Mills, 2011). With the facilitation of the Web 2.0 tools, students are more likely to be engaged in a variety of interactive learning environments that equip them with more flexibility and autonomy (Kessler, 2009).

Vygotsky's (1978) social constructivism theory was also well-cited in the reviewed studies. Vygotsky reinforces the importance of social interaction in helping learners to achieve cognitive learning. He posits that social interaction can leverage learners' skills to a level that is hardly attained by individual learning as it provides tremendous opportunity for learners to verbalize their own learning, reinforces their own understanding, and allows them to access varied resources provided by others. Researchers can seamlessly relocate this theory in the realm of language learning and teaching .

Sociocultural theory is also highly applicable into language learning settings. The sociocultural theory views learning as an active social and collaborative process in which

learners use a system of symbols and tools to achieve their learning goals. In this process, learners interact with the social environment and transmit their learning both externally and internally. In use of Web 2.0 tools such as blog and wikis, the tools themselves are not merely deemed an external artifact that learners can adopt and use; more importantly, they are tools that learners use to mediate their learning and bring about individual cognitive development (Gebhard, 2012).

Researchers also use situated cognition theory, which holds that learning takes place within a specific context and it should also be applied in a new situation (Brown, Collins, & Duguid, 1989). The association between situated learning and Web 2.0 emphasizes learners' abilities to apply their knowledge into actual practice; in other words, *learning by doing*. The learning context, which entails the learning environment, teacher-designed activity, learners themselves, and the culture within which learners are immersed, is of great importance as far as situated cognition theory is concerned. The learning environments that Web 2.0 tools provide enable learners to situate their own learning and apply their knowledge and skills to create actual learning products by using the tools.

Web 2.0 Technologies in Reviewed Studies

The distribution of various types of Web 2.0 tools examined in the current reviewed studies is presented in Table 3. Obviously, wikis and blogs remain the top two commonly examined Web 2.0 technologies, which cover 32% of the total reviewed studies. On a larger scale, wikis and blogs are consistently the most two commonly investigated and widely appropriated tools in the field of CALL (Oliver, 2010). Voice blog, as a newer form of blog that incorporates audio features into the traditional blogs, also garnered researchers' attention (Sun, 2010; Sun, 2012). The third most investigated tools were social networking tools including Facebook and Twitter. In addition, some other scholars examined podcast and showed interests in Googledocs and so on. Table 3 demonstrated the major types of Web 2.0 tools examined in the reviewed studies.

Table 3 Types of Web 2.0 tools examined in reviewed studies

Web 2.0 tools	Research	# of Research	%
Blog	Ducate and Lomicka (2008); Gebhard, Shin, and Seger (2011); Hafner and Miller (2011); Lee (2009); Lee (2011); Martinez (2012); Vurdien* (2011); Yang (2011);	8	18%
Wiki	Arnold, Ducate, and Kost (2012); Diez-Bedmar and Perez-Paredes (2012);	6	14%

	Elola and Oskoz (2010); Ernest et al. (2012); Kessler (2009); Lee (2010)		
Social networking tools	Mills (2011); Mitchell (2012); Perifanou (2009); McWilliams et al. (2010); Borau et al. (2010)	5	11%
Podcast	Lee (2009); Abdous, Camarena, and Facer (2009); Lord (2008); O'Bryan and Hegelheimer (2007);	4	9%
Voice blog	Sun (2009); Sun (2012);	2	5%
Chat	Darhower (2008); Elola and Oskoz (2010)	2	5%
Youtube	Hafner and Miller (2011)	1	2%
Video conferencing	Yanguas (2010)	1	2%
Google docs	Kessler, Bikowski, and Boggs (2012);	1	2%
Other		14	32%
Total		44	100%

