An interactive blended environment for language learning: AIOLE

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Abstract: Taking advantage of the hardware infrastructure installed in the educational centers of Castilla La Mancha region in Spain, the CHICO research group have developed AIOLE, an e-Learning system for language learning that, in addition to offering Web space to facilitate the provision of contents, offers as an innovation the integration of interactive Web tools for dynamic learning design and communication in online learning environments in order to practice and develop the linguistic communicative skills, mainly writing, reading and listening. The integration of chat channel, discussion forums, the AWLA resource for learning to write in a foreign language and a WYSIWYG editing tool helps the participants to design the learning in collaboration. The AIOLE system facilitates the integration of the ICT tools and the access to the Web in the traditional classroom applying Blended Learning.

Keywords: e-Learning system for language learning; Blended Learning; Human-Computer Interaction; Lifelong learning

1. Introducción.

The use of the Internet in the last decade as a repository of content for Language Learning has produced a practically limitless set of materials, which, to a certain extent, makes it unadvisable to waste efforts in producing more materials following the traditional way of drilling exercises and quizzes for practice, as it seems to be the tendency. This makes us think about what is required to develop so that we do not 're-invent the wheel'. Recent research proposes [1, 2, 3, 4] the necessity to focus on pedagogical issues to further develop the implementation and use of technology in schools and universities.

Making use of the hardware infrastructure already installed in the educational centers of Castilla La Mancha in Spain, we have developed AIOLE (An Interactive Online Learning Environment), an e-Learning system for language learning that, in addition to offering Web space to facilitate the provision of contents, also offers as an innovation the integration of interactive Web tools for dynamic learning design and communication in online learning environments to practise the communicative.

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communication in online learning environments to practise the communicative language skills in an integrating interactive way.

The University of Castilla La Mancha (UCLM) is made up of four main campuses located in four of the largest provinces in Spain (Albacete, Ciudad Real, Cuenca and Toledo) with an extension of 78000 km^2. The peculiarity of this large geographical extension made it necessary to make use of the infrastructure of Information and Communication Technologies (ICT) to offer the courses that could be interesting for a large number of the students at the UCLM. Some courses are already available in the way of Learning Management Systems (LMS), mainly consisting of lectures in written form accessible as content with some assignments for the students to do and deliver through email. However, the learning outcomes of courses related with more practical disciplines such as foreign languages, which are more demanding of interactive communication, fall short of expectations when using only content-delivery LMS systems.

More communicative interaction was required, which could enable more effective collaboration between tutors in the design of common objectives and content, with flexibility and dynamic adaptability to attend the specific and diverse needs of students in different campuses, and more interaction in their learning experience as a community of learning.

Developed under the ubiquitous computing perspective [5] and offering the collaborative learning facilities [6,7] that characterize the developments of the CHICO Research Group, the AIOLE system facilitates the integration of the ICT tools and the access to the Web in the traditional classroom developing Blended Learning where the tutor guides their students at a distance, provides them with access to contents, communicative resources for collaboration and interaction via the Web, and also offers guidance and extra conversational practice in face-to-face lessons. The eLearning environment created in this project is accessible not only from the classroom but from anywhere at any time. The system has been designed initially for the University as well as for the Official Schools of Languages and is adaptable by each teacher at any level in learning the English, French, German and Italian languages. This allows the accomplishment of the recommendations established by European Community [8] on the application of eLearning initiatives and life-long learning. Both educational institutions must adapt their curricula to the recommendations of the Common European Framework of Reference for Language Learning, Teaching and Assessment [9] .

2. Theoretical Foundations.

The use of the email in the academic community in the 80s and the emergence and growth of the Web at the end of the 90s established the initial use of the TIC in education. Teachers and tutors offered their lectures and the bibliography lists on the Web and they communicated with the students via email when not in face-to-face learning environments. This was a real advantage for distance education but also for content delivery outside the classroom for face-to-face teaching. The use of the TIC

helped the academic community to have the learning curricula and design of the courses published on the educational center's Website, and some library service implemented. Sometimes discussion forums between the students were facilitated.

After these initial actions, the ICT researchers and specialists began to look for technological enhancements to implement an organised scheme of educational environment. After the first technological aspects were addressed and somewhat solved in dedicated computer-based classrooms with CDROMs and multimedia facilities, other organizational issues came into play. LMS systems such as WebCT allowed for the delivery of such educational content, packed with technology-based activities and equipped with ICT facilities offering certain degree of interaction.

