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## **WIKIS AS A TOOL FOR COLLABORATIVE LANGUAGE LEARNING: IMPLICATIONS FOR LITERACY, LANGUAGE EDUCATION AND MULTILINGUALISM**

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**Summary.** This study presents a review of the literature concerning the use of wikis as a tool for collaborative learning in the second language acquisition and foreign language learning process, as research on the use of wikis is relatively new. The study first introduces the theoretical background behind the use of wikis in the mentioned processes. Then, it reviews the studies concerning wikis as a tool for collaborative language learning. The study concludes that the use of wikis improves basic language skills, encourages positive perceptions of learning, increases motivation, provides opportunities to practice autonomy, and enhances inquiry learning and critical thinking, although they appear to have no effect on cultural proficiency. More importantly, Wikis appear to be an advantageous tool for improving writing, and may have additional benefits in developing literacy in multilingual contexts where access to minor languages in the educational process is limited. The paper ends with practical recommendations for teachers and researchers.

**Keywords:** collaborative learning; collaboration; foreign language learning; learner autonomy; second language learning.

### **Introduction**

Within the contexts of second language acquisition and foreign language learning, wikis constitute a quickly emerging and popular learning tool. Because research on their efficiency is relatively new, wikis' efficacy in the language acquisition and learning processes remains an open question. This study aims to review various scientific studies on the use of wikis as a tool for collaborative learning and their role within second language acquisition and foreign language learning contexts. The study first introduces wikis in general and focuses on the effects of wikis on education. Second, the study focuses briefly on the theoretical framework of wikis in language learning, particularly in terms of *Collaborative Learning*, *Collaborative Writing*, *Constructivism*, *Situated Cognition*, *Autonomy*, and *Self-determination Theory*. Finally, this study reviews research concerning

the use of wikis as a tool for language learning. It first reviews the studies on learners' attitudes towards and perceptions of the use of wikis in language learning and the effects of wikis on motivation. This study then focuses on the effects of wiki use on learners' cultural awareness, autonomous learning, inquiry learning, and critical thinking. Next, the study reviews the research concerning basic language skills, namely skills in speaking, reading, writing, and grammar. Finally, after a brief summary of the research reviewed, this study concludes with practical recommendations for teachers and researchers.

### **What is a Wiki?**

A wiki, introduced in the mid-1990s (Wei et al., 2005), "is a freely expandable collection of interlinked web pages and hypertext system for storing and modifying information" (Leuf & Cunningham, 2001, p. 14) in a database where each page is visited, read, organized, updated (Zorko, 2009), and easily edited by any user with a forms-capable Web browser client (Leuf & Cunningham, 2001) via a markup language and rich-text editor (Mitchell, 2008). In other words, wikis are dynamic and constantly changing web-based environments where readers are both authors and editors, and the format allows multiple users to upload, build, and create content and global communities (Parker & Chao, 2007) for "*distributed participation and collaboration*" (Knobel & Lankshear, 2006, p. 81). In this sense, users can collaborate to create knowledge, rather than simply absorbing knowledge (Farabaugh, 2007). Thus, wikis combine personalization, interactivity and collaborative content building (Millard & Ross, 2006) and enable learners to become part of an active learning community (Alm, 2006). One of the best-known wikis is the encyclopedia *Wikipedia*. The characteristics of wikis most relevant to education are *user friendliness* (Zorko, 2009), *flexibility* (Nicol, Littlejohn, & Grierson, 2005), and *low cost* (Zorko, 2009). Moreover, wikis can be used to enrich online learning because they facilitate storing various types of digital information (Choy & Ng,

2007; Godwin-Jones, 2003), sharing information, monitoring learners' progress individually and collaboratively (Nicol et al., 2005), promoting democratic participation (Schwartz et al., 2004), empowering learners (Thorne & Payne, 2005), and interacting and collaborating (Choy & Ng, 2007; Godwin-Jones, 2003; Schwartz et al., 2004; Thorne & Payne, 2005; Wei et al., 2005).

### **Theoretical Framework**

This section explains the theoretical background of the use of wikis in second language acquisition and foreign language learning. However, before presenting the theoretical framework, clarification of the terms second and foreign language is necessary. Second language acquisition refers to the natural and incidental process of acquisition of an additional language within a language community of native users. Unlike a second language, a foreign language is not used in the learners' social settings, but rather is learned for certain reasons, such as academic requirements, future travel, pleasure, professional needs or other cross-cultural communication purposes (Saville-Troike, 2012).