This finding demonstrates that researchers in recent years have begun to investigate a wider range of Web 2.0 technologies than was examined previously. The current pool of investigated Web 2.0 tools presents an increased investigation in both its number and scope, including wiki, blogs, social networking, podcasts, and video conferences. The preceding research found in the CALL literature focused more on text-based computer-mediated technologies, such as email and text-based chat (Stockwell, 2007). Contrastingly, multimedia web technologies with interactive and collaborative features dominate the current reviewed studies. In addition to sharing interactive and collaborative features, these multimedia Web 2.0 technologies vary considerably in the way they can support language learning and teaching. For example, wiki and blogs were primarily used to support writing tasks, as opposed to the fact that podcast and video conference were used to perform speaking tasks. Social networking tools, on the other hand, were predominantly used to enhance student motivation and collaboration. Simply put, the use of Web 2.0 tools in the reviewed studies seem to be able to afford language learning environments that fit differentiated learning goals and facilitate to implement varied learning tasks.

Methodological Issues

Among all the reviewed studies, approximately 68% of the reviewed studies were qualitative and descriptive in nature, aiming at answering what and how questions through rich description. As opposed to determining any casual relationships between Web 2.0 tools and language acquisition, the majority of the reviewed studies focused on describing the learning context and the Web 2.0-supported learning environment in attempts to shed lights on how

students might learn in such environments. Researchers used interviews, observation, surveys and content of learners' writing on the Web 2.0 space (e.g. wiki, blogs) as data types found in the qualitative studies. In the quantitative studies, 76% of them were descriptive and 14% used rigorous experimental designs. This finding indicates that the research revolving around Web 2.0 and language learning is still in the germination stage, where contemporary research studies are still exploratory in nature.

When looking into the specific qualitative approaches used, the qualitative case study shares a large portion of research in the current reviewed studies. As a research methodology that probes into the dynamics of specific educational settings such as a classroom or lesson, case study offers a unique opportunity to delve into various language learning contexts which possibly encapsulate a deeper understanding of multiple participants in a learning activity (Duff, 2008). For example, Darhower (2008) used case study to investigate the linguistics affordances of Telecollaborative Chat involving 80 students in a higher education setting. Although not specified by the authors, it is noteworthy that many of the reviewed studies in this literature review used a single class or multiple classrooms as their research units (Antenos-Conforti, 2009; McBride, 2009; Román-Mendoza, 2009). By using case studies, scholars were able to take a closer look at the interplay and interrelations of a variety of components in educational settings including students, teachers, and the Web 2.0 integration. This may be a rising methodological approach in CALL research.

Among the quantitative studies, the research was predominantly descriptive with a few exceptions that used experimental design. Using a questionnaire is found to be commonplace as one research method to gather quantitative data in order to conduct descriptive and statistical analysis. In a great number of research studies, scholars used self-reported questionnaires to elicit students' and teachers' perceptions of their employed Web 2.0 tools (Antenos-Conforti, 2009; Chen, Chen, & Sun, 2010; Grgurovic, 2011; Hourigan & Murray, 2010; Huang, Lin, & Chiang, 2010; Perifanou, 2009; Román-Mendoza, 2009; Woo et al., 2011). Although many researchers acknowledged the limitations of using self-reported survey data, it is patent that this type of quantitative data nevertheless reveals valuable insights in this exploratory stage of research investigation. In one of the few experimental studies, Chen et al. (2010) conducted a research study which used experimental design to statistically analyze the relationship between students' performance on reading comprehension and social-tagging technology integration with a pre- and post- comparison before and after the Web 2.0 tools' intervention.

The research studies also vary in their data types, settings, and sample sizes. In addition to the abovementioned data types including typical interviews and survey questionnaires, researchers also used multiple venues to record the interaction that took place in both online and offline settings. For example, in Yang's (2011) ethnography study, online interaction including number of blogs and comments records, class assignments, and reflective journals, in addition to the regular surveys and interviews, were all collected as research data.

In terms of researcher settings, almost all of the studies in the current literature review explored how Web 2.0 tools were used in higher education. The target language taught/learned in

each study varied from foreign languages such as French and German, to English as a second language, although the majority of them continue to target more commonly taught foreign languages. Regarding sample size, most of the reviewed studies have relatively small sample, among which 87% are less than 50. Only two studies have sample size larger than 100.

