LINGWEB: A NEW PEDAGOGY-DRIVEN CMS FOR LANGUAGE LEARNING AND TEACHING*

Nancy Pedraza Araque y Martha Berdugo Torres**
Universidad del Valle. Cali, Valle, Colombia

ABSTRACT

This article presents a research study in the context of which an innovative CMS (Course Management System) for language learning and teaching was designed. *Lingweb* is a platform created at the Language School of the Universidad del Valle, Cali (Colombia). The system is grounded on a socioconstructivist view which combines sociocognitivist and sociocultural principles with interactionist, collaborative and metacognitive approaches to language learning and teaching. The article describes the system's structure, components, functionalities, as well as two samples of teacher-guided scenarios which illustrate the way *Lingweb* has been used.

* Artículo recibido el 17 de marzo de 2009 y aceptado para su publicación el 18 de agosto de 2009.

** **Nancy Pedraza Araque.** MA Candidate in Linguistics and Philology. Assistant Professor of the Language Sciences School, *Universidad del Valle* (Cali, Colombia). E-mail: npedraza@univalle.edu.co; acadreading@gmail.com

Martha Berdugo Torres. Docteur en Sciences du Langage, Université de Toulouse Le Mirail, France. Associate Professor of the Language Sciences School, *Universidad del Valle* (Cali, Colombia). E-mail: maberdug@univalle.edu.co

Keywords: web-based learning, CMS, language learning and teaching, e-learning platform, pedagogy-driven tools

RESUMEN

En este artículo se prueban los resultados de una investigación que utilizó un Sistema de Manejo de la Información para el aprendizaje y la enseñanza de los idiomas, denominado "Lingweb", el cual se diseñó y creó en la Escuela de Idiomas de la Universidad del Valle, situada en Cali. Esta plataforma y su utilización se fundamenta en el paradigma socioconstructivista, el cual a su vez incluye principios sociocognitivos, socioculturales y metacognitivos, y los aplica en la enseñanza y el aprendizaje de los idiomas. En el artículo se describe la estructura del sistema, sus componentes y su funcionalidad. Además, se reportan los resultados de la utilización de la plataforma Lingweb a través de dos muestras de módulos guiados por el profesor.

INTRODUCTION

The purpose of this article is to present Lingweb, a web-based CMS for language learning and teaching, which was designed as a result of a longitudinal research developed in two phases from November 2002 to June 2007 at the Universidad del Valle (Cali, Colombia)[1]. During the second research phase a new sophisticated prototype of the CMS was developed and evaluated. The pedagogical perspective to language learning and teaching in the CMS is framed within socioconstructivism and is built on four fundamental educational approaches, namely, sociocultural theory, interactionism, metacognitive theory, and collaborative learning. Lingweb is the result of a team-based work where the language pedagogical model was defined by the authors of this article while the design and programming was in the hands of three undergraduate students of systems engineering.

As for the instructional design method, we adopted an ADDIE (Analysis, Design, Development, Implementation and Evaluation)

model of instructional design and a participatory action research design. The second prototype of the CMS provides an enhanced set of working and communication tools and a new student portfolio—a key component of the language learning process in the environment. The new structure of the system is characterized by improved functionalities and better graphic design, in addition to new affordances for working individually and collaboratively.

This article is organized as follows: first we present a review of some well-known CMS for general purposes and for language learning; then, we summarize the theoretical framework that guided the system development. Afterwards, we present the design model and a description of the system's components and functionalities. Finally, we describe some of its pedagogical uses through two examples of teacher-guided learning scenarios.

RELATED WORKS

Prior to the design process, several works and experiences of language learning and teaching in online environments were reviewed in the Colombian context (e.g., Berdugo & Pedraza, 2005; Pedraza & Berdugo, 2007; Hernández & Kostina, 2006; Ardila & Bedoya, 2006; Moreno, 2005; Servicio Nacional de Aprendizaje, 2008). Many more projects, such as the Alex Virtual Project of *Universidad Nacional de Colombia* and the Virtual Education Pilot Project of *Universidad de Ibagué*, are being carried out at several language departments of Colombian universities. Now, in the international context, a great number of language learning projects in web-based environments are also reported (e.g., Polisca, 2006; Lewis, 2006; Whelpton & Arnbjörnsdóttir, 2006; Bañados, 2005; Mangenot & Nissen, 2006).

Among the most common and world-wide used CMS, there exist several commercial platforms, such as Blackboard and WebCT, and public domain systems, such as Moodle, Claroline, and ATutor. Language teaching, like teaching in many other subject matter areas, has adopted, in many educational contexts, one of these multipurpose systems. Moreover, there is a tendency to incorporate to the CMS

several software packages (e.g., Flash applications), specifically designed for language practice.

Concerning the e-learning systems for language learning and teaching, the literature review shows very few CMS specifically designed for this purpose. Several works report the existence of a vast number of language environments (e.g., websites and portals) of all kinds, which proliferate in the web; however, they do not have the features of a CMS[1]. Although most language departments have adopted and adapted commercial or free multipurpose CMS, some outstanding efforts are being made to build dedicated e-learning systems or platforms.

An interesting project carried out at the Communicative English Program of *Universidad de Concepción* (Chile) has led to the creation of the *UdeC English Online*, a rich and multifunctional virtual learning system, which is framed within second language acquisition (SLA) principles (Bañados, 2006) and allows a diversity of students' independent work and online monitoring. Among other virtual learning environments dedicated to language learning and teaching, there is *iWill* (Intelligent Web-based Interactive Language Learning), a web environment for teachers' and learners' resourcing and interaction, which is mainly dedicated to the development of English reading skills and to concordance exercises. There is also *Canufle* (*Campus numérique français langue étrangère*), a virtual platform of five French universities (*Université Stendhal-Grenoble* 3, *École Normale Supérieure Lettres et Sciences Humaines*, *Université Lumière-Lyon 2, Université de Franche-Comté* and *Université de Bourgogne*), specifically designed for French teacher development (Mangenot, & Nissen, 2006).

Even though there is a great variety of e-learning tools which offer a great number of useful resources for language learning and teaching, they lack important features and functions for more efficient language learning processes, or they are not affordable to everyone. Let us consider the main advantages and drawbacks of these systems.