**Collaborative learning.** Vygotsky (1978) argued that collaborative learning is necessary for assisting students through the Zone of Proximal Development (ZPD), namely the gap between what the learner can accomplish alone and in cooperation. For Wells (1999), this scaffolding provides self-regulation for carrying out a task, building knowledge and skills, and working independently. In other words, collaborative learning involves an active and constructive process in which knowledge is created and transmitted in a social context where learners work in groups or together with teachers by applying thinking and problem-solving skills (Smith & MacGregor, 1992). Collaborative learning focuses on what individuals can bring to a group process (Cope & Kalantzis, 2000) whereas cooperation can refer to individuals working autonomously in the presence of others (Donato, 2004). A shift to learning through participating in a collective activity (Sotillo, 2002) is occurring. As Swain

(1995) demonstrates, this participation causes engagement in meaning construction that facilitates natural language production.

In a collaborative community, ideas and information shared by learners are a source for every student in the class. According to Dearstyne (2007), the posting and pooling of ideas generate sparks of creativity as others react, reflect, have their insights deepened or changed and, in turn, contribute something new. For example, students can conduct research, analyze it, and share it. They create materials that show what they learned and see connections between their personal experiences, course content, and their schemata. When they create wikis, they develop trust and camaraderie with other members, and they contribute to a common goal. It can be concluded that wikis encourage trust and engagement among members and encourage them to collaborate with each other (Matthew, Felvegi, & Callaway, 2009). The technology supports collaboration because wikis allow users to revise joint text in a collaborative change (Kessler, 2009). Because wikis provide a means for interaction among participants concerning revisions and feedback, they are a means of identifying strengths and weaknesses to improve performance and develop language skills (Dippold, 2009).

**Constructivism.** One of the current trends in second language acquisition and foreign language learning relies on the sociocultural perspective that focuses on learners' participation in a joint activity, which previously depended on individual cognition of language learning (Firth & Wagner, 2007). From a sociocultural perspective, participation in human social interaction, mediated by cultural artifacts, facilitates language learning (Lantolf & Thorne, 2006). Moreover, collaborative and cooperative learning and technology-supported collaborative learning tend to be mainly constructivist (Parker & Chao, 2007) and originate from a sociocultural perspective.

According to constructivism, learning is socially constructed through "competent participation in the discourse, norms, and practices associated with particular communities of practice" (Kuiper & Volman, 2008, p. 244). Learners can construct their knowledge by interpreting new information based on their previous knowledge (Kuiper & Volman, 2008). The constructivist approach also

provides learners with opportunities to interact with the environment, to learn through social and collaborative activities in a meaningful context, and to make connections between their prior experiences and their new experiences (Willis et al., 1996). In addition, it involves critical thinking, reflecting, and using new knowledge (Tynjal, 1998). Education is learning-centered, and teachers assume the role of facilitators to guide learners in exploring the environment and increasing their knowledge. Thus, teachers are the facilitators of the wiki, enabling their students to create knowledge (Farabaugh, 2007).

**Situated cognition.** According to situated cognition, social and physical contexts are inseparable components of learning (Brown, Collins, & Duguid, 1989), and learning can be transferred to other activities. Therefore, learners can work in groups to solve problems and negotiate understanding because “the activities of person and environment are parts of a mutually constructed whole” (Hung & Der-Thang, 2001, p. 4). Above all, learners who work together to create new knowledge can understand that collective knowledge is more substantial than individual knowledge (Matthew et al., 2009). In this sense, wikis provide opportunities to work together and create knowledge.

**Autonomy.** Learners’ autonomy plays an important role in both second language acquisition and foreign language learning. Benson (2001, p. 6) defines autonomy as “whatever an autonomous person thinks it is.” In other words, learners who progress towards autonomy can develop the ability to assess their accuracy (Little, 1999). Conversely, autonomy may cause a teacher to lose control over the class (Cotterall, 1995). Thus, teachers need to encourage their students to “take responsibility and make informed choices” (Kupetz & Zeigenmeyer, 2006, p. 63). Although autonomous learning was previously considered isolating, technology is now believed to promote social opportunities for autonomous practice and interaction (Benson, 2001). Specifically, Littlewood (1996) emphasizes three domains: Autonomy depends on the ability of creative language use and appropriate strategies for communication, engagement in independent work and learning strategies, and the expression of personal meaning and creation of personal learning contexts. In this sense, “wikis are

intensely collaborative ... "such a system only works with users serious about collaborating and willing to follow the group conventions and practices."

**Self-determination theory.** Language learning environments may increase learners' motivation. Self-determination Theory is based on the assumption that learners share the needs of relatedness, competence and autonomy. The relevance of the needs relates to educational and language learning theories such as Vygotsky's (1978) social learning theory and Krashen's (1985) concept of input + 1. Wikis provide social interaction and collaboration (Godwin-Jones, 2003) that can be viewed as the reason for motivation (Wheeler, Yeomans, & Wheeler, 2008).