Except for those studies that did not provide such information, the duration of intervention varied from one hour to 2 years. Most of the studies were conducted in a typical semester-long learning period. One study that involved synchronous chatting chose to focus on (an hour chat-session) an hour-chat-session as the research intervention duration (Darhower, 2008). Seven of the studies that were conducted in higher education settings lasted no more than eight weeks, seven studies lasted 14 to 15 weeks, and the other two studies lasted two semesters.

Educational Benefits of Web 2.0 Tools

Promoting Affective Learning

Web 2.0 tools were often used to promote learning in the affective learning domain through enhancing student motivation and providing stimulus to change their attitudes and perceptions towards technology-enhanced learning. As Krathwohl, Bloom, and Masia (1973) posit, the affective learning domain includes the manner in which we deal with things emotionally, such as feelings, values, interests, enthusiasms, motivations, and attitudes.

A large number of Web 2.0-supported activities conducted in the reviewed studies succeeded in augmenting student motivation, enjoyment and interest (Ernest et al, 2012; Gebhard, 2012; Kessler, 2009; Liou & Peng, 2009; Martinez, 2012; Román-Mendoza, 2009). Researchers also reported that learners tend to have favorable attitudes towards Web 2.0 integration in learning contexts (Antenos-Conforti, 2009; Armstrong & Retterer, 2008). For instance, Perifanou's study (2009) reported that micro-gaming language activities using Twitter enhanced students' motivation in an Italian classroom. Martinez (2012) noted in that students used blogs to provide each other "affective reassurance," especially when encountering difficulties in their studies (p. 207). The blog provided a unique channel for them to support and encourage one another, which is often unavailable in time-constrained face-to-face sessions.

Enhancing Collaborative Learning

Researchers have widely adopted collaboration-oriented Web 2.0 tools such as wiki and discussion forums for collaborative writing, as these tools offer a naturalistic platform through which students can practice sharpening their writing skills (Ernest et al, 2012; Kessler, 2009; Lee, 2010; Matthew, Felvegi, & Callaway, 2009; McWilliams, Hickey, Hines, Conner, & Bishop, 2010). The social nature of Web 2.0 tools makes the collaborative learning not only possible on wiki, but even commonplace, especially in language learning environments.

In Kessler's (2009) class, wiki was employed with an aim to enhance students' collaborative writing skills. The wiki tool afforded a safe and interactive environment where students were willing and able to work collaboratively and autonomously. Although a goal for grammatical accuracy was not well-met in the collaborative writing activities, students

demonstrated a high level of confidence in their collaboration and indeed, they were not hesitant to make alternations to their peers' works. Matthew's (2009) research was conducted with pre-service teachers in language arts classes where participation in wiki occurred and was counted as part of the course assessment. By collaboratively building 11 wiki pages and a 26-page glossary as course content, the students were able to be highly involved in collaborative content creation, which thus largely deepened their understanding and leveraged their learning to a higher level.

Fostering Learning Community

The formation of a learning community is a dominant theme across studies. A Web 2.0 tool, whether it is wiki, blog, Twitter, social networking sites, or any specifically-designed social software like TACO (Chen, Chen, & Sun, 2010), all have great potentials to bring students into a learning community where they can have easy access to each other and further foster a sense of community and belonging through social interaction via the Web 2.0 medium (Antenos-Conforti, 2009; Lee, 2011; Harrison & Thomas, 2009; Mills, 2011).

In most of the wiki-supported classes, students were able to form learning communities within which they interacted, assisted and peer-assessed one another through collaborative writing (Kessler & Bikowski, 2010; Matthew, Felvegi, & Callaway, 2009; Woo, Chu, Ho, & Xuanxi, 2011). Social networking tools can be used in similar manners. In McBride's (2009) study, Ning was used in a scenario where students of the class were geographically detached from each other. The author reported that Ning largely strengthened the student cohesiveness as a learning community, thus augmenting student motivation and engagement in the class. Research also showed that Microblogging tools like Twitter can foster learning communities, as conversations occur when people use the @ symbol to respond to each other. Such conversations are considered a marker of "social coherence and community forming" (Borau, Ullrich, Feng, & Shen, 2009, p.84). Similarly, social networking tools such as Facebook and Twitter provided tremendous opportunities for students to engage in social interaction and therefore facilitated community building (Mills, 2011; Reinhardt & Zander, 2011; Borau, Ullrich, Feng, & Shen, 2009).