- The different CMS reviewed offer several interaction tools; however, they do not offer clear guidelines on how to use them in order to create learning scenarios that foster metacognitive reflection and collaboration strategies. They focus almost exclusively on the promotion of the cognitive learning dimension, but they do not include explicitly, in their design foundations and in their functionalities, the metacognitive and socioaffective variables of learning.
- Most multipurpose CMS, either commercial or open access, provide tools which are too general for language learning content design (i.e. modules, lessons, activities, etc.) which do not offer specific language teaching and learning needs, namely high levels of interactivity, collaboration and different kinds of feedback. The COVCELL Project may offer considerable solutions to these problems (Whelpton, & Arnbjörnsdóttir, 2006).
- The addition of interactive multimedia objects and applications to an existing CMS, in order to address specific language learning needs in listening and pronunciation or in grammar and vocabulary, is an acceptable and efficient solution in virtual language education. Although limited by the rigid structure of the multimedia format, this kind of complementary tools can be appropriate for the development of some skills; however, these learning objects are too inflexible to promote free oral and written language production, to process textual data, and to effectively assess the learner's performance.
- Finally, most of the web-based language learning tools produced at the institutional level are neither open access nor commercially available; hence, they are almost inaccessible.

Given this panorama, the research study described in this article sought to provide language teachers and students of *Universidad de Valle* with a dedicated CMS which offers specific tools for language course design and for language learning. Two prototypes of Lingweb have been developed since 2002 through 2007 (Berdugo, & Pedraza, 2005; Álvarez, & Cobo, 2003; Cruz, 2006); the second version is described herein.

THE PEDAGOGICAL MODEL OF LINGWEB

The theoretical perspective behind the platform design and its pedagogical model is framed within a socioconstructivist view of teaching and learning, which is based on three complementary approaches: a sociocognitivist and sociocultural approach, a metacognitive approach and a collaborative approach. According to the socioconstructivist perspective, the knowledge building process is the result of individual as well as social variables (Piaget, 1935/1969; Vygotsky, 1978; Delval, 1997; Carretero, & Limón, 1997). While some information processing theories, such as declarative and procedural knowledge types (Aguilar, 1994; Andler, 1992), mental structures or schemata (Rumelhart, 1980), short and long term memory (Atkinson & Shiffrin, 1968), explain the individual cognitive activity during the learning process, the sociocognitivist theories highlight the role of social and contextual factors in knowledge building.

The sociocultural approach of learning and teaching, mainly building on Vygotsky's developmental theory, shares the sociocognitivist principles of learning (Warschauer, 2005; Lantolf & Thorne, 2006). Social learning theory, within the sociocultural framework, states that high mental functions develop first at the interpersonal, and then at the intrapersonal level. This explains why the learning process is more effective when children interact with more advanced peers. Besides, following the sociocultural theory of mediation, the human activity in online environments is mediated by the tools used in order to have access to, construct and convey social meanings. Computers, Internet and learning platforms are highly structuring technologies of human activity and mental functioning.

Teaching and learning a language in a virtual web-based environment must also take into account second language acquisition theories (Chapelle 2001, 2005; Egbert & Handson-Smith, 1999; Halliday, 1999). The promotion of social interaction is the core principle of SLA since it allows for meaning negotiation and construction. Moreover, the enriched interactional CMC environments offer great opportunities to expose learners to a variety of input and to produce output; they are the favorable space for authentic

communication and meaningful tasks, with low levels of affective filter, stress and anxiety.

The next approach to be integrated into the pedagogical model was the metacognitive one. Metacognition is another core cognitivist concept which highlights the role of consciousness, self-reflection and self-regulation during the learning process. It also has to do with the self-awareness of cognitive functioning, resources allocation and efficient strategy use. The learning environments should allow the development of metacognitive strategies through a structured training in the metacognitive cycle: planning, monitoring-controlling and evaluating, taking into account the person, the task, strategy and context variables (Mayor, Suengas, & González, 1993). The purpose of this training is to promote self-control, self-regulation and, as a result, to create conditions for autonomous learning.

Finally, the collaborative approach to language learning and teaching allows guidelines to be set for the design of the platform and the language courses within it. Collaboration is considered here both *as a process* and *as a state*; in this view, participants could cooperate *in a process* while maintaining a collaboration *as a state* (**Brna, 1998). Collaboration is then taken as** an umbrella notion that includes cooperation (Panitz, 1996); hence, it suggests the accomplishment of both highly controlled and structured tasks (cooperating) at the early stages of the learning process, and less guided and less structured tasks (collaborating) at the advanced stages. A CMS for language teaching and learning, based on sociocultural and interactionist approaches, should highly promote social learning and collective language building through shared work and peer interaction. For doing so, it must provide a rich environment and a toolkit that afford a wide variety of interaction patterns: one-to-one, one-to-many, many-to-many. It must also provide pedagogical devices to create various communicative learning activities based on several types of cooperation and collaboration patterns.

The definition of the platform's components and functionalities was then informed by the pedagogical framework described above, so that they address the diverse teaching and learning needs of se-

cond languages (L2) in the specific context of the *Universidad del Valle*. Thus, the entire CMS design process as well as the online L2 courses design, the interaction and study tools in the web environment are guided by a principled pedagogy-driven approach.

DESIGN METHOD

The instructional design method follows an ADDIE model (Analysis, Design, Development, Implementation and Evaluation) of software design (Galvis, 1989), completed with the instructional design model of websites by Montilva, Sandia and Barrios (2002). The study first proposed to develop a website for language learning and teaching at the Universidad del Valle, but it was soon changed to a more sophisticated tool, that is, a course management system (CMS), which could offer ample opportunities of interaction and language learning multitasking, the design model is briefly described below:

- *First Stage*: Definition of the Instructional Course Management System (needs analysis, definition of the e-learning system type, components, structure and functionalities).
- *Second Stage*: Requirements Definition (software architecture, functional and interaction requirements, use cases, conceptual model).
- *Third Stage*: Course Management System Design (pedagogic framework and features, users' interface design, database structure, class and interaction diagrams).
- *Fourth Stage*: Course Management System Implementation (database production, users' interfaces and tools building, package diagram, course system publishing and delivery).
- *Fifth Stage*: Evaluation of the Course Management System and the Design Process (users' and administration interfaces tests, course delivery, users' evaluation, adjustments and new requirements).

The evaluation stage takes place throughout the whole design and development process, which is consistent with a participatory

action research design approach (Vincini, 2000; Steyn, 2001). Hence, electronic journals and forum logs, questionnaires, focal groups and surveys were used for documenting the design experience. In the second phase of the research, a complete design cycle was carried out in order to build the second version of the language learning and teaching platform[3].