Based on a more pedagogically-centered need, the use of the Web technology derived from perspectives of networks for groupware environments [10] and developers began to integrate diverse tools for education and learning. Videoconference systems, shared whiteboards and interactive simulations were developed with the help of technology and capital investment. Wireless access to the Web could help take these ICT functionalities out of dedicated computer laboratories into the classroom and anywhere, at home, in the library or at the workplace. This facilitated an Integrated Learning Model [11], full of resources, based on interaction and work in group with material adaptative to the learners' needs and to the evolution of elearning environments.

These match three different learning theories with a characteristic shifting focus:

1. The traditional conductist, transmissionist method of Lecture Tutorial delivery for learning by access and repetition. It is supposed to be the transitional stage from traditional learning to technology-based learning. Here technology, mainly computers with diskettes or CDROMs, supports the main part of learning. It involved such a big change that in certain cases, everything turned into an adaptation to the new technology of computing. It was widely known as the Computer-based Instruction (CBI). In languages, every activity was adapted to be accessible using CALL systems (Computer-Assisted Language Learning) [12]. It focused on self-learning, with the materials designed by an expert teacher, who had little contact with their students during the course. Interaction was kept to a minimum. It also focused in the product and the role of the teacher was to select or design the material and to evaluate the knowledge retrieved from the students at the end. This transitional mode was, and still is, a kind of complementary set of activities to be done in the computer lab, the library or as a homework, as it first occurred with audiovisuals and the AudioLingual Method, restricted to the practice of drilling quizzes and language patterns in language labs, for homework or in cars. According to McLuhan's "rearview mirror" theory [12], when a new medium emerges the methodology goes back to the starting point of the previous medium. It doesn't go on from the previous last achievements. Warschauer calls this stage the Behaviouristic CALL [13]
2. A more organizational focus to offer classes of registered learners to be managed as to their learning progress. Collaborative work [6] is being enabled and student-centered learning is improving through technology implementation. Constructivist learning shares the focus with other more structural progressive ways of learning. Learning Management Systems (LMS) have been spreading over all the educational institutions, helping the teacher in the task of organising the virtual

classrooms. Also addressed to distance learning, LMS still focus greatly on content and provide access to materials selected by the teacher, who also organises the task to achieve in group in some cases. Automatic evaluation is highly appreciated, but they do not offer much flexibility or feedback to adapt to the learners needs, whether environmental or knowledge-related. A profusion of utilities in the form of software widgets help the learners make use of advantageous computing enhancements, allowing them to take part in discussions sessions, collaborative tasks and information queries both inside and outside the learning environment all of which allows for certain amount of interactivity. Tracing the students actions is highly relevant to get an appropriate assessment of the learners' progress and the time spent in learning, since this is essential in organization-based formal learning. In language learning, LMS allow access to authentic texts which the teacher has adapted into teaching materials with instructions on the learning tasks, mainly consisting of reading or listening comprehension activities and quizzes checking language use and understanding. These content activities are mainly thematically centered and the communication is mainly between the student and the computer through the texts, not the situation. Although communication here is a kind of simulation, it was called the Communicative CALL by Warschauer [13].

3. A higher-level learning environment is emerging, with scenarios and tasks for learning in authentic environments full of problem-solving situations, with smarter features such as adaptative tasks, open-ended contexts for learning and collaborative projects, allowing interaction with real world and offering opportunities for non-formal lifelong learning. Britain & Liber [1,2] advocate for this kind of more pedagogically-grounded systems, based on projects, tasks or scenarios which will facilitate the development of authentic skills. A more holistic model of learning is integrated in this advanced way of learning enabled by ICT. First it is empowering the traditional learning classes with supplementary online interaction which is known as Blended Learning. Although a less constraining way of learning, it requires more pedagogically-grounded foundations related to knowledge development and social involvement, often successfully achieved by offering interesting, motivating information in communicative engaging discursive exchange. Even the role of the teacher can combine two outstanding features: the one of a mentor with guiding expertise and the one of a co-learner. The radical models of learning find their realization in this environment: Adaptative Tutoring Systems and Learning Communities with Project-based Learning Models and constructionist techniques where the learners interact and learn by creating real artifacts (in the case of language learning, real texts, possibly published on the Web, in diverse formats: newspapers, blogs, wikis, or multimedia Webpages). This seems to be the ideal framework for language learning, which Warschauer calls Integrating CALL [13], and we would refer to as Integrating TELL Model since it is not the computer, but the use of the technology with ubiquitous facilities (portable devices and Web wireless accessibility), which allows and adds an extra value to the learning environment.