Based on the theoretical framework of wikis as a tool for language learning presented above, it is possible to draw several conclusions. First, wikis encourage language acquisition through collaborative learning. Second, wikis allow teachers to act as facilitator for learners' creation of knowledge and encourage learners to work together in accordance with constructivism and situated cognition. Third, wikis enable autonomous learning through collaboration. Finally, wikis increase motivation in terms of the self-determination theory because they provide social interaction and collaboration.

### **Research on Wikis as a Tool for Language Learning**

This section presents a review of studies that focus on wikis as a tool for second language acquisition and foreign language learning. The section focuses first on wikis as a tool for collaborative language learning and then reviews research about the wiki effect on motivation and how learners perceive wikis. Next, studies concerning how wikis affect cultural awareness are reviewed. After presenting the review of literature related to the role of wikis in autonomous learning, inquiry learning and critical thinking, the section will focus on how wikis influence basic language skills and grammar.

**Wikis as a tool for collaborative language learning.** Studies focused on the effects of wikis as a tool for collaborative language learning have found considerable positive results. For instance, Sykes, Oskoz, and Thorne (2008)

introduced wikis as a means of collaborative content building and dissemination of information, and wikis were described as a specific environment that utilizes collaborative tools in a study focused on the implementation of active and collaborative practices in information and communication technology classrooms. Lund and Rasmussen (2008) empirically examined how learners of senior high school English as a foreign language (EFL) approached and responded to an open-ended and collectively oriented task using a wiki and found that wikis helped learners to sustain strategies with many characteristics of collective production. They also noted that wikis can foster collective awareness. Similarly, Kessler (2009) studied the use of a wiki by pre-service EFL teachers and found that participants were more willing to collaborate regarding content rather than form.

Conversely, Zorko (2009) argued that little research has been conducted, although wikis are known as a powerful tool for assisting the development of constructivist learning environments. To qualitatively explore factors that influence learners' collaboration in the wiki environment, Zorko (2009) investigated sociology students' perceptions of collaboration on wikis as a part of their English for specific purposes (ESP) course. He found that wikis promote collaborative behaviors, including learning from each other and communication with their teachers and peers, and problem-based language learning. The study concluded that wikis enhance effective collaboration in a constructivist approach to English as a second language (ESL) learning.

Similarly, Matthew et al. (2009) used a case-study methodology to examine the benefits and challenges of contributing to a wiki in a language class. Thirty-seven pre-service teachers' reflections revealed that wikis encourage deeper processing of the course content. Most importantly, findings indicated that students collaborated regarding shared and collective knowledge. Alyousef and Picard (2011) examined the use of a wiki in an in an assessment task by ESL learners. Six ESL students who were studying intermediate financial reporting participated in the study. The data obtained from the interviews with one Saudi and five Chinese graduate students indicated that although the

participants collaborated and cooperated together to complete the task, they favored cooperation over collaborative learning.

Finally, in an exploratory and qualitative project, Pellet (2012) examined the processes and learning outcomes for 30 undergraduate second language learners who built a wiki and engaged in other collaborative and active-learning exercises to develop content knowledge in French. Evaluations revealed that learners engaged with course content and developed a sense of class community through the collaborative approach.

**Learners' attitudes, perceptions and motivation.** A limited number of studies about how learners perceive wikis and how to motivate them demonstrated that learners have primarily positive attitudes toward and perceptions of the use of wikis as a learning tool and that wikis increase motivation. For instance, Chao and Lo (2011) examined students' perceptions of wiki-based collaborative writing. They proposed a wiki-based collaborative writing project that included collaborative planning, partitioned drafting, peer revising, peer editing, and individual publishing. They found that 51 EFL learners at the university level demonstrated positive perceptions of the wiki-based collaborative writing environment. Furthermore, Ducate, Anderson, and Moreno (2011) reported findings obtained from three different wiki projects they conducted: micropedia, branching story, and pre-reading. The participants were 30 intermediate foreign language learners of German, Spanish and French. The study investigated the type of collaboration that wikis foster and learners' perceptions of this collaborative work. The qualitative and quantitative data demonstrated that students viewed the wiki as a valid learning tool and found the wiki environment to be enjoyable. The wikis helped in their learning process and increased their motivation, although some students still had a strong desire to work alone.