DESIGN RESULTS

Overall system structure

Lingweb has been conceived as a system for delivering course contents and materials and as a complementary tool to face-to-face classes. As a course management system, it provides not only the technological devices for designing and delivering language contents, but also a rich set of study and interaction tools (portfolio, notebook, journal, bulletin board, publications, forum, website links…), which are briefly described later.

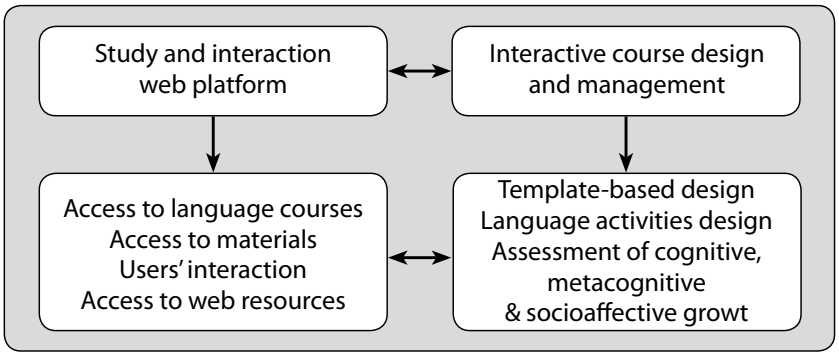

Figure 1. CMS Structure of Lingweb

The learning environment is structured into three main working spaces according to the users: the teacher's area, the student's area and the administrator' area. All the components of the CMS have been inspired by social constructivist and SLA principles, and are intended to enhance the building of language learning scenarios that promote the cognitive, metacognitive and socioaffective dimensions of the learning process.

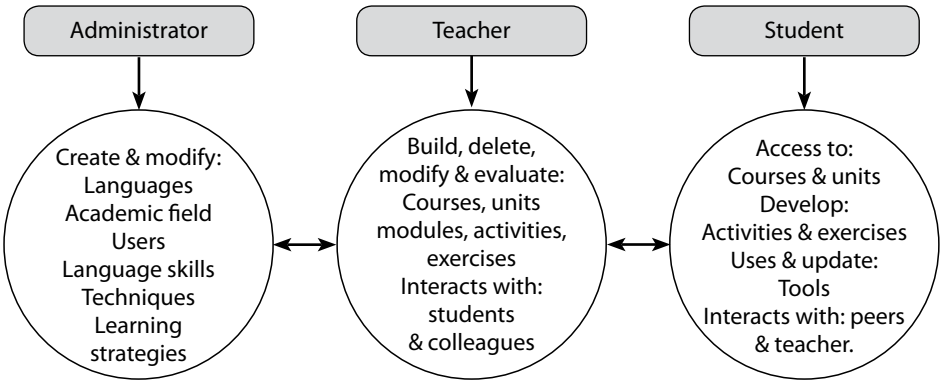

Figure 2. User's profiles in Lingweb

Teacher's environment: template-based course design

Defining the instructional model of the platform also led us to consider the language course design approaches and the L2 teaching methodology that could be implemented in the system. The online language course is organized, for design purposes, following a hierarchical structure where the didactic unit or sequence is the core component of the course. The unit is, in turn, structured into modules, which are structured into activities, which are finally structured into exercises. The unit can also be accompanied by a study guide designed by the teacher in any format (htm, pdf, doc…). For each of these unit's components, Lingweb provides a set of design templates that teachers can fill in according to their teaching purposes. See the exercise template in Figure 3.

The didactic unit structure—together with the entire course package (study and interaction tools)—, does not marry any particular design or approach to language teaching design. The course contents and the unit's components will be defined according to the syllabus type and the course approach selected by the teacher or the language study program. Nevertheless, we suggest the adoption of analytic and process-oriented syllabi such as task-based, project work or content-based ones which promote real-life communication, problem solving, and knowledge building in meaningful contexts. Furthermore, these approaches to language course design allow the integration of situational, functional, lexical, grammatical,

textual and cultural contents in coherent sequences. The web-based language learning environments enhanced with hypermedia and CMC are particularly appropriate to implement diverse communicative approaches from an integrative and holistic perspective of course design (Richards, & Renandya, 2002; Beglar, & Hunt, 2002; Stoller, 2002).

Figure 3. Teacher's Interface in Lingweb: Exercise Template

Student's environment: the multifunctional and multidimensional portfolio

The student portfolio is the central working space where the contents of the course are developed. It is a space of a socio-cogni-metacognitive nature for the execution and registration of three kinds of tasks: cognitive, metacognitive and socioaffective (O'Malley & Chamot, 1990). These three learning dimensions are developed through three different types of strategies, and are identified by the student through a characteristic color: light blue characterizes the cognitive, light green the metacognitive and light brown the socioaffective (Figure 4).

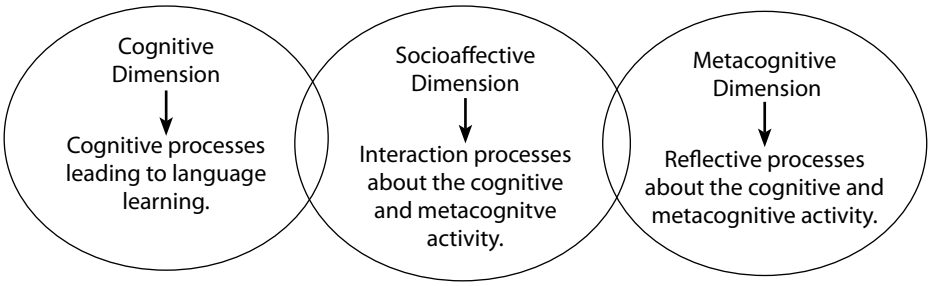

Figure 4. Dimensions of learning in the Lingweb environment

Each kind of strategy is related to a different kind of output: first, the cognitive, whose main function is to document the actual tasks or exercises done, and as such are closely related to the cognitive and linguistic strategies and skills which foster the process of learning a foreign language. Second, the metacognitive whose main function is to document the reflective processes that deal with the planning, monitoring and evaluation of the cognitive tasks[1] and that foster the language learning process in a strategic and self-regulated way. And third, the socioaffective entries whose function is to document the socialization processes of the cognitive and metacognitive work.

