

AN APPLICATION OF WIKIS FOR MEDIATED COLLABORATIVE LEARNING TO SPANISH L2

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ABSTRACT

Information and Communication Technologies facilitate the emergence of new contexts and practices of learning that educational institutions have to adapt to their pedagogical discourse. This paper presents an application of wikis for mediated collaborative learning of Spanish as a second language (“Spanish L2”). We employed the off-the-shelf wiki environment provided by wikispaces in this pilot project. Students were asked to create a set of pages in Spanish about topics of their interest, with the aim of creating a complete cross-linked wiki. At the end of the project, the students answered 25 open questions related with their experiences in improving their language skills, technical use, and collaborative writing with wikis; working collaboratively in small groups; and searching and reading available information in Spanish on the Internet. Our results indicate that students can quickly appropriate wikis as a tool for learning Spanish L2. Moreover, the wiki supported the shift from individual to collaborative writing effectively as indicated by a change from (a) personal to collective responsibility; (b) fragmentary and individual comprehension to general and collective knowledge; and (c) monocontextuality to polycontextuality. Notably, the wiki was a catalyst in language skill development and proved a good tool for cultural knowledge acquisition.

KEY WORDS

Wikis, Spanish L2, Web-based Education, Collaborative E-Learning, Sociocultural Theories of Learning

1. Introduction

A wiki is a second generation web application (“Web 2.0”) which resembles a regular web site for most visitors. However, the editorial process in a wiki is considerably different from conventional web sites. Users can visit the wiki and read the available material but, in addition, they can edit existing contributions and provide new ones. Wikis facilitate online collaboration with minimal requirements on software and hardware equipment and little need for user/student training [1].

The incorporation of Information and Communication Technologies (ICT) in education is a phenomenon that has its origin not only in the institutional context. As we discuss in Section 2, ICT and the Internet, in particular, bring about new contexts for learning and enable innovative teaching practices, which institutions have to adapt to their pedagogical discourse. In this paper we show an example of didactization of a wiki in a higher education context with the main objective of serving as a cultural artifact for mediating foreign language learning. The institutional objective of adopting ICT into teaching and learning was fulfilled with the use of an intuitive and easy-to-use web-based interface, which is not didactical by itself, for working language and cultural contents. In that way, we strive to strike a balance between the curriculum contents and the students’ interests.

More specifically, we present an application of wikis for mediated collaborative learning of Spanish as a second language (“Spanish L2”). We employed the off-the-shelf wiki environment provided by wikispaces and asked students to create a set of wikis in Spanish about topics of their interest related to Spanish culture. We made clear that the project’s aim was to create a complete wiki based on their choice of topics. To the best of our knowledge this is the first use of wikis for Spanish L2 with a respective application of sociocultural theories.

This paper is organized as follows. Section 2 presents related work. Section 3 introduces our three main objectives (improve language skills, integrate ICT in learning practices, and develop collaborative skills) and overviews our methodology. Section 4 presents our results and Section 5 concludes this paper outlining future work items.

2. Related Work

Sociocultural theories present learning as a process that goes from interpersonal to intrapersonal, as the works of Vygotsky explain [2][3]. New knowledge is produced through the social interaction of participants, mediated by cultural artifacts that have influence on the development of the mind [4]. In that sense, cultural artifacts have the function of linking respectively individuality with collec-

tivity, individuals with the society [2][3]. This work applies Vygotskian sociocultural theories of learning to the collective acquisition of Spanish L2.

ICT can be considered cultural artifacts that support the developing of collaborative learning [5]. Computer-supported collaborative learning (CSCL) emphasizes the collaborative aspects of learning. CSCL fosters advancements in technological environments that promote authentic group learning in networks [6][7]. Instructors can profit from artifacts, such as the Internet, and other ways of communication that have already been fully assimilated by students. By finding ways to integrate ICT in the classroom, instructors can use tools freely available on the Internet for fulfilling curriculum goals and supporting an open, multimodal, and multicontextual environment [8].