Thus, with AIOLE we intended to develop a system that derives from the most recent pedagogical issues applied to the previous managed online courses. The LMS systems were too much centered on content and the mechanism to design the learning activities and strategies did not seem to evolve into effective practice. So, we tried to

develop a system which allows the design of the learning taking place, while in process, depending on the learning model applicable to each specific assignment.

The Web facilitates the creation of learning communities where the pedagogical aspect acquires a new dimension, since the design of learning can be adapted to the learners' needs, to the specific activities, to the requirements of assignments and to linguistic competences on demand. AIOLE facilitates the learners' active engagement in the design of their own learning. Chat and discussion forums take an important role in Web communication, releasing the teacher from replying requests and receiving students' works via email, allowing discursive collaboration in group. The Web also offers the possibility to publish materials and students' works both in the community and open to the public audience. The writing capacity of Blogs and Wikis add extra value for designing the activities on the fly.

3. Objectives.

The use of ICT avails for easy contact with people with other languages and offers new possibilities for communication in authentic contexts. Acquiring new skills in foreign languages is extremely important for "the acceptance, adoption and use of ICT" [4]. Learning a language in the classroom improves when technological components take and extend the functionality of the traditional ones.

AIOLE is centered on providing the teacher with tools for the management and monitorization of the learning of the communicative skills that take part in the acquisition of a foreign language. In addition, it tries to apply in written activities the collaborative learning techniques that are demonstrating to be so effective in the learning of the oral skills in face-to-face environments (work in pairs, in groups, role play, etc.). In real life we also collaborate in the professional world, with the realization of projects in group, writing reports, etc. AIOLE presents a series of computing tools based on the Web aimed to make work in group possible, considering the benefits contributed by new paradigms of computer-human interaction such as ubiquitous computing in collaborative learning.

Under this perspective, the AIOLE Web-based learning system tries to take a qualitative step in the provision of interactive resources for language learning. This interactive environment allows the design of tasks or activities for learning, the trace of the users' actions, the adaptation of the scenario according to the evolution of the learning and the presentation of additional alternatives in their learning process. All this is done in an easy and user-friendly way. Users need not be experts in computer science or programmers, or webmasters; just an average, competent user of computers and the Internet can manage. Teachers shift from being transmitters of their knowledge to being mentors or tutors who facilitate the learning. They are not simple contents selectors either, who guide the students towards the most appropriate and updated information, but they also design the learning activities, which can be based on tasks, results, problem solution, simulation or learning experiences. It is the experience of the learning which matters in these new interactive environments. They offer resources for collaboration in group and individualized activities. Following the current tendency of using the Web to provide resources for a more interactive

learning, AIOLE tries to contribute more to the design of advanced scenario-based learning environments, where the provision and access to contents are not as crucial as the fact to facilitate the access to Web services, based on agent-like facilities that help in the learning process. They are utilities for the communication between the teacher and the student, and between the students to each other, as the writing on Web, tutorial, dictionaries, glossaries, predefined Web searches, external access to materials and contents as well.

The AIOLE system has the following objectives:

1. Integration of technological paradigms such as ubiquitous computing and wireless Web technologies for language learning to favour the textual exchange of information anywhere at any time establishing the basis for blended environments.
2. Developing techniques for designing collaborative environments online with the features of usability, portability, adaptability and monitorization.
3. Implantation of new environments of interaction which offers the opportunity to design the learning materials and tasks.
4. Integration of linguistic and computing resources within learning environments.

Therefore, we propose a system that facilitates the active use of the target language for communication. This is put in practice by means of the TELL environments, with mobile ICT tools improved with wireless Web technology to have access to information and to communication. Thus, we can provide the appropriate interaction, with the characteristics of accessibility, adaptability and flexibility.

4. Description of the AIOLE System.

AIOLE is originally conceived from the facility to write on the Web in a user-friendly way. It evolved from the writing resource called AWLA [14], which we also developed for learning-to-write language activities. It additionally includes a blog-like WYSISYG utility to write content, called WebWriter, which helps the participants to easily design the learning activities. Both the teachers and the students themselves can build their own scenarios.