**Cultural awareness.** This section explores the effects of wikis on language and culture, which are intimately related (Aydın, 2012). However, only two studies about the effects of wikis on culture have appeared. One study demonstrated that the use of wikis encouraged learners to provide their own cultural perspective and conceptualize cultural context, whereas the other study

found that wikis did not significantly affect gains in student cultural proficiency. A research project conducted by the University of the South Pacific examined how to build educational media in accordance with learning approaches. After administering interviews, questionnaires and usability tests to staff and students at the university to create an interactive CD-ROM, the study found that the materials prepared for distance and flexible learning did not provide the cultural context at the university that the staff and students desired. The cultural context was organized into two categories: decentralized and dialogic contextualization. As a tool for decentralized contextualization, the wiki was used to encourage students to provide their own cultural context to the learning materials. According to Robbins (2006), the study concluded that teachers and students can conceptualize cultural context by creating conversation-like interfaces such as wikis. In a quasi-experimental quantitative design that involved 150 Spanish students at a suburban high school, Muir (2010) examined the level of cultural proficiency of those using wikis and those using eBoards. The data obtained from a demographic survey, a pre- and post-test instrument and an attitudinal survey demonstrated that no significant difference was apparent in gains in student cultural proficiency, although significant differences existed in student levels of satisfaction in favor of students using wikis.

**Autonomous learning.** The results of three studies on the effect of wiki use on autonomous learning demonstrated that wikis provide opportunities to practice autonomy. Kessler and Bikowski (2010) studied attention to meaning among 40 non-native pre-service EFL teachers regarding collaboration on a wiki in a 16-week online course. In the study, the wiki activity was intended to serve as a space where participants could synthesize the content of the course. The findings revealed that students collaborated in student interaction, language use, and the quality of the wiki. They concluded that students benefit from opportunities to practice autonomy in a flexible learning environment.

In the second study, Aborisade (2009) described a Nigerian tertiary education context that involves large numbers of students crammed into small classrooms, emphasized the need for innovative learning spaces, and proposed

wikis as a learning tool at a university. In this experimental study, Aborisade (2009) used wikis as a tool for second language writing in a large class of freshmen, explored wikis in a blended learning class from a socio-cultural and collaborative learning perspective and reported learners' experiences. In this qualitative and quantitative research, Aborisade found that students are satisfied with their learning experiences, and developed both autonomy and collaboration regarding interactional communication in a second language. Arnold et al. (2012) examined the online writing and revision behaviors of 53 university language learners at an intermediate level from three universities. Participants created wiki pages with background information about a novel read in class. In the study, students' revisions were analyzed in terms of cooperation and collaboration. The results indicated that wikis provide a great potential for collaborative and autonomous work, although clear tasks and teacher guidance are required.

**Inquiry learning and critical thinking.** Studies of the effects of wiki use on inquiry learning indicate that wikis enhance inquiry learning and critical thinking. In terms of inquiry learning, Davies, Pantzopoulos, and Gray (2011) described a case study of a wiki-writing assignment. Twenty-seven higher education and vocational educators enrolled in a program for a graduate certificate in tertiary education tried to create an online community of reflective practitioners that supported tertiary educators to deepen their understanding and improve their practice of student assessment. They concluded that the wiki-writing assignment shaped assessment as learning in four ways: the language for talking about assessment, collaboration, expression, and inquiry learning. In addition, in a comparative case study, Yukawa (2006) observed the learning experiences of two graduate students in an online action research course through the use of narrative analysis. In a course that involved tacit and active co-reflections, one of the tools used was wiki-style collaborative software. Yukawa (2006) found that the software allowed students to freely and easily create their own web pages and adapting the tools for their different communication and learning styles effectively supported inquiry learning and co-reflection.

In a separate study that used a phenomenological approach employing a comparative grounded theory methodology, Wake and Modla (2012) investigated a collaborative digital language experience approach project. Participants were 16 teacher candidates at a university. They collaborated across two sites, building joint wikis that were designed to support critical thinking collaboration. The results indicated that wikis effectively promoted collaboration, critical thinking, and understanding of learners' development, diversity, and literacy-based pedagogical strategies. However, teacher candidates needed support regarding the contexts of instructional practice and guidance in peer feedback.

In terms of critical thinking, in their small-scale case study, Woo et al. (2011) examined how the wiki's key attributes might help in bolstering Chinese primary school EFL learners' collaborative writing projects. The study found that students had positive perceptions of using a wiki and were encouraged by peer interaction and group work. The authors also found three key areas in which wikis were perceived as enhancing collaborative writing and helping to foster critical thinking and creative problem-solving: the educational, social, and technological areas.

### **Basic Language Skills and Knowledge Areas**

This subsection explores the effects of wikis on speaking, reading, writing, and grammar and is categorized into integrated language skills, speaking, reading, writing, and grammar. No studies focusing on listening skills or vocabulary knowledge were found.