There is extensive literature in the area of CSCL, which cannot be covered in this paper due to space considerations. We will, however, highlight findings closely related to the work presented in this paper. First, we point out that until recently, there has been unbalanced attention to developing computer systems rather than pressing forward didactic aspects. For example, Huh and Hu [9] note that, specifically for second language learning, CALL (Computer-Assisted Language Learning) has to be better connected to theories of second language acquisition. Kern [10] points out the need for more qualitative and longitudinal studies that have more explanatory power than short-term studies that rely solely on quantitative results.

Earlier efforts at collaborative writing were limited by the lack of effective, open, and easy to use software. For example, Kumpulainen [11] studied a system of peer group interaction by focusing on the function of verbal interaction and the nature of cognitive and social processing. Unfortunately, her study was performed using word processing software and all interactions required the students' physical presence. In this paper we consider remote yet close cooperation where group members perform part of collaborative learning in the classroom and part over the Internet (multimodal learning).

Wikis open the possibility of capturing more deeply the communicative relationships between agents, cultural tools, and the context they are embedded in. Different works have found applications of wikis for visualizing and pursuing linguistic, communicative and cultural aims in English as a Foreign Language (EFL) [8][12]-[15]. Lund et al. have used sociocultural theories of learning as a principle for designing language activities in technology-rich environments. The focus of this approach is in the human interaction mediated by cultural tools and related to its social context [12].

The production and acquisition of language in wikis transcend the individual and mentalistic approach to language acquisition as they enable activities that involve multiple voices and give a more goal-oriented collective

focus [13]. The environment of the wiki provides resources for taking on complex problems, supporting language production, and making possible to trace individual contributions as well as aggregated output over time [13]. Getting involved into collaborative writing with wikis establishes an epistemological shift as the aggregated knowledge can not be really reduced to a sum of discrete individual contributions [14]. Response, trust, and interdependency create a sociogenetic approach to foreign language production [14].

Wikis and ICT enable the emergence of multiple contexts and learning practices that often have their origin outside the institutional context and discourse. Instructors need to understand how these practices can be explored and taken advantage of in educational contexts or, otherwise, educational institutions risk losing out on an important cultural change and may fail to prepare learners for emergent communicative opportunities and requirements [8]. The responsibility of the teacher in this case is to bring the new practices to the educational context and to make them didactical by designing and enforcing certain activities, such as, inquiry-based learning and a cyclical process of asking, investigating, creating, discussing and reflecting, which fosters the object-oriented activities of the learners [15].

3. Objectives and Methodology

The aim of this pilot project was to create a set of wikis in Spanish by university students taking a second course in Spanish (see subsection 3.3, below). The final set comprises wiki pages each of which addresses a particular topic. Students formed four small groups and were allowed to choose freely the topic of their group's wiki page as long as it related to Spanish culture. Each of the pages was to be produced in a collaborative fashion. The freedom to choose the topic allowed for connecting the students' personal interests with the curriculum content as advocated by Lund and Smørðal [15].

3.1 Project Structure

The project was organized in five stages for scaffolding and facilitating student performance. In the first stage, the students created their own groups and prepared a list of on-line references related with the topic that they wanted to work on. The second stage consisted of basically consulting a number of web pages, and in the third stage the students chose a select set of web sources to form the foundation of the course wiki page text. In the fourth stage, the students completed their wiki pages adding links, pictures and embedding multimedia content. In the final stage, the instructor was involved more actively to edit and correct text and, subsequently, this final wiki content was presented by the students in turn to the whole class. Table I presents these five stages and connects them to the main objectives and the specific tasks that had to be accomplished in order to reach the set goals.