Augmenting Performance

The integration of Web 2.0 tools is conducive to augmenting students' performance in various aspects. Blogging helped to improve students' reading skills (Ducate & Lomicka, 2008) when they participated in a research-based project. In one of the experimental studies, social-tagging tools positively affected students' reading comprehension, as students who experienced the tag-based learning system showed a significant improvement in their reading scores as compared to the control group (Chen et al., 2010). In addition, Web 2.0 tools such as voice blogs also improved speaking and public presentation skills (Sun, 2012).

Wiki and blogs can also enhance students' overall writing skills (Armstrong & Retterer, 2008; Arnold et al., 2009; Ducate & Lomicka, 2008; Kessler, 2009; Lee, 2010; Vurdien, 2011; Zorko, 2009). For example, In Sun's (2010) study, she concluded that writing blogs could be of

value to improve learners' writing skills, as learners develop good writing habits, build language awareness, and eventually promote their confidence and motivation. Wiki also had a positive impact on students' understanding of learning content (Matthew et al., 2009). By reading and rereading postings and edits on the collective wiki pages, students reported that they were able to enlarge their knowledge base and to produce a more solid understanding of the course content through their collective knowledge creation.

Web 2.0 tools, social networking tools in particular, often were appropriated to promote the development of cultural and intercultural competence (Borau, Ullrich, Feng, & Shen, 2009; Lee, 2010; Lee, 2011; Mills, 2011; Mitchell, 2012; Reinhardt, 2011). For example, Twitter was used to provide supplementary opportunities for learners to practice the target language in an authentic environment with a goal to elevate their English cultural competence (Borau et. al., 2009). In Reinhardt and his colleague's study (2011), students' increased learner-learner interaction simultaneously enhanced the development of transcultural, plurilingual identities, and therefore intercultural competence, in language learning.

Supporting metacognitive learning

Web 2.0 tools investigated in the reviewed studies are also reported to support metacognitive learning (Hafner, 2011; Lee, 2011; Kessler, 2011). Metacognitive learning is broadly defined as thinking about thinking and learning about how people learn (Metcalfe & Shimamura, 1994). It is more pertinent to how students learn to reflect upon, self-regulate and automate their own learning. Evidently, Youtube and blogs were perceived to be beneficial to students' autonomous learning (Hafner, 2011). In addition, in Kessler's (2010) study, the instructor purposefully left the students with full autonomy that permitted their collaborative tasks to be accomplished without having any intervention. Surprisingly, without the instructor's feedback, students exhibited "more willingness to edit their peers' writing than their own" (p. 88). Lee (2011) also reported that writing blogs can enhance learners' autonomy as writing freely on blogs gave students more control of their own learning rather than restricting them to practice particular language learning skills. Many other researchers noted that writing on blogs and wikis promoted learners' reflective learning, as the Web 2.0 tools rendered a space for students to ponder thoroughly upon their own learning and give voice to these self-reflections (Kessler, 2011; Lee, 2011; Yang, 2011).

Potential Challenges

Several challenges of using Web 2.0 tools in language learning were identified in the reviewed studies. First of all, technical issues have persistently kept some students and teachers away from using them in language learning and teaching. For example, wikis' slow loading time, podcasts's large file size and low connection speed, and participants' temporary breakdown of internet access have all posed great challenges to learners that hindered their use (Lee, 2011; Woo et al., 2011).

In comparison to wiki and blogs, more care needs to be taken concerning incorporating social networking tools into formal learning, as some teachers and students may not understand the educational use of such tools and therefore object to their usage (Antenos-Conforti, 2009; McBride, 2009; Reinhardt, 2011). For instance, the intrinsically social and disruptive nature of social networking tools such as Twitter and Facebook can bring a considerable amount of distraction and noise information, which potentially prevents students from their actual learning purposes. Extraneous issues such as students' interpersonal relationships are likely to be unintentionally brought into the classroom by the social networking tools, which indirectly affects the authenticity of a formal learning environment (Antenos-Conforti, 2009).