**Integrated language skills.** Two studies on the effects of wikis on integrated language skills revealed that wikis facilitate making both digital and cognitive connections in reading, writing, vocabulary and enhanced performance in listening and reading skills. Nakamaru (2011) described a wiki project that she used in her ESL composition course that focused on persuasive essay writing at a community college. She concluded that wikis are useful as a tool for

classroom learning and that the collaborative, creative, and linkable nature of the wiki facilitated making both digital and cognitive connections in the reading, writing, and vocabulary aspects of the composition classroom. A case study conducted by Stickler and Hampel (2010) focused on two learners who used wikis for collaboration and blogs for reflective learning in an intermediate level German course. The study found that online courses can combine using language communicatively and focusing on form and language practice. Chen (2008) investigated the effectiveness of wikis regarding learning outcomes and found that wikis enhanced performance in listening and reading skills when compared to courses that did not use wikis.

**Speaking skills.** The only study on the effects of wikis on speaking skills indicated that the utilization of wikis improved speaking. In the study, Dehaan et al. (2012) focused on wikis used as a learning management system for a four-week teaching module designed to improve the oral communication skills of Japanese EFL students at a university. Participants engaged in experiential learning cycles such as planning, doing, observing, and evaluating their performance. After their performance was video recorded and uploaded to the wiki, the teacher gave the students online feedback. Analysis revealed that of the use of the wiki and video cameras improved learners' independence and confidence. The authors concluded that the cycle could be effectively integrated to mediate EFL learners' oral communication development.

**Reading skills.** The two studies reviewed indicated that wikis facilitate learners' understanding of the literary nature of language and force them to read course materials. Farabaugh (2007) described a Shakespeare course in which college students used wiki software for writing exercises and directed reflection on language. The author noted that wiki software presents an important platform for reading and writing assignments that encourages language awareness in the literary domain and enables learners to structure discussions on their own. Moreover, the study suggests that learners have the opportunity to consciously shape their discourse and their understanding of the literary nature of language. Farabaugh (2007) also suggested that wiki technology can be used as a remarkable classroom tool. Matthew and Felvegi (2009) focused on

language arts students' perceptions of the benefits and the drawbacks of creating a wiki through their online reflections and interviews. Participants stated that creating the class wiki forced them to read course materials, other textbooks, resources and the wiki pages themselves to solve technical issues such as enabling cookies and refreshing pages as they struggled to understand the collaborative nature of the wiki.

**Writing skills.** This subsection reviews studies concerning the effects of wiki use on writing skills. Studies about the effects of wikis on basic language skills mainly focused on writing skills. A brief review of theoretical information about collaboration types in writing processes proposed by Parks, Hamers, and Huot-Lemonnier (2003) is useful for understanding this group of studies. Parks et al. discuss four types of collaboration in learning writing skills. First, joint collaboration occurs when "two or more writers working on the same text who assume equal responsibility for its production." Second, parallel collaboration occurs when "two or more writers do not assume equal responsibility for its production." Third, incidental collaboration occurs when "spur-of-the moment requests for help directly related to the writing task at hand." Finally, covert collaboration involves retrieving "information from documents or other linguistic or non-linguistic sources during the process of producing a text" (p. 40).

Studies have indicated that wikis play an important role as a tool for collaborative writing and bring considerable advantages to second language and foreign language writing. For example, Mak and Coniam (2008) qualitatively examined authentic writing through the use of wikis as a collaborative writing platform by secondary school ESL students. The results indicated that students increased the number of words written; improved coherence, accuracy, and creativity; facilitated the peer review process; and enhanced their self-confidence. Similarly, Bradley, Lindstrom, and Rystedt (2010) researched the ways that wikis enhanced group interaction in terms of constructing text and encouraging an exchange of peer responses as well as how wikis promoted language learning from a sociocultural perspective in a seven-week advanced ESP course for Swedish software engineering students. The results indicated that

wikis facilitated the writing process and engagement in co-operation, collaboration, and interaction.

Likewise, in their exploratory study, Miyazoe and Anderson (2010) investigated the effectiveness of forums, blogs, and wikis as online writing tools in an upper-intermediate level EFL course. The results indicated that Japanese EFL learners have positive perceptions of the blended course design with online writing, and have the favorable perceptions of wikis. Moreover, a qualitative analysis of wiki writings indicated that participants progressed in their EFL writing style ability. The study concluded that wiki use has a positive effect on students' language learning progress. Wichadee (2010) compared 35 EFL students' summary-writing ability before and after they were taught using a wiki. She found that the mean score of post-tests was higher than the pre-test score. In addition, she concluded that learners had positive attitudes toward this experience and that wikis contribute to the improvement of learners' writing skills.