Table I. Project Structure and Objectives

	Improve Language Skills	Integrate ICT in Learning Practices	Develop Collaborative Skills
Stage 1		Familiarize oneself with the wiki interface	Organize the group task Choose a topic of personal interest Start contributing to the wiki content
Stage 2	Improve reading comprehension Develop vocabulary Identify main text content	Acquire information about Spanish culture using the Internet	
Stage 3	Learn how to produce/edit texts collaboratively Improve writing skills	Become acquainted with wiki metafunctions	Develop teamwork skills
Stage 4	Correct language mistakes	Master wiki metafunctions Learn how to add pictures, embed multimedia and links to the wiki	Organize team work effectively
Stage 5	Edit text with instructor assistance	Reflect on learning Spanish L2 with the use of a wiki	Evaluate group collaboration results

3.2 Objectives

Table I presents the main objectives of this study: (1) to improve the students' Spanish L2 linguistic skills; (2) integrate ICT tools in learning practices and allow students to assimilate the use of new technologies in their repertoire of metacognitive learning skills; and (3) develop the students' collaborative skills and reinforce team work capacities.

As we will see in Section 4, the wiki proved to be an exceptional tool for mediating the achievement of these three objectives. This collaborative system, with an easy-to-learn interface is a simple yet effective distributed text composition system, with integrated discussion forums that fosters student interaction [1].

For example, from a linguistic perspective, the students first learn how to collect material (from the Internet) and produce original text. Then, they edit (and correct) their own text along with other material contributed by their partners and, finally, perform an editing round with the help of the instructor. The students also put ICT technologies to good practice, learning how to gather "bits and pieces" using the Internet. Then, after acquiring the basic wiki editing skills, they familiarize themselves with wiki metafunctions, such as page history tools and the discussion forum. Finally, students are able to add multimedia content and take full advantage of the wiki metafunctions.

By fulfilling all these tasks, the students acquire a range of collaborative skills, learn how to perform well in small teams and distribute work fairly and efficiently, and realize the positive effects of concerted collaboration.

3.3 Participants and Tools

This project was developed with the participation of nine (9) students of Spanish L2. All of them were first-year/second-semester students at the Oulu University of Applied Sciences, participating in the course *Basic Spanish II* during the Spring 2007 semester. This course is part of the curriculum for two degree tracks, namely International Business and Information Technology, that are fully taught in English. The programs accept both full-time Finnish and foreign students alike. Erasmus exchange students that visit the university every year can also register for the course. The group of students that took part in this pilot project comprised five Finnish degree students, three foreign degree students and one exchange student. Five different nationalities and languages were represented in the group.

We employed wikispaces (www.wikispaces.com), a wiki farm based on PHP, MySQL and lighttpd technologies. Wikispaces provides free wikis for instructors at all levels of education free of charge. This offering was chosen primarily for its setup simplicity, usability, and openness.

3.4 Evaluation of the Learning Experience

At the end of the course project, students were asked to answer a survey of 25 open questions related with their (i) experiences in improving their language skills, (ii) technical use and collaborative writing with wikis, (iii) working collaboratively in small groups, (iv) searching and reading available information in Spanish on the Internet. Moreover, the participants were asked to provide other general impressions and their opinion about the pedagogical quality of the project along with suggestions for future improvements. The survey was designed to provide sufficient feedback so that we could reach specific conclusions regarding our efforts for further research in collaborative learning using wikis for Spanish L2. The following section presents our results based on the students' feedback.

4. Results

This section presents the results of the survey related with the appropriation of the wiki interface, developing collaborative writing skills, improvement of language skills and learning cultural contents. Once again, we note that the emphasis in this paper is on the didactic aspects of using off-the-shelf software and not on the potential novelty of the computer application employed. In effect, the novelty of this work is putting Vygotskian theories into practice for Spanish L2 using Web 2.0 tools in a multi-

cultural classroom and centering on the educational aspects and not on software development.

4.1 Appropriation of the Wiki

Appropriation was defined by Wertsch as *bringing something into oneself or to make something one's own* [16]. Appropriation is then a concept related with shared thinking and social interaction, social instruments and transformation [17][13]. The idea of appropriation has also been applied to the use of technologies. Effectively, every time people use a particular technology for communicating online, they acquire simultaneously the language and its content [5][6]. In our case, students appropriate the wiki interface while learning Spanish.

It is possible to evaluate the level of appropriation of the wikis of our students through their survey responses. In general, the participants seemed to like the wikispaces offering and were satisfied with the use of the wiki in their learning experience. The following reasons seem to have facilitated the appropriation of the wiki.