At present the learning management systems at work do not implement many collaborative strategies for learning. LMS systems usually have discussion forums and the electronic mail (internal as well as external) for the collaboration issues. From the pedagogical aspect the communicative methodology of language learning moves to a more holistic approach, adapting the materials to the specific activities for each assignment. The learning contents in AIOLE environments basically consist of multimedia and written materials easily developed by the teachers and links selected from the Web as teaching materials (for which resources of comprehension techniques, testing quizzes and other similar procedures are offered for the pedagogical goal). There are also written texts as feedback or composition writing that the student should be able to develop mainly within the system (for which resources of writing on the Web are integrated, based on the AWLA system and the WebWriter tool). This system allows using reading, listening and understanding strategies in integrating activities such as WebCasts (with comprehension listening and viewing activities) and WebQuests, consisting of guided project-based searches

of information on the Web (the usual final edition and delivery is done in paper) and to adapt them to the Web in its final phase of development and presentation: AIOLE enhances these activities allowing the assignments handing-in on the Web.

Thus, from the realization of exercises merely based on repetition most languages-related LMS systems propose, taking advantage of the so attractive motivation that the learning with computers entails and the accessibility to the information they provide, we tried to improve the methodology of their application to language learning by emphasizing the interaction capacity and collaboration as the main communicative resources. We focus on the group of students as Learning Communities in the sense of Jonassen [6] where the participants share interests and common objectives of learning. Online learning can face the challenge in collaborative activities where face-to-face learning had certain difficulties to implement, due to time and space restrictions. Complementarily, others where face-to-face communication has proved successful remain difficult to achieve on the Web. This is the case of oral interaction. This leads us to state the appropriateness of Blended Learning for language learning courses. Blended Learning, in its wider sense, offers the possibility to use some strategies on the Web, avoiding the restrictions imposed by time and space, and at the same time, leave some activities for face-to-face learning environment, the traditional classroom.

5. A Case Study.

The system has been used in courses of lifelong learning at the EOI Ciudad Real and the course for Writing Research Articles in the Faculty of Chemistry, UCLM.

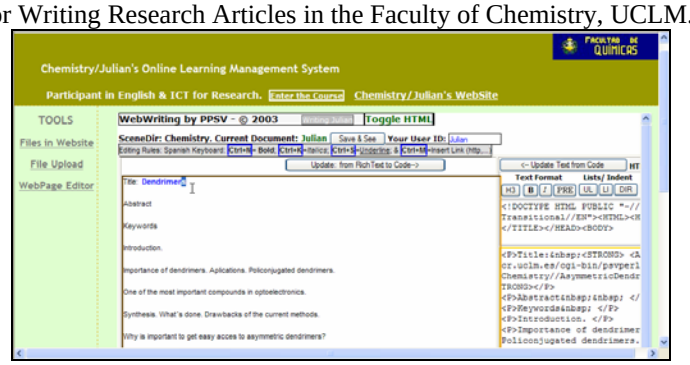

Fig. 1: Edition of contents with WebWriter, the AIOLE writing system on Web (in the Learning environments of 'Writing for Research Course').

The most elaborated working application of the AIOLE system is the basis for the development of online language courses to prepare students in foreign languages from the Universidad de Castilla La Mancha. They are the students who intend to continue their studies in stays in other European countries following the ERASMUS Program, and so the courses are called CIVI-Erasmus (acronym from the Spanish "*Cursos Interactivos Virtuales de Idiomas para Erasmus*", which means Virtual Interactive Language Courses for Outgoing Erasmus Students). There are 16 teachers participating in the course: one in each campus (Albacete, Ciudad Real, Cuenca and

Toledo) and for each language (German, French, English and Italian). They initially proposed the Plan of Language Activities as minimal contents in a first face-to-face meeting. They distribute them in a blended way: online, tutoring some reading, listening comprehension and writing activities, together with a more traditional presentation of grammar and vocabulary items and the evaluation of exercises elaborated by themselves or selected from the Web; and with the practice in face-to-face classroom environments for activities of oral interaction.