Eloia and Oskoz (2010) similarly examined second language learners' approaches to the writing task in wikis, collaborative synchronous interactions, and perceptions of individual and collaborative writing. Eight foreign language learners in an advanced Spanish writing course participated in the study. The authors reached three main conclusions. First, no significant differences were found in the measure of complexity regarding fluency and accuracy, whereas trends in their interactions with the text when working individually or collaboratively were observed. Second, wikis benefited different aspects of writing such as content, organization, editing, grammar, vocabulary, structure and references. Third, collaboration improved quality overall.

Lee (2010) examined the use of wikis as a means of collaborative writing at the beginning level. Participants in the study included 35 ESL learners who contributed to wiki pages for 14 weeks at a university. The data obtained from the wiki pages, student surveys, and final interviews indicated that creating wikis positively affected learners' writing skills, peer feedback, accuracy and the organization of the content. Wong et al. (2011) outlined a collaborative writing approach employing a wiki to address weaknesses in vocabulary and grammar

among ten-year-old students learning Chinese as a second language. Participants collaboratively conducted wiki-based word and phrase pooling, sentence making, paragraph writing, outlining, and individual essay writing. The approach improved students' micro-skills and motivation in writing. Lin and Yang (2011) investigated whether wiki technology for collaboration and peer review would improve students' writing skills in an EFL writing class. Thirty-two college students participated in a study that used a socio-cultural theoretical framework to examine their perceptions of the effectiveness of wiki-based writing projects. They found that EFL learners were positive about their ability to apply wiki and peer feedback to writing instruction, although they encountered both functional and psychological obstacles to using it. In addition, they demonstrated more progress in grammar mechanics and style than in organization and content.

Research has also demonstrated that wikis increase engagement in writing stages. For instance, in a quantitative study, Nakamaru (2012) explored the extent to which students in a community college remedial ESL course. Participants were 47 advanced EFL learners. Findings revealed a strong and positive relationship between wiki engagement and passing the final exam for students, whereas technology-mediated learning activities did not necessarily lead to increased engagement.

Similarly, in a small-scale study, Pifarré and Fisher (2011) investigated how writing in a wiki environment might facilitate and support learners' composition and revision strategies. Twenty-five native speakers of Catalan language at a primary school participated in this study. The findings obtained from this classroom-based project indicated that students as readers and writers were engaged in a space to share and discuss ideas and arguments, and they developed their evaluation and revision skills.

In Lee's (2010) case study, five university students at the beginning level of Spanish as a second language contributed to wiki pages over a period of 14 weeks. The results indicated that wiki use has a positive effect on the development of writing skills through collaborative engagement. Moreover, she noted that scaffolding through peer feedback plays an important role in second

language writing in terms of error corrections for language accuracy and that the amount of writing increased.

Anzai (2009) presented survey results on current technology trends among university-level Japanese EFL learners related to the uses of podcasting and wikis and concluded that wikis enhanced learners' ability through collaboration with peers, revising, and editing. Arnold et al. (2009) examined computer-supported collaborative learning among EFL graduate students who created a wiki. They found that the success of collaborative interaction depends mainly on the members of group. Findings obtained from transcripts and surveys also revealed that the level of participation in the wiki project differed in terms of collaboration and group dynamics. Namely, the group leaders in the project significantly affected the degree of collaboration regarding planning and design.

**Grammar.** Research has indicated that wikis affect learners' grammar knowledge. Kessler (2009) investigated the collaborative construction of a wiki among 40 pre-service non-native speaker English teachers who were observed at a course to improve their language skills over a period of sixteen weeks. Participants were encouraged to focus on language accuracy during their interactions with their peers. The results indicated that participants focused on meaning rather than form, correcting word choices and spelling errors, and editing their peers' posts. Conversely, Castañeda (2011) examined the differences in levels of achievement in learning the preterit and imperfect aspects of Spanish in 57 undergraduate foreign language students at a public university. The results indicated that although no significant differences were found at the production level between wikis and video/photo blogs, significant differences were found in the recognition level. Most importantly, the results revealed that video/photo blogs and wikis facilitated teaching and learning the most difficult structures.

In a case study, Kuteeva (2011) explored how wikis were used in a course on effective communication in English to teach writing for academic and professional purposes. The author also examined the writer-reader relationship. The texts published by 14 ESL learners who took the effective communication in English course at a university and used the wiki were examined for reader-

oriented features and interactional meta-discourse resources. Kuteeva (2011) concluded that writing activities on the wiki caused the students to pay close attention to correct grammar, structural coherence, and text organization.

Lund (2008) examined wikis from a sociocultural perspective, emphasizing the emergence of psychological phenomena and the social origins. This qualitative and exploratory study focused on learner interactions involving the use of a wiki among high school EFL learners. The author found that the wiki holds potential value for learners' lexico-grammatical and semantic expansion in collective practices and concluded that wikis support collective language production.