First, the participants of this study were seasoned computer users and technology was well integrated into their learning habits. Their previous extensive experience using ICT was key to a successful appropriation. Second, the students quickly acknowledged the transcontextual use of the wiki. Some of the students expect that wikis may be part of their prospective working life for creating and sharing information and knowledge in professional settings. It appears that at least for our university students it is important to learn practices and employ tools with applications to their future working careers.

Third, the prospect of observing the daily growth of their own work, monitoring their group's contributions, and following the gradual development of the whole wiki, proved to be extremely motivational for the majority of the students. Progress towards learning Spanish L2 is not an abstract notion, but something that is easily measured in a wiki environment. As other studies show [14], the expansive character of the wiki gives multiple opportunities for language production and participation in many ways (adding text, links, pictures, searching for new information, moderating, editing, and so on, see Figure 1). Based on our experience, we concur with Lund et al. that the capacity that wikis have of linking to content still not existent is an open invitation to knowledge and language production [14][15].

Although the students recognize that the wiki features an easy and intuitive interface, they also express their need for guidance at the first stages of its use. Resistance to the appropriation of the wiki could be found in the students' complaints about problems, for example, related to more advanced features, such as adding pictures, fixing font sizes, and especially simultaneous page editing. All these are technical problems that can be solved with proper



Figure 1. Wiki page about *Turismo en Andalucía* with student-produced text and embedded multimedia.

guidance at the beginning of the course. Evidently, one could consider some more sophisticated tools that employ, for example drag-and-drop functionality or file locking. Although this is left for evaluation in future work, instructor guidance at the beginning of the project seems to be necessary.

4.2 From Individual to Collaborative Writing Mediated with Wikis

In the survey, students were asked to reflect on the positive and negative aspects of working in groups based on their experiences. After reviewing all opinions, it is clear that there are many ways in which students were convinced of the value of team work as we explain below.

Students made favorable comments about working in groups. They found collaborative learning a motivating experience as group members can receive help from their peers, including corrections of their language productions when necessary. Some students noted that working in a team makes it easier to get new ideas. Although this can often translate into more work, at the same time, it makes such work more meaningful, and in the end it is not necessary to invest as much tedious time as when working alone. Students also commented that the best teams had members with miscellaneous skills.

Nevertheless, some students still felt more comfortable when working alone. High performance students often find it very difficult to change their learning style as they have been rewarded during their entire study life by an educational system that emphasizes individual achievement. In situations like these, evaluation can be an excellent tool making students understand that, because of the collaborative nature of the task, the evaluation unit will be the group and not the individual. There is also room for instructor action following the quality of the students' interactions. Some of the answers show that students can follow what we define as *false practices of collaboration*. One example is when students divide a

task in equal parts for working individually and then putting them together without paying attention to issues such as cohesion and homogeneity of the final result. This practice can be avoided by designing tasks that require diverse kinds of input, changes in roles, and continuous coordination among all team members.

Transitioning from individual working practices to collective working practices is not a straightforward process. It requires training, time, and practice. In our students' answers we have identified some indicators that point to an ongoing process of acquiring collaborative writing practices. Three such changes are clear:

1. *Change from personal to collective responsibility.* The participants showed in their answers to be developing a feeling of equal duty towards reaching a set of common goals.

2. *Change from fragmentary and individual comprehension to broad and collective knowledge.* Collaboration in the wiki changed the nature of the knowledge that all team members acquired. Knowledge was produced by the accumulation and sharing of individual contributions, creating more opportunities for language production and learning (assisted with the instructor's feedback).

3. *Change from monocontextuality to polycontextuality of learning.* Working collaboratively on the wiki enabled a more diverse range of learning contexts (such as synchronous or asynchronous collaboration, distance and online learning). For example, Figure 2 presents the discussion forum for a particular topic in the wiki. With the wiki, classroom interactions are no more the one and only way for acquiring new knowledge.