Usually teachers emphasize the implementation of activities that help language learners to develop the necessary cognitive processes, but neglect both the metacognitive reflection and the socioaffective interaction that naturally occur in everyday exchanges, for example, in professional settings. In Lingweb these three dimensions appear explicitly interconnected in the "Training Module" where the student can see the strategy (cognitive, metacognitive, or socioaffective), the teaching technique and the language skills involved in each exercise. The interplay of these three dimensions is evident during the processes of annotation, registration, revision, socialization as well as individual and collective revision of answers. Thus, from the epistemological perspective that guides the present research, the portfolio is more than just a repository of private cognitive individual work; it stands as a multifunctional and multidimensional learning space that enables learners to go beyond the mere registration of answers and beyond the private

self-reflection activities. The working space allows the students to see their peers' presence, and mainly to share and transform the learning process collectively.

The portfolio can be consulted by selecting a course from the course list. The user immediately finds a content page displaying the didactic units (study guide, modules, activities, and exercises) from which he selects the exercise he needs. Then, he comes to the exercise page. On the upper section of the page, he finds the information related to the context of the exercise (unit, module, activity, and study guide). Finally, he comes to the central space of the page where he finds the exercise itself: first, the objectives, type of strategy, learning technique, skill, and the instruction; second, depending on the exercise design, the links to the materials—the system allows the teacher to upload two kinds of materials: exercise materials and complementary materials—and if needed, some specific suggestions for carrying out the exercise; finally, two main sections, the student work space and the socialization area.

- The work space presents the exercise depending on the type chosen by the teacher: open-ended answers, table-filling or multiple choice. The first two types offer a writing space which is equipped with a text editor. The learner may have to do various kinds of exercises: completing tables, answering questions, filling in gaps, and, if needed, he may also upload the answer as an attached file. The system archives the various versions of the exercise; this function is intended to foster the student's reflection on his performance and interaction processes. The third type allows the student to do multiple choice or true and false exercises, and to get immediate feedback.
- The socialization area appears below the working space and is divided into three sub-areas. The first one shows the peers' comments or evaluations on the exercise; the second one provides access to the peers' answers to the same exercise; and the third space allows feedback on their peers' answers to be sent. The student may contact the partner who sent the comments through e-mail.

Interaction and study tools

Following is a brief description of the set of interaction and study tools available in Lingweb. Both users, the teacher and the students, have access to them but only the former has administration and moderation facilities. All the tools can be used either autonomously or under the teacher's guidance within a given activity or exercise as is shown later in the learning scenarios section.

- *Forum*: This is a communication and interaction space that seeks to foster academic discussion among students and teachers. Lingweb offers the possibility of creating specific course content forums (unit, module, activity or exercise forums), and a general forum, for freer academic discussions proposed by the teacher or the students.
- *E-Mail:* This tool, although rather simple, is very functional and allows one-to-one and one-to-many interactions. It enables users to send e-mail messages to the accounts that are registered in the system.
- *Bulletin Board:* This tool enables students and teachers to publish messages about the development of the course, as well as all kinds of social or cultural activities related to the class members.
- *Notebook*: Like a regular notebook, it is an individual working space to be used while executing the course activities. This private space, which can also be accessed and annotated by the teacher, is structured into a notebook for registering general notes, and a notebook for every course in which the student is registered.
- *Journal*: This is also a private space which seeks to foster self-reflection about all aspects of the course (contents, methodology, materials, evaluation, etc.), and the dimensions (cognitive, metacognitive, and socioaffective) of the language learning process. It can be accessed and annotated by the teacher, and thus becomes an interaction tool between teachers and students. The student has a general journal and as many class journals as courses in which he is registered.

- *Links to web-based dictionaries*: This tool allows students and teachers to create, edit and have access to links to web-based dictionaries. They can organize the links into two general categories: monolingual and bilingual. Once inside each category, the dictionary can be further organized into general or specialized.
- *Useful websites:* This tool allows users to create, edit and have access to links leading to sites that are relevant to the course it can only be edited by the teacher or the student who has created the link.
- *Glossary*: It enables users to register and have access to vocabulary items related to the course materials. The terminological card includes: term, definition, context, source of the text, synonym, antonym, grammatical features, and Spanish translation. Only the term, the context and the definition are obligatory fields for registering a new item.
- *Publications*: This is a space for the publication and socialization of student projects and course documents. All users can publish all kinds of materials related to the course activities in various formats (e.g., htm, doc, pdf, mp3, jpg, gif…). Only the user who publishes the document can edit it, but everybody can comment on it in the forum.

TWO EXAMPLES OF TEACHER-GUIDED LEARNING SCENARIOS

The following learning scenarios conceived for two different language courses illustrate both the learning language and teaching principles described in the theoretical model and some ways in which the technological environment (portfolio, communication and study tools) can be used to enhance language learning within *Lingweb*. The first scenario was prepared for an ESP course (a Reading for Academic Purposes course) and the second one, for a communicative French course (a task-based oriented course). The working sessions, in the first case, were developed during class time with the accompaniment of the teacher; in the second, they were designed in a semi-autonomous learning context where some of

the activities were developed during class time and the rest in the student's free time. The activities in both scenarios were designed in such a way that the learners had to interact with the system, their teacher and their peers.

The cognitive, metacognitive and socioaffective nature of the pedagogical scenarios implemented requires a learner who possesses an average development of four basic traits that characterize successful online learners, namely being skilled in the use of online learning technologies, particularly collaborative technologies; having a strong academic self-concept and good interpersonal and communication skills; having understanding and appreciation of collaborative learning; and having self-directed learning skills through the deployment of time management as well as cognitive learning strategies (Dabbagh, 2007).

Reading activities for an ESP Biology course

The reading activities described below are designed for students taking an English for Specific Purposes reading course entitled "Introducing the metacognitive reading cycle to biology students" (Pedraza, nd). This course has two main objectives. The first seeks to familiarize the learners with the typical moves in research report introductions, and the main linguistic features and signpost markers that characterize them (Swales, 1999). The second seeks to familiarize them with a three-phase (planning, monitoring-controlling, evaluating) and four-variable (reading task, type of text, reading strategies, reader) metacognitive reading cycle. After the students introduce themselves to their learning community in Unit cero, they find the following four units: "Introducing the metacognitive reading cycle" (unit 1), "Moves in research report introductions" (unit 2), "Applying the complete metacognitive reading cycle" (unit 3), and "Evaluating" (unit 4).

Although the students develop the activities mainly during class sessions—working at their own pace—they have to meet flexible programmed deadlines. The teacher's presence is minimized to favor student-student interaction, student-system interaction,

learner-centered knowledge construction and the development of autonomous learning. Since the learners are expected to have taken two previous reading courses in which they are introduced to cognitive reading skills for academic contexts, this course does not provide further training in this regard. However, provision is made to include—as part of the complementary materials—a revision of some of the most important reading strategies, and related web links for autonomous use.