### **Conclusions and Recommendations**

Several conclusions can be drawn from this review of the effects of wiki use on second language acquisition and foreign language learning. First and from a broad perspective, wikis are a collaborative tool for language learning. From a narrower perspective, the utilization of wikis causes positive perceptions of language learning and increases learners' motivation. Wikis also encourage learners to conceptualize cultural context, although wikis have no advantages for cultural proficiency. Wikis provide opportunities to practice autonomy and enhance inquiry learning and critical thinking. Most importantly, they facilitate basic language skills and grammar and vocabulary knowledge in both integrated and isolated manners. For example, wikis improve speaking skills, facilitate learners' understanding of the literary nature of language, force them to read course material, and enhance their grammar knowledge. In addition, wikis have considerable positive effects on learners' writing skills. Wikis also play an important role as a tool for collaborative writing and provide certain advantages in writing. For example, they improve the amount of writing, overall quality, accuracy, fluency, content, organization, unity and coherence. Furthermore, wikis increase engagement in the stages of writing, including brainstorming, planning, the first draft, feedback, correction and revision. Moreover, they

increase positive perceptions of and attitudes towards writing and motivate learners to write.

Second, although results on the effects of wikis on second and foreign language learning are mainly positive, because research on the topic remains scarce, results on certain issues are insufficient to inform conclusions. For instance, the data on wiki effects on learners' attitudes, perceptions and motivation, target culture awareness, listening, speaking and reading skills and grammar and vocabulary knowledge are too limited to have certain pedagogical implications.

Third, current research on the effects of wiki use on second and foreign language learning supports the theoretical basis of wikis. For instance, research results demonstrate that wikis are an ideal tool to assist learners in advancing through the ZPD within the collaborative learning framework. Moreover, wikis are suitable for joint, parallel, incidental and covert collaboration. Within constructivism, wikis present a learner-centered environment in which learners construct their knowledge with the help of their teachers as facilitators. Because wikis constitute social and physical contexts, the data about the effects of wiki use on language learning support situated cognition. Because wikis motivate and encourage learners to take responsibility, research results also support autonomous learning and self-determination theory.

Based on these studies, this review offers several recommendations for using wikis as a tool for language learning. First, teachers should channel the potential of wikis as a collaborative tool for language learning into learning practices. In other words, language teachers should use wikis to improve their students' motivation and perceptions of and attitudes toward language learning; to conceptualize cultural context; and to enhance student autonomy, inquiry learning and critical thinking.

Moreover, teachers should be aware that wikis can be used to improve basic language skills, knowledge of grammar and vocabulary. Teachers should know that wikis are an ideal tool to develop learners' writing skills in collaborative writing, increase engagement at all writing stages, improve their perceptions of and attitudes towards writing, and enhance their motivation to

write. According to Matthew and Felvagi (2009), unlike individual writing assignments, teachers should know that through collaborative writing, wikis contribute to participation, transform teachers into facilitators, and empower learners to discover and share knowledge in a controlled learning environment (Weimer, 2002). Teachers should also realize that wikis provide engagement in collaborative writing, promote peer interaction, and facilitate the sharing and distribution of knowledge (Lipponen, 2002) because collaborative online environments provide students with opportunities to read and build on each other's work (Hewitt & Scardamalia, 1998).

On the other hand, in spite of the clear benefits of technology in education, language teachers are often unaware of the opportunities that it provides them (Kilickaya & Krajka, 2010). Thus, both pre- and in-service teacher training programs need to be reorganized in accordance with the recent scientific developments in using wikis in language teaching and learning. Teacher training programs should be redesigned to fill the gap between *digital natives*, who have experienced the normalization, invisibility and internalization processes of technology, and digital *immigrants*, who need to harness the opportunities that are presented by emerging technologies. Moreover, teachers should follow recent developments in emerging technologies to teach students who use smart phones to take notes instead of using pen and paper and take photographs of the board in classes instead of using notebooks.

Several general recommendations can also be made about concerns with trustworthiness, security, and malware for wikis. First, because wikis are edited publicly, users can add malicious content or edit disruptively. This problem can be solved by using expert reviewers who can analyze and improve text and by restricting editing to users. Second, because of their open access, wikis do not ensure that every editor creates correct and appropriate meaning. Thus, some wiki software allows administrators to moderate the content (Black, Delaney, & Fitzgerald, 2007). Third, malware may cause problems because users can add links to sites that host malicious code. Thus, wikis need to have a blacklist of

malware sites and prevent users from adding an edit that contains malware links.