4.3 Language Skill Development with Wikis

The students also reflected on their language skill development. Most were certain that their skills improved. In particular, they mention that their vocabulary expanded greatly, and their reading comprehension and writing skills improved considerably. Note that grammar and oral expression are beyond the scope of this paper. To expand their vocabulary, students were asked to maintain a word list containing terms they found on Internet pages while reading online references. At the beginning of the project students only knew the very basic, general words related with their chosen topic. In their questionnaire answers, the students expressed that by the end of the project their vocabulary knowledge expanded, becoming more specialized.

In addition, the requirement to read Internet pages in Spanish proved to be an excellent way for improving the students' reading skills. When the project started, students had only been working with adapted prose, dialogues, and so on, custom-made for text books. So reading "real-life texts" in Spanish was a big challenge at first.

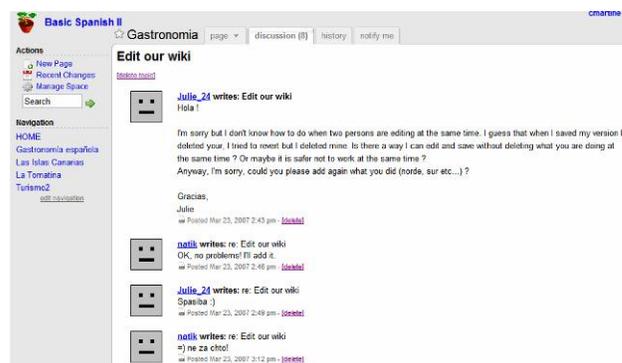


Figure 2. Discussion forum: *Gastronomía*.

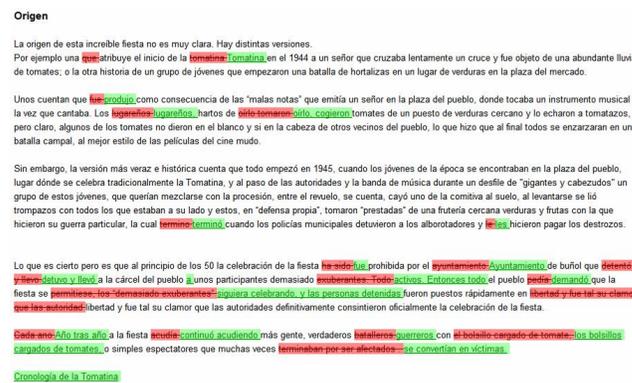


Figure 3. Comparing the original student version with the instructor's corrected/edited version of a wiki page

The level of difficulty of the Internet pages was higher, so students were forced to put into practice a diverse set of reading strategies, such as, for example, repeat reading, fast identification of the main topics only, and translation of the key terms only. This resulted in a fast improvement of their reading skills and a higher level of confidence when reading everyday Spanish texts.

With respect to the development of their writing skills, the majority of the participants agreed that it was difficult to start producing text for the wiki. This may be attributed to the "white page writer's syndrome" as indicated by the fact that frequently the first versions of the pages were simple reproductions ("copy and paste") of existing Internet pages. Coming up with new content is always a challenging task. However, the students continued to edit the text, which proved to be an excellent language practice that gave students more confidence when writing and made their text production easier and faster. By the end of the project all text material was effectively original.

Figure 3 depicts the history function of the wiki, which allows us to compare the students' productions with the instructor's edited version. In the wiki, the corrections are open to all team members and to the rest of the class. This part was also useful for the instructor, when creating exercises for the entire class, as well as for discussing and "recycling" language mistakes.

4.4 Wikis as Cultural Knowledge Acquisition Tools

The requirement to gather material from the Internet and to subsequently structure the wiki content in a coherent manner and interlink the collected material was an excellent exercise towards acquiring cultural knowledge as well. Based on their answers, we can classify the students into two groups. First, those who knew something about the topic they chose before embarking on building a wiki page about it and, second, those for whom the topic was completely new. For the first group of students, building the wiki gave them an excellent opportunity for going deeper into their knowledge by reading and writing about a topic of great interest to them. For the second group, according to one student, creating the wiki was like “starting from zero to reach [an] upper level”, getting in the process a considerable amount of cultural input.

As we mentioned in subsection 3.3, five different languages and nationalities were represented in our classroom. The use of Spanish in addition to the different native languages created awareness among the students about the use of a lingua franca in the classroom and made them familiar with the continuous meaning negotiation that occurs in such multilingual situations.