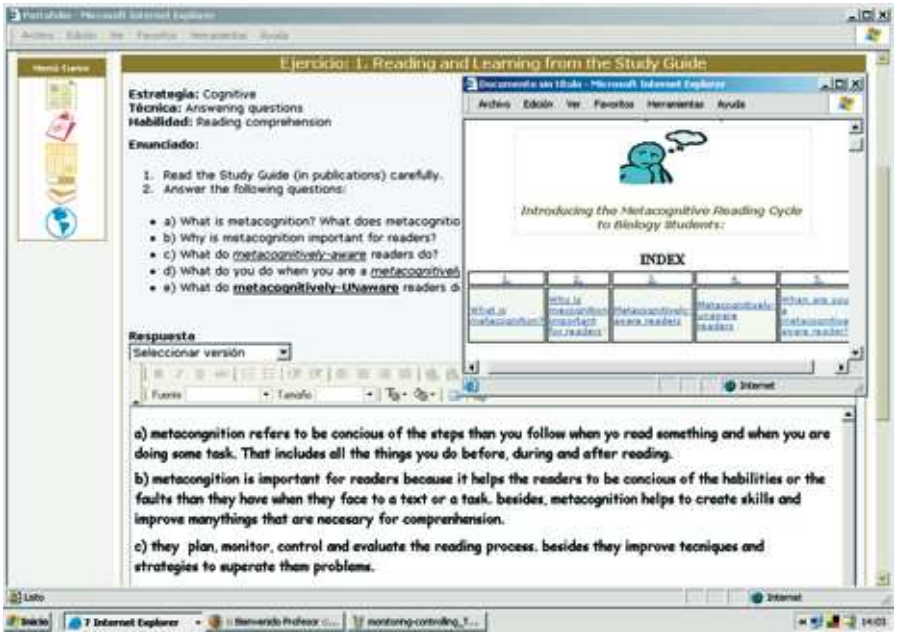

Figure 5.
Unit 1, Exercise 1, Reading and Learning from the Study Guide (ESP Course).

The metacognitive reading cycle training is developed through a **Direct-Instruction Approach** in which the socialized reading of the study guides is of crucial importance. First, in Unit 1, the students are introduced to the metacognitive dimension through a Study Guide which provides the learners with key knowledge of issues such as the difference between cognitive and metacognitive knowledge and strategies, the importance of metacognition for efficient reading, the main kinds of metacognitive knowledge (i.e., declarative, procedural, and conditional), and the three phases

and the four variables. In order to provide a variety of means to visualize the contents, the metacognitive cycle is presented via both animated cartoons and HTML documents. In addition, this study guide provides examples to model, through expert metacognitive readers, the efficient use of the metacognitive reading cycle (see Figure 5).

Then, the student is asked to assess both his own answers and his classmates'. The peer review process should lead to the production of an evaluation that expresses the conclusions of this comparison. The teacher can design this socioaffective interaction, either by embedding it in the metacognitive exercise itself, or by planning the socialization as a separate exercise, as can be seen in Figure 6, where the student is asked to consult and comment on his classmates' answers.

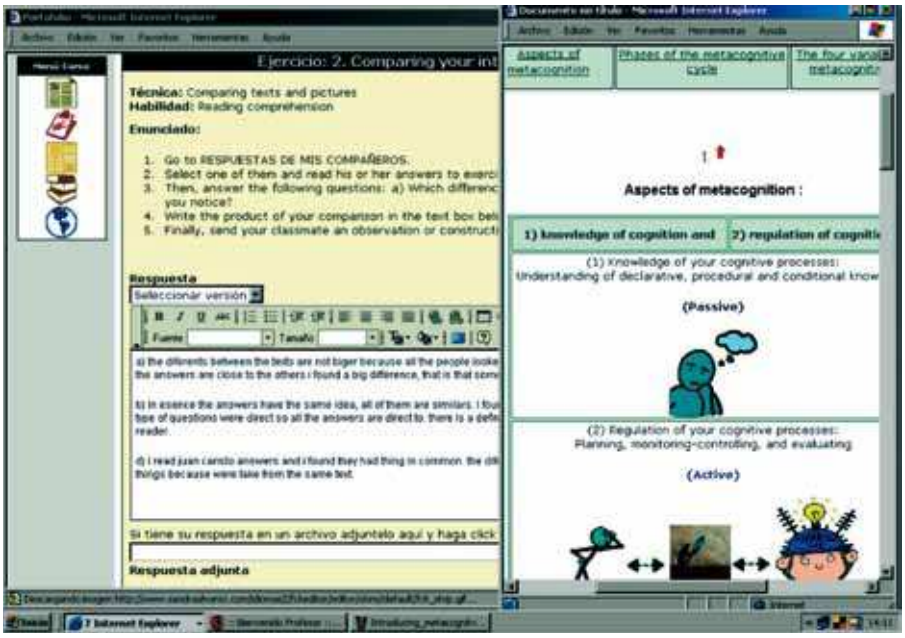

Figure 6.
Unit 1, Exercise 2, Comparing your interpretation of the study guide (ESP Course).

The teacher can implement various modalities of socioaffective exercises, ranging from basic to more complex patterns. The first type seeks to enable the learner to integrate the three-phase

metacognitive cycle into the cognitive processing of the research report introduction through the analysis of his own answers in the light of his peers' answers in order to improve his own version. This is the simplest modality because it only entails the correction of the student's own version. The second one demands, in addition to this personal correction, the production of feedback to the peers. Thus, like the first modality of socialization, this seeks to foster—initially—self-reflection to assess his own answer in order to identify weaknesses or problems, make decisions as to which changes he needs to introduce, and put them into practice to improve the execution of the reading task. Then, he has to study his classmates' answers carefully and involve himself in high order cognitive processes (e.g., analyzing, inferring, summarizing, concluding), and deploy argumentative skills. Only in this way can he produce constructive collaborative assessment or feedback that goes beyond the simple general positive or negative comments (e.g., "We have the same answers," "I disagree," etc.), and take the necessary time to annotate the points in focus in some detail.

Figure 7.Unit 3 (Content page), Applying the complete metacognitive reading cycle (ESP course).

After each metacognitive phase is presented and studied as described above, in Unit 3 the student is presented with the actual reading of the introduction to a biological research report. At this point, he is guided to use the complete metacognitive reading cycle that can be observed in Figure 7.