The appropriation of social technologies can also trigger information overload (Román-Mendoza, 2009). Given that students are connected to a considerably larger social network which pertains to significant amounts of information rather than a small-sized classroom, they are more prone to be distracted by irrelevant information such as advertisements (McBride, 2009). The aggregative and accumulative functionalities of RSS exacerbate the possibility of experiencing information overload (Román-Mendoza, 2009).

Institutional barriers were found to be persistent in many research studies (Gebhard, 2012; Matthew et al., 2009; McBride, 2009; Román-Mendoza, 2009). In Matthew et al.'s (2009) local elementary school study, even internet access was initially blocked, to say nothing of allowing access to wiki. McBride (2009) also precisely discussed different levels of conundrums concerning the implementation of social networking sites into educational settings. As a more sophisticated Web 2.0 technology, RSS requires instructors to have a higher level of knowledge and understanding of the Web, which makes implementation at the institution and school level even more difficult (Román-Mendoza, 2009).

Another major challenge is how to ensure an equal contribution among all the members and increase students' editing efforts in a collaborative writing effort (Arnold et al., 2009; Kessler & Bikowski, 2010). The unmotivated learners may claim to have vicarious experience by observing other learners' participation, but they are virtually not engaged in the true collaborative activity. How to motivate those learners and ensure an equal amount of participation across learners of different language proficiency levels remains a challenge to language teachers (Arnold et al., 2009). Researchers also stated that this lack of contribution may come from varying reasons, among which are different levels of concerns and understandings of authorship (Arnold et. Al., 2009; Lee, 2010).

Pedagogical Implications

Just as teachers have different opinions on to which extent Web 2.0 tools ought to be adopted in language teaching classrooms due to their different understanding and levels of familiarity with technology, students' internet literacy varies significantly as well. Therefore, there is no one single cookie-cutter recipe that meets all students' needs as far as the integration of Web 2.0 is concerned. From a pedagogical point of view, an instructors should have various degrees of integration of the technology in alignment with students' degree of interests and levels

of electronic literacy. It is not wise to assume that all students in the classroom are *digital natives* who can automatically fit themselves into the technology-supported learning environment and remain highly engaged in such environments (Rosell-Aguilar, 2009).

One pivotal pedagogical implication is a call for teacher controlled and guided elements in Web 2.0 tools-supported environments. Many studies demonstrated that the incorporation of Web 2.0 tools does not guarantee learner autonomy in the learning environment (Hourigan & Murray, 2010; Matthew et al., 2009). Therefore, instructors should provide explicit guidance and scaffolding and continue to give feedback and on-going encouragement in scaffolding in order to students, ensuring the positive effect of the Web 2.0-involved activities (Arnold, 2009; Lee, 2010; Kessler, 2012; Martinez, 2012). For example, some specific guidance suggested by research is that teachers are encouraged to provide some structure for those Web 2.0-supported activities (Arnold, 2009; Hafner, 2011). Also, to nurture the supporting dynamics in collaboration and foster equal contribution patterns, teachers should consider breaking down the larger class into more defined and precise learning groups (Arnold, 2012).

Furthermore, although Web 2.0 tools have presented multiple potentials for language learning, educators should note that the pedagogical approaches do not come along with the tools naturally; instead, teacher training and a social constructivist professional model of development have to be in place in preparation for the adequate use of Web 2.0 tools (Thomas, 2009). In addition, rewarding as this incorporation is, it still requires a substantial investment of time and efforts by both instructors and students. Many issues, such as authorship and ownership of online content generated during the online learning processes, were discussed by many scholars (Kessler & Bikowski, 2010; Matthew et al., 2009; Woo et al., 2011). The quality of the online content, along with criteria and standards to assess the online content, are of great concern to the teachers particularly in regard to grading (McBride, 2009).