5. Conclusion and Future Work

This paper presented an application of wikis for mediated collaborative learning of Spanish L2. A set of wiki pages were created with didactical purposes for facilitating the simultaneous appropriation of language, technological tools, and collaborative skills. The structure of a wiki mediates the collaborative process of language production as it facilitates the creation of a common, shared final product, which is “owned” by all contributors. This is also an essential characteristic of collective language production using a wiki, and it differs from the one observed in other synchronous (say, online chat) and asynchronous (such as email) interfaces.

The results from this preliminary study indicate that students can quickly appropriate wiki as a tool for learning Spanish L2. The wiki supported the shift from individual to collaborative writing effectively as indicated by three changes: (a) from personal to collective responsibility, (b) from fragmentary and individual comprehension to broad and collective knowledge; and (c) from monocontextuality to polycontextuality. Finally the wiki acted as a catalyst in language skill development and proved to be a valuable tool for cultural knowledge acquisition.

The pilot study presented in this paper has, of course, certain limitations. For example, the number of participants in the project is small and prevents us from applying quantitative analysis methods that would contrast this study to other previous work in a starker manner. However, we are currently evaluating a similar project in-

volving second-year/third-semester students of Spanish L2 involving 18 individuals. For this project we created a larger questionnaire, based on our earlier experience. Video recordings of student interactions while working with the wiki in the lab will also be used alongside researcher field notes to detail the processes identified in this paper.

References

- [1] B. Leuf and W. Cunningham, *The Wiki way: quick collaboration on the Web* (Addison Wesley, Boston 2001).
- [2] L. S. Vygotsky, *Thought and language* (MIT Press, Cambridge Mass, 1962).
- [3] L. S. Vygotsky, *Mind in Society: the development of higher psychological processes* (Harvard University Press, Cambridge, 1978).
- [4] J. V. Wertsch (Ed.) *Culture, communication, and cognition: Vygotskian perspectives* (Cambridge University Press, Cambridge, 1985).
- [5] S. Thorne, Artifacts and Cultures-of-Use in Intercultural Communication, *Language Learning and Technology*, 7(2), 2002, 38-67.
- [6] S. Thorne and S. Payne, Evolutionary Trajectories, Internet-mediated Expression and Language Education, *CALICO Journal*, 22(3), 2005, 371-397.
- [7] D. W. Johnson and R. T. Johnson, Computer-assisted Cooperative Learning, *Educational Technology*, 26(1), 1986, 12-18.
- [8] A. Lund, The Multiple Contexts of Online Language Teaching, *Language Teaching Research*, 10(2), 2006, 181-204.
- [9] K. Huh and W. Hu, Criteria for Effective Call Research, *CALL Research Perspectives*, 2005, 9-21.
- [10] R. Kern, Perspectives on Technology in Learning and Teaching Languages, *TESOL Quarterly*, 40(1), 2006, 183-210.
- [11] K. Kumpulainen, The nature of peer interaction in the social context created by the use of word processors, *Learning and Instruction*, 6(3), 1996. 243-261.
- [12] A. Lund, ICT and EFL: What can we now do with language?, *Språk & språkundervisning*, 2, 2007, 30-36.
- [13] A. Lund, Appropriation as a didactic concept: language, technology and speech communities, *Proc. 1st ISCAR*, Seville, Spain, 2005.
- [14] A. Lund, Wikis: a collective approach to language production – and a new research agenda for CALL?, *Proc., EuroCALL 2006*, Granada, Spain, 2006.
- [15] A. Lund and O. Smørdal: Is There a Space for the Teacher in a Wiki?, *Proc. of the 2006 International Symposium on Wikis*, Odense, Denmark, , 2006, 37-46.
- [16] J. V. Wertsch, *Mind As Action* (Oxford University Press, Oxford, 1998).
- [17] G. Wells, *Dialogic Inquiry. Towards a Sociocultural Practice and Theory of Education*, (Cambridge University Press, Cambridge, 1999).