While developing the exercises (cognitive, metacognitive, and socioaffective), the learner is prompted to refer to the forum where the teacher has made provisions for an extended dialog on a given exercise. Also, he is invited to verbalize his metacognitive reflections in his journal, if the teacher chooses to construct a more personalized and private interaction with each student, as can be seen in figure 8**—this example is taken from another ESP biology course.**

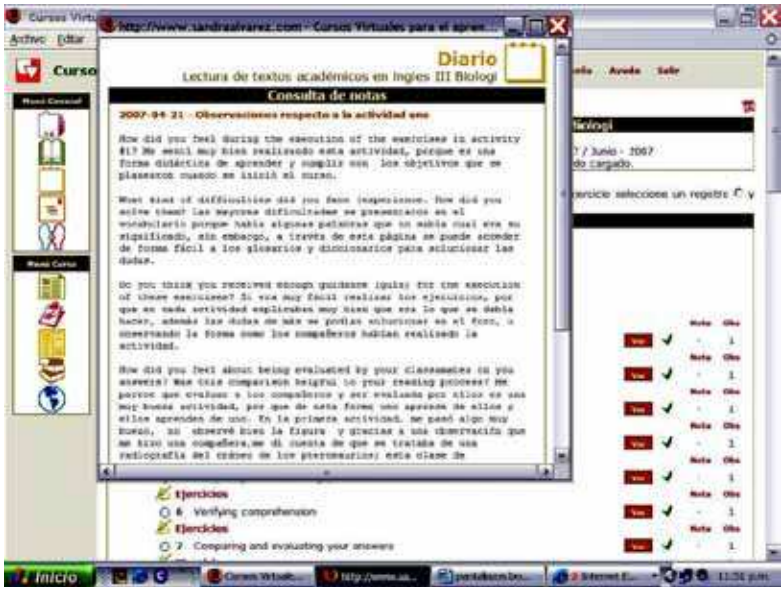

Figure 8. Journal entry, Reflecting about overall reading performance and reading process

Communicative language tasks in a French Course

The following learning scenario is part of a didactic unit designed by Moreno and Quintana (2007) for first year students of French of the undergraduate language program. In this unit "L'alimentation

et la santé", the learners explore some French cooking traditions as well as their own culinary traditions. They are expected to listen to and write cooking recipes; to discuss the relationship between good eating habits and good health; and to practice some language structures and vocabulary on food. The unit contains a training module composed of two communicative language tasks (activities): "Plats de cuisine française" (task 1) and "Manger sain pour mieux vivre" (task 2). The activities designed follow the task-based approach which allows the main language skills (listening, reading and writing, speaking) to be integrated with subsidiary skills (grammar and vocabulary). A second evaluation module, "Testez vos connaissances", is intended to check qualitatively the learners´ achievement upon completion of the training module.

The working path proposed by the teacher leads the student step by step through the activities and exercises of each module. In addition to the accomplishment of the communicative tasks which involve different cognitive processes such as previewing, searching, selecting, analyzing, comparing or synthesizing information, the learner is given the opportunity to develop some metacognitive and socioaffective strategies. At different stages of the unit, the teacher asks the students to interact with their partners through the exercises page or through the forum (socioaffective strategy), or he/she leads them to reflect on their learning process (metacognitive strategy) using the e-journal.

In task 1, "Plats de cuisine française", the learner is guided to prepare a cooking recipe. In order to achieve the task, he starts by reviewing his previous knowledge (Exercise 1. "Les aliments"); he is then exposed to an important amount of oral and written comprehensible input through several recipes in the form of audio and video recordings, where he must look for specific information (scanning strategy), fill in information, analyze text structure and forms (Exercises 2, 3, 4 and 7); and he is also asked to navigate and practice language structures in previously selected websites (see Figures 9 and 10, Task 1, Exercises 2 and 6). Finally, he must synthesize linguistic, textual and cultural knowledge (specific structures and vocabulary, kinds of food, and cooking recipes) into a writing exercise (see Figure 11, Task 1, Exercise 8), which is the fulfillment of the communicative task.

Figure 9. Task 1, Exercise 2. "La vinaigrette" (French course)

Figure 10. Task 1, Exercise 5. "Pratique grammaticale" (French course)

While developing the activities, the student can refer to the Study Guide, consult and feed the glossary of the unit, consult online dictionaries and related websites. He can also ask for help from a classmate or from the teacher by sending e-mail messages or by posting a message in the forum. Throughout this process, he can write notes in his notebook and reflections in his journal.

After completing these individual exercises, the learner is asked to share his written production, to read his partners' work and to send feedback accordingly in the socialization area of the exercise (see Figure 11, Task 1, Exercise 8).

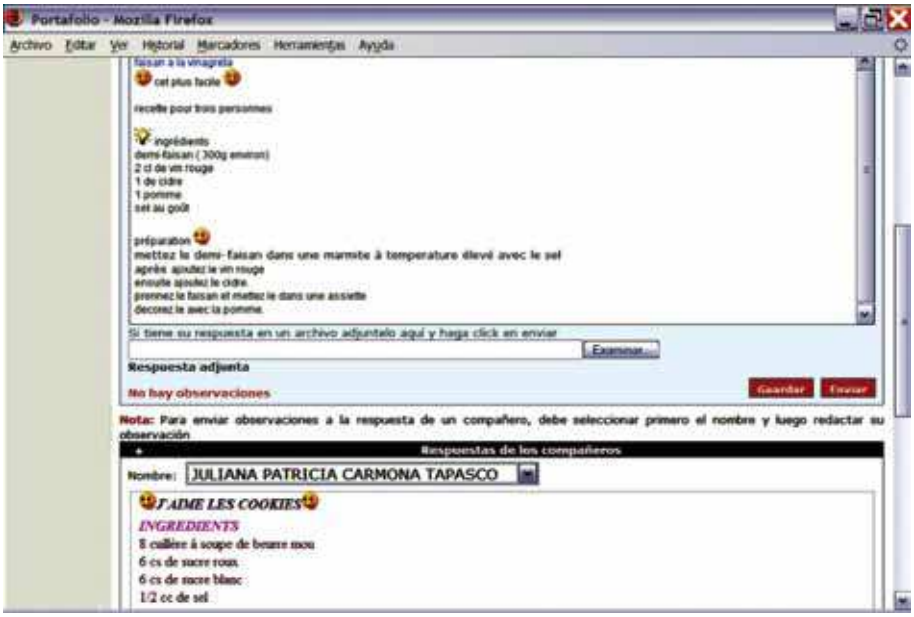

Figure 11. Socialization Area. Task 1, Exercise 8. "Création d'une recette originale" (French course)

Another way of socializing and interacting with peers is to relate a given activity or exercise with the forum. The teacher can propose a discussion topic and have the students participate in it, such as in exercise 8 ("Obésité ? Anorexie ? Quoi encore ?") of task 2 ("Régime et habitudes alimentaires") (see Figure 12) where they are asked to discuss the illnesses related to bad eating habits after having read about this topic, watched two short film sequences, and

after written down healthy diets. Finally, to promote the student's reflection strategies, the teacher can design a set of metacognitive exercises along with the language activities or use other tools such as the journal to register comments on the online activities or course development.