Although wikis have certain advantages, teachers must consider several issues with their use (Ducate et al., 2011). First, teachers should select a user-friendly wiki interface that can be easily navigated (Zorko, 2009) and train learners on this technology (Cole, 2009; Zorko, 2009). Second, teachers should create well-designed activities that require collaboration (Larussen & Alterman, 2009) and instruct learners how to assess peer contributions (Cole, 2009). Third, teachers should inform learners about collaborative working (Bonk et al., 2009) and conduct a practice task before starting the real project (Lin & Kelsey, 2009). Fourth, teachers should start and model communicative activities (Godwin Jones, 2003; Zorko, 2009). Last and most importantly, teachers should provide regular feedback to motivate and encourage learners (Bonk et al., 2009; Lin & Kelsey, 2009; Zorko, 2009) and offer clear instructions about the project (Bonk et al., 2009; Zorko, 2009).

Teachers should also be aware of the limitations of wikis including unintentional and accidental changes, students' reluctance, and demotivation among learners. Students can unintentionally delete others' work. This problem can be solved by collaboratively reconstructing and correcting wikis (Bold, 2006) because wikis allow users to revert to previous versions (Robinson, 2006), track additions, view deletions, and compare changes. Students are also sometimes reluctant to allow their peers to see their unfinished projects (Zorko, 2009) and to revise each other's work. In other words, they only read the online documents and only contribute in class (Wheeler et al., 2008). Another problem is that learners prefer publishing their unfinished projects (Zorko, 2009). Last, learners feel unmotivated when the technology is poorly designed (Cole, 2009). Thus, technological infrastructure at schools should be revised with the support of school administrations.

Further investigation on the use of wikis is necessary because studies of certain issues are fairly limited. Future research should focus on how learners perceive wikis as a tool for language learning and how wikis affect their motivation levels and attitudes. Although studies have mainly focused on writing

skills due to the written nature of wikis, little research has focused on listening, speaking, reading, and integrated language skills. Grammar and vocabulary are additional fields to investigate. Moreover, more data are needed to determine the effects of wikis on cultural awareness, because current results are confusing. From a related standpoint, given the considerable benefits of wikis in terms of literacy development, an additional suggestion can be made with respect to research on their use in multilingual contexts. According to the UNESCO Education for all (EFA) global monitoring report, literacy skills are a critical component of "today's knowledge societies, conferring benefits on individuals, communities and nations" (UNESCO, 2006, p. 27). Yet, as Olufue (2011) points out, in many multilingual societies, particularly those found in developing countries, access to education in heritage languages is often extremely limited, thus contributing to the ongoing problem of language and culture loss, language shift, and the disenfranchisement of minority populations. On the other hand, access to digital technology such as mobile phones and the Internet is increasing, even among these disadvantaged populations. Thus, making use of these resources as educational tools, including the use of wikis, may provide significant opportunities for developing literacy skills in minority languages and supporting the maintenance of multilingualism and multiculturalism, which are widely recognized as critical to preserving our world heritage. However, the use of wikis in multilingual education has not been investigated; therefore, research on this potentially significant application is recommended. The more research that is conducted, the more easily target groups can comprehensively understand how to utilize such emerging technologies.

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\* Editor's note: Our journal policy is to limit the number of references per article to no more than 30. However, in this case, an exception has been made to preserve the quality of the article as a comprehensive literature review.

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### **WIKI – MOKYMOŠI BENDRADARBIUJANT ĮRANKIS RAŠTINGUMUI, KALBŲ MOKYMUŠI IR DAUGIAKALBYSTĖS PLĖTRAI**

**Santrauka.** Straipsnyje nagrinėjami literatūros šaltiniai, kuriuose *wiki* apibūdinamas kaip antrosios kalbos bei užsienio kalbų mokymosi bendradarbiaujant įrankis. Kadangi tyrimų apie *wikio* panaudojimą mokantis kalbų ganėtinai maža, šiame straipsnyje pirmiausia pristatomas *wikio* panaudojimo teorinis pagrindas. Toliau patekiamos studijos, susijusios su *wikiu* kaip kalbų mokymosi bendradarbiaujant įrankiu. Galiausiai reziumuojama, kad *wikio* panaudojimas leidžia patobulinti besimokančiųjų bendruosius kalbinius gebėjimus, suteikia teigiamų emocijų, didina motyvaciją, įgalina mokytis savarankiškai, pagerina tiriamojo mokymosi gebėjimus bei ugdo kritinį mąstymą, nors kultūrinės kompetencijos tobulinimas nedaro ženklios įtakos.

**Pagrindinės sąvokos:** mokymasis bendradarbiaujant, bendradarbiavimas, užsienio kalbos mokymasis, besimokančiojo savarankiškumas, antrosios kalbos mokymasis.