SUGGESTIONS FOR FUTURE RESEARCH

This section discusses the limitations of the current research and suggests possible directions for future research. First, it is necessary to diversify the learning contexts in which Web 2.0 integration was investigated, the very Web 2.0 tool(s) that was employed, and the target language taught in the Web 2.0-supported learning environments. The research settings in the current research were mainly limited to formal higher education with few exceptions in other settings, such as K-12 or professional training environments. Additionally, the Web 2.0-supported activities were very often incorporated as a subset of formal classroom learning. How learning takes place in informal learning and naturally formed learning communities is barely known. Meanwhile, the majority of research have examined the mainstream Web 2.0 tools and left out the less-studied tools such as social annotation and bookmarking tools. Lastly, the target language is often commonly-taught language such as English, while how some particular types of Web 2.0 tools respond to less commonly-taught languages are largely unknown. Therefore, more research is needed to investigate the use of Web 2.0 tools in various educational settings,

including the less-tapped learning territories such as corporate, community of practitioners, emerging online learning communities, and also to involve a wider range of target languages including Arabic, Chinese, and so on. Such efforts will deepen our understanding of how learning occurs in the Web 2.0-supported environments and what types of learning discrete Web 2.0 tools can promote.

Several methodological issues are of concern in the current research. As the current research base is descriptive in nature, little research investigates any casual relationship between the Web 2.0 tools and student learning, and how to improve the effectiveness of Web 2.0 integration. Many current research studies are also conducted in limited period of time so that long-term effects usually remain unnoticed in the contemporary research realm. The use of self-report surveys and questionnaires as research instruments is pervasive in the reviewed studies. However, few reviewed studies checked interrater reliability for content analysis or survey reliability, which makes the findings of the studies less generalizable to other circumstances. Scholars also recognized the novelty effects to be one of the main methodological constraints. As students are more accustomed to the Web 2.0-supported learning environments, whether they can still be motivated or engaged in the course of learning remains a critical question (Rosell-Aguilar, 2009). Given these limitations, future research should specifically attend to scientific and methodological robustness, such as engaging in longitudinal research that captured the lasting impact of Web 2.0 intervention; using more advanced data analysis methods and techniques to ensure the validity and reliability; and also exploring potential means to tease out the novelty effects.

Current research studies also suggested a large collection of topics to be further investigated by future research. For example, researchers suggested plenty of unexplored variables as intervening factors to be included when probing the relationship between student learning and the Web 2.0 intervention. Such variables encompass age, gender, teacher presence, field of study, self-selected groups, language fluency, computer literacy, motivation, and learner personality (Díez-Bedmar, 2012; Lee, 2010; 2009; Mitchell, ; Sun, 2012). Noticeably, as Kessler et al. (2012) postulated a framework for the co-evolution of collaborative autonomous pedagogy, they stated that it is critical to “reflect upon the relationship between the evolution of the use of these tools, the tools themselves, and the related pedagogy in order to identify approaches to encouraging flexible pedagogical practices.” This statement indicates that due to the complexity and ever-changing dynamics in Web 2.0-supported environments, researchers not only are encouraged to investigate each unique impacting factor, but also the interplay and interrelationships of those varying factors so as to provide us a more in-depth and holistic understanding of student learning under such environments.

CONCLUSION

With Web 2.0 tools and their interactive, social and collaborative features, language acquisition can be more engaging, motivating, and collaboration-oriented. The * studies in this

current literature review suggest that the integration of Web 2.0 tools holds great potential to benefit language learning and teaching through multiple means. Activities designed with these Web 2.0 tools may help students develop important skills in addition to language learning skills such as communication, collaboration, and problem solving, which are the critical skills needed especially in the 21st century.

Considering the ever-changing development of Web 2.0 technologies, reviewing and critiquing research studies over the past five years is critical to build upon the existing research base, which helps to guide future research and practices. In addition to the benefits, this review study also presents challenges found in the current research, such as the persistent technical issues, teachers' inability to fully leverage Web 2.0's potential, and institutional barriers. Given these limitations, future research is needed to confirm the existing findings and address the additional questions brought up by the researchers, including the various factors affecting student language learning in a Web 2.0-enhanced learning processes and how to support effective language learning in the Web 2.0-supported environments.

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