Figure 12.
Task 2, exercise 8. "Obésité ? Anorexie ? Quoi encore" (French course)

The two previous experiences illustrate the kind of learning scenarios that can be implemented in Lingweb. Evidently, the pedagogical characteristics of the didactic units as well as their interactivity and visual appeal to the students depend—to a high degree—on the teacher's pedagogical approach, creativity, electronic literacy and web-based design expertise. Lingweb has been validated through empirical studies in the context of several learning scenarios similar to the ones previously described (see Berdugo, & Pedraza, 2005, 2007; Moreno, & Quintana, 2007; Tróchez, 2008).

Conclusion

Undoubtedly, the main result of this two-phase research is the language learning platform itself, which is the first system of this

kind in Colombia. The second prototype developed as the product of the design process is framed within a socioconstructivist view of learning and teaching, taking into account sociocultural, collaborative, interactionist and metacognitive principles of language learning. The different components of the system address specific needs of the design process of language courses and of second language acquisition, although some problems still remain unsolved. The system lacks more collaborative and assessment tools, and the student work space needs further sophistication in terms of better content organization and higher levels of interactivity[4].

The design and implementation of the learning scenarios has been very enriching and enlightening. First, from the theoretical perspective, the learning scenarios permitted us to confirm our hypotheses about how language learning and teaching processes occur in this kind of web-based learning environments. Second, from the computational design perspective, they permitted us to verify if the functional requirements of Lingweb, defined at the early stages of the research process, were appropriate for the language CMS, or if they needed to be completed or readjusted. In fact, this dynamic led us to a third research phase which is running since December 2007 through December 2009—this new project is funded by Universidad del Valle and COLCIENCIAS.

Notes

1. For a detailed report of the research results of the two phases, the reader can refer to Berdugo & Pedraza (2005) and to Pedraza & Berdugo (2007). The main result was two system prototypes, named ECLUV (which stands for Escuela de Ciencias del Lenguaje de la Universidad del Valle). This former name was finally changed into Lingweb.
2. Most of these web environments present administrative information, content websites, documents and activities, multimedia resources, interaction spaces (forum, blogs, email exchange), but they do not give the possibility to engage and register as an active student in a virtual language course and to have access to a tutor's or teacher's guide and assessment.
3. Because of length limitations, this article aims at giving a detailed description of the different components of Lingweb, and at showing samples of some lan-

guage learning scenarios within the platform. The reader can refer to Berdugo and Pedraza (2008) for an overview of the evaluation process results.

4. We have tried to illustrate the articulation of Lingweb's theoretical foundations with the system structure and components. Of course, we understand that it may be difficult for the reader to have a full idea of how this system works from the information presented herein only, so we invite him to get in contact with us for further information.

References

Aguilar, V. J. (1994). Algunas contribuciones de la teoría cognitiva a la educación. *Tecnología y Comunicación Educativa* 24, 69-81.

Álvarez, S. & Cobo, F. L. (2004). Diseño de un sitio web para el aprendizaje de idiomas en la Universidad del Valle. Unpublished monograph, Ingeniería de Sistemas, Universidad del Valle.

Andler, D. (1992). *Introduction aux sciences cognitives.* Folio-essais. Paris: Gallimard.

Ardila, Ma. E. & Bedoya, J. R. (2006). La inclusión de la plataforma de aprendizaje en línea MOODLE en un curso de gramática contrastiva español-inglés. *Íkala* 11 (17), 181-205.

Atkinson, R. C. & Shiffrin, R. M. (1968). Human memory: A proposed system and its control processes. In K.W. Spence & J.T. Spence (eds.). *The psychology of learning and motivation,* Vol. 8. London: Academic Press.

Bañados, E. (2006). A Blended-learning Pedagogical Model for Teaching and Learning ESL Successfully Through an Online Interactive Multimedia Environment. *CALICO Journal* 23 (3), 533-550.

Beglar & Hunt (2002). Implementing Task-based Language Teaching. In Richards & Renandya, W. (eds.), *Methodology in Language Teaching. An Anthology of Current Practice* (pp. 96-106), Cambridge: Cambridge University Press.

Brna, P. (1998). Models of Collaboration. Retrieved October 16, 2006 from http://www.scre.ac.uk/personal/pb/ papers/cs98paper/bcs98.html.

Berdugo, M. & Pedraza, N. (2005). *Construcción de un Ambiente Web para la enseñanza y el aprendizaje de idiomas*. Cali: Unidad de Artes Gráficas Fac. Humanidades, Universidad del Valle.

Berdugo, M. & Pedraza, N. (2008). Evaluación de Lingweb: ambiente virtual para el aprendizaje de lenguas. *Lenguaje*, 36 (2), 473-509.

Carretero, M. & Limón, M. (1997). Problemas actuales del constructivismo. De la teoría a la práctica. In Mª-J. Rodrigo & J. Arnay (eds.). *La construcción del conocimiento escolar* (pp. 137-153). Barcelona: Paidós.

Chapelle, C. (2005). Interactionist SLA Theory in CALL Research. In J. Egbert & G. Petrie (eds.), *CALL Research Perspectives* (pp. 53-64). Mahwah, NJ: Lawrence Erlbaum Associates.

Chapelle, C. (2001). *Computer Applications in Second Language Acquisition. Foundations for teaching, testing and research*. Cambridge: Cambridge University Press.

Cruz T., C. (2006). Rediseño y Evaluación de un sitio Web para la Enseñanza y el Aprendizaje de Idiomas Extranjeros en la Universidad del Valle. Fase II. Unpublished monograph, Ingeniería de Sistemas, Universidad del Valle.