Fig 2: Opening Home Page with Management facilities in the CIVIErasmus environment for the Italian Tutor in CR campus

CIVIErasmus was presented to the 16 teachers in the only one face-to-face general meeting due to budget and time restrictions. There were some meetings between the four Language Coordinators, the eLearning Administrator and the Course Director who brought suggestions from their language colleagues and themselves. The initial task was to design a Placement Test to select the students registered for Erasmus stays who needed a language course to improve their level of domain knowledge to the establish goal of Independent User following the classification made by the Common European Framework. Every teacher made their contribution to the Placement Test for each language online. They used the AWLA writing resource, which allows collaborative writing. The eLearning Administrator edited the final version, providing the saving facility to the Tests, this is, the facility to be accessed and read, then filled up with options selected and finally saved in every student's scenario. The Placement Test was done on the same day in the four campuses for each language. The results were checked, corrected and evaluated on the Web on the basis of a key done by the language coordinators. The course was compulsory for all the students who failed the test, since they did not get the level of domain knowledge of the language. The others who passed were only allowed to take the online course.

Then, in one of the coordinators' meetings, the general Plan of Activities was designed consisting of five central topics related to the foreseen experiences of the students in the target country:

- Getting Ready for Mobility,
- Travelling,

- Accommodation,
- At the University,
- Everyday Situations.

Later, every teacher was assigned some topics and finally they proposed materials in collaboration for some of these five sections. These materials were mainly of three kinds: some were reading comprehension activities and grammar and vocabulary exercises developed by themselves; some were materials from open-access authoritative Websites specialised in language quizzes and exercises, searched and found on the Web, such as the BBC Learning English and the Goethe Institute activities for German; and finally, others were authentic materials with information about the selected topics for the Erasmus students. Additional writing activities are to be done using AWLA (Fig.3).

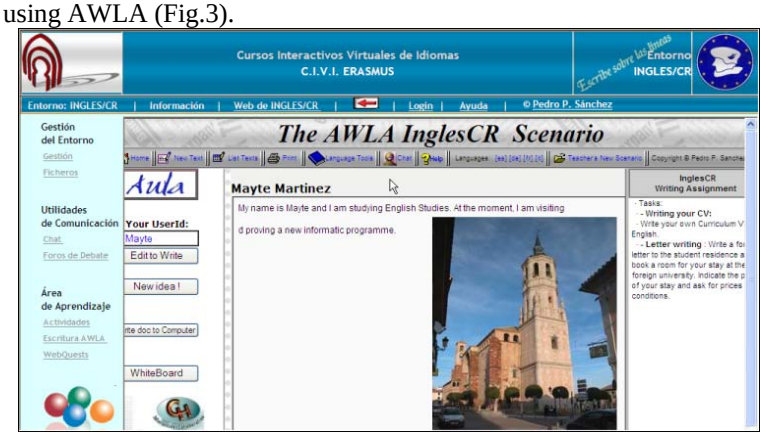

Fig 3. Integration with AWLA, a Web-based eLearning system of learning writing

The Plans of Activities are accessible in a gradable way, which demonstrates the adaptability of the system. The eLearning administrator has access to everything and exclusive access to the root directories: the course directory and the four root language scenarios, where the four general Plans of Activities (one for each language) are to be located.

Fig 4: Activities Page for German (right) and selected for the Group in Ciudad Real (left)

The teachers as tutors have access to the general Plan of Activities of their language scenario (Fig. 4), and to their specific scenario (their language in their campus), where they can edit their specific Plan of Activities for their own group of students. This is done by taking links from the general Plan of Activities in their language, copying and pasting it in their Task editor utility, an adaptation of the WebWriter editor, the writing utility specifically designed and developed for the AIOLE system.

Every student has access to the plan of activities developed by their tutor for the group they belong to (their language in their campus). They have also access to their own scenario, a directory where the files resulting from their participation in the activities are saved (Fig.5).

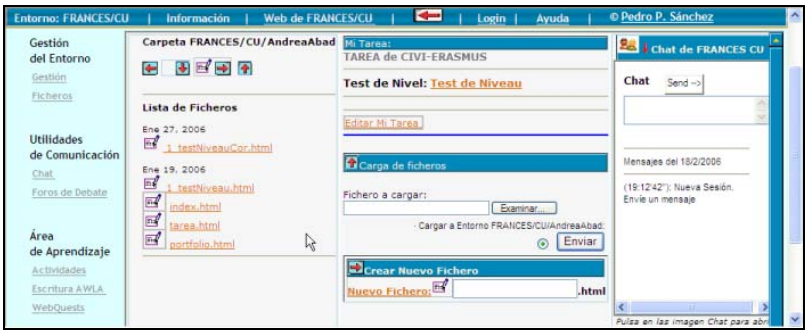

Fig 5. Student`s scenario with their files, editable task, file uploading and chat

Every participant (whether teachers or students) can upload files to their own scenario and to the scenarios below their level. They can also create new documents and edit the tasks with the user-friendly WYSIWYG WebWriter editor (Fig. 4).