Dabbagh, N. (2007). The online learner: Characteristics and pedagogical implications. *Contemporary Issues in Technology and Teacher Education*, *7*(3), 217- 226.

Delval, J. (1997). Tesis sobre el constructivismo. In Mª-J. Rodrigo & J. Arnay (eds.), *La construcción del conocimiento escolar* (pp. 15-33). Barcelona: Paidós.

Egbert, J. & Handson-Smith, E. (eds.) (1999). *CALL environments. Research, Practice and Critical Issues*. Alexandria, VI: TESOL.

Galvis, A. (1992). *Ingeniería de Software Educativo*. Bogotá: Ediciones Uniandes.

Gonglewski, M. & DuBravac, S. (2006). Multiliteracy: Second Language Literacy in the Multimedia environment. In L. Ducate & N. Arnold (eds.) *Calling on CALL: From Theory and Research to New Directions in Foreign Language Teaching* pp. 43-68). CALICO Monograph Series Vol. 5. San Marcos, Texas (USA): Computer Assisted Language Instruction Consortium.

Halliday, L. (1999). Theory and Research: Input, Interaction, and CALL. In J. Egbert & E. Handson-Smith, *CALL environments. Research, Practice and Critical Issues*. Alexandria, VI: TESOL.

Kostina, I. & Hernández, F. (2006). Curso virtual para docentes de inglés: una alternativa para la profesionalización. *Íkala* 11 (17), 209-231.

Lantolf, J. & Thorne, S. (2006). *Sociocultural Theory and the Genesis of Second Language Development.* Oxford: Oxford University Press.

Lewis, T. (2006).When Teaching is Learning: A Present Account of Learning to Teach Online. *CALICO Journal* 23(3), 581-600.

Mangenot, F. & Nissen, E. (2006). Collective Activity and Tutor Involvement in E-learning Environments for Language Teachers and Learners. *CALICO Journal* 23(3), 601-622.

Mayor, J., Suengas, A. & González M., J. (1993). *Estrategias metacognitivas. Aprender a aprender y aprender a pensar*. Madrid: Editorial Síntesis, S.A.

Moreno, F. (2005). La Internet como herramienta de apoyo en la formación de alumnos investigadores y aprendices del inglés en la Universidad Tecnológica del Chocó. *Íkala* 10 (16), 151-167.

Moreno, Y. & Quintana V. (2007). Diseño y evaluation de una unidad didáctica para el curso Habilidades Integradas en francés II en la plataforma ECLUV de la Escuela de Ciencias del Lenguaje, Universidad del Valle. Unpublished monograph, Universidad del Valle.

Montilva, J. A., Sandía, B. & Barrios, J. (2002). Developing Instructional Web Sites–A Software Engineering Approach. *Education and Information Technologies*, 7 (3), 201-224.

O'Malley, J. M. & Chamot, A. U. (1990). *Learning Strategies in Second Language Acquisition*. Cambridge: Cambridge University Press.

Panitz, T. (1996). A Definition of Collaborative vs. Cooperative Learning. Retrieved October 16, 2004 from http://www.city.londonmet.ac.uk/deliberations/collab.learning/panitz2.html.

Pedraza, N. & Berdugo, M. (2007). Diseño y evaluación de una plataforma web para la enseñanza y el aprendizaje de idiomas en la Universidad del Valle. Fase II: Sofisticación del sistema. Unpublished research report, Escuela de Ciencias del Lenguaje, Universidad del Valle.

Pedraza, N. (nd). Introducing the metacognitive reading cycle to biology students. Web-based course in the ECLUV platform of the Language School, Universidad del Valle.

Piaget, J. (1935/1969). Les méthodes nouvelles, leurs bases psychologiques. In *Psychologie et pédagogie*. Éditions Denoèl (1969). Paris: Folio essais.

Polisca, E. (2006). Facilitating the Learning Process: An Evaluation of the Use and Benefits of a Virtual Learning Environment (VLE)-Enhanced Independent Language Learning Program (ILLP). *CALICO Journal* 23 (3), 599-515.

Rumelhart, D. (1980). Schemata: The Building blocks of Cognition. In R. J. Spiro et al. (eds.), *Theoretical Issues in Reading Comprehension.* Hillsdale, N.J: Erlbaum.

Richards, J. & W. Renandya (eds.) (2002). *Methodology in Language Teaching. An anthology of Current Practice*, 7th edition. Cambridge: Cambridge University Press.

Servicio Nacional de Aprendizaje (SENA) (2008). EOL – English Online. Inglés para todos los Colombianos. Retrieved August 20, 2008 from http://www.senavirtual.edu.co/ingles/ingles.html.

Steyn, D. (2001). The value of students as part of the design team for educational software, *Instructional Technologies Forum*, Paper 53. Retrieved October 10, 2004 from http://it.coe.uga.edu/itforum.

Stoller, F. (2002). Project Work: A Means to Promote Language and Content. In J. Richards & W. Renandya (eds.), *Methodology in Language Teaching. An Anthology of Current Practice* (pp. 107-120), Cambridge: Cambridge University Press.

Swales, J. (1999). *English in Academic and Research Settings*, 6th edition. Cambridge: Cambridge University Press.

Tróchez, J. (2008). Design, development and evaluation of two web-based didactic units for the course English Reading 1 in the ECLUV platform at the Language School in Universidad del Valle. Unpublished monograph, Universidad del Valle.

Vigotsky, L. S. (1978). *Mind in society. The development of higher psychological processes.* Cole, John-Steiner, Scribner (eds.). Cambridge, MA: Harvard University Press.

Vincini, P. (2001). The Use of Participatory Design Methods in a Learner-Centered Design Process, *Instructional Technologies Forum*, Paper 54. Retrieved Octobrer 10, 2004 from http://it.coe.uga.edu/itforum.

Warschauer, M. (2005). Sociocultural Perspectives on CALL. In J. Egbert & G. Petrie (eds.), *CALL Research Perspectives* (pp. 41-51). Mahwah, NJ: Lawrence Erlbaum Associates.

Warschauer, M. (1998). Computer Mediated Collaborative Learning: Theory and Practise. *The Modern Language Journal* 81(4), 470-481.

Whelpton, M. & Arnbjörnsdóttir, B. (2006). *Teaching Needs Report*. University of Iceland. Covcell State of the art Report and Minerva Europe, Reykjavík Iceland (pdf document). Retrieved February 4, 2007 from http://covcell.org/index.php?option=com_content&view= article&id=59&Itemid=57.