Other management tools that the system offers are an agenda, and a prototype for portfolio edition, where access to accredited portfolios is located along with editable content about the student's learning experience.

Apart from the writing utilities themselves, which can be considered as communicative tools in the edition of the tasks (with WebWriter) and the publication of the texts on the Web (with AWLA), there are two properly called communication tools (since they are conversational, dialogic): the Web-based Chat facility and the Discussion Forums. The participants can communicate with these at the different levels of the community: between peers (teachers-teachers, students-students, and between levels of participants, teacher-students, and locations, participants in a specific campus and in all the UCLM Erasmus Community). The discussion forums also work on a topic basis, with five topics initially designed:

1) Problems with a specific language;

2) Timetable (initially established for the student's voting three options proposed by the tutor, and later for information purposes and possible modification throughout the course);

3) Open discussion for a specific location or campus;

4) Experiences and FAQ section about Travelling and

5) General issues about eLearning experiences

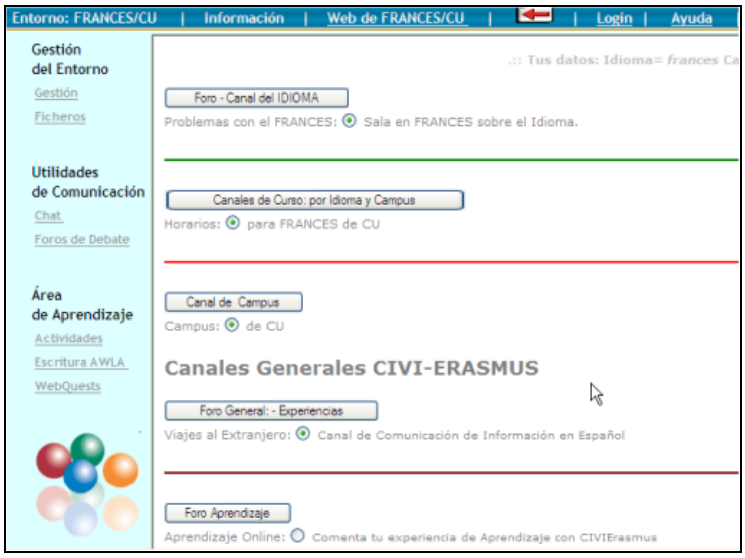

Fig. 6: Set of discussion forums

Table 1 shows the first partial results of use of the system taking advantage of the opportunity of tracking the direct interaction of the students of these courses.

Table 1. First partial results of CIVIErasmus usage

Statistics for CIVIErasmus	
Total Visits (24, March – 21 May)	3954
Average Visits	6
Quantity of Different Visitors	591
Visits in the last ten days	
May 12, 2006	46
May 13, 2006	76
May 14, 2006	144
May 15, 2006	100
May 16, 2006	89
May 17, 2006	83
May 18, 2006	33
May 19, 2006	27
May 20, 2006	34
May 21, 2006	81

Currently there are about 600 university students registered and working in this system all around the UCLM campuses. This course will be available for other two months to have all the activities completed.

6. Conclusions.

AIOLE allows language learning, based on activities and tasks directed to develop the language skills of writing, reading and listening, and on strategies initially designed with communicative objectives that are adapted to the necessities of the students from a constructivist perspective of the learning improved by technology. It is based on the capacity of writing in the Web which allows the participants, both the tutors and the students, to be able to have access to contents, to communicate and to collaborate in the design of learning. Its use in ubiquitous collaborative learning environments is possible by mixing face-to-face sessions with activities online, where the collaboration based on writing can be achieved via Chat, Discussion Forums, the AWLA resource and the WebWriter facility. The capability to integrate WebQuests (combining reading, and searching for information and editing the final text with AWLA) and WebCasts (with the possibility to upload recorded authentic sound-based material on a page and leave it published on the Web) is part of the work under development.

The definite holistic approach with the mixture of face-to-face and distance learning (Blended Learning) is on its way to becoming the common model of learning. To strengthen it with good practices in the two disciplines considered essentially instrumental as language learning and the use of ICT are (being in addition integrated in the same system) takes us to establish the bases of a system effective to achieve Life-Long Learning.

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