UC Virtual: A New Educational Platform for Professional Updating and Accreditation Programs

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Abstract

Distance education for graduated professionals and skills + knowledge accreditation is two main activities that most Universities in the world are now including in their educational activities. The use of ICT tools through the Internet is an interesting option to provide potential students, at home or at their working places, with upgrading educational programs, enabling them to adapt a personalized learning time schedule.

A new educational platform is presented, providing an integral educational advisory and administrative service, available for private course developers, universities and production/service companies. The platform includes many ICT tools, and a personalized tutorial support for students.

The platform is being used in a Diploma in Agroforestry Technology, with e-learning and b-learning alternatives, for Agricultural and Forestry Engineers in several Latin American countries, and its use is expanding to areas like Architecture, Medicine, Chemistry, Nursing, Engineering, etc. Its ICT and operational capabilities to evaluate both scientific and technical knowledge as well as professional skills, is enabling us to use it as the main instrument in a wide mandatory accreditation program for Latin American professionals. The use of this ICT educational instrument in primary and high schools, to provide students with a supporting option to face to face education, is being explored.

An highly sophisticated data processing software included in the platform can be used in quantitative educational research, based on the ever-increasing database, as each student is connected through the Internet with each specific component or activity included in each course.

Key words: Distance education, ICT in education, professional upgrading and accreditation

1 Introduction

Interactive and asynchronous distance education for updating professional knowledge and skills, based on the fast development of science and technology, is an educational option that is just beginning to develop, as a result of massive access to personal computers by professionals, as well as due to the expansion of Internet (Casas, 1998; Casas and Vergara, 2002). However, the number of available courses for professional updating with a 100% Internet support is very limited (Poley, 2003; Isaac, 1999). Demands for knowledge and technical skills for professional updating in the agricultural and forestry (AgF) industries have experienced an exponential growth in the last 20 years.

Updating professional study program supply is very limited: only on-campus, M. Sc. or Ph. D. degree conventional programs, with full time student presence, mostly in main cities, distant form the engineer's
working place. In most cases, these post-graduate programs require on-campus activities, representing a significant investment for each student.

The development of e-learning courses, based 100% on information technology tools (ICT) like the Internet, is now possible due to the multiple available options to present teaching materials and to formulate on-line teaching/learning and evaluation tools, workshops including interactive exercises to solve, on-line seminar preparation, research and presentations, teacher-student forum participation, and other similar tools, unknown less than 10 years ago. However, the personal interaction teacher-student available on a classroom is lost; for updating at a professional level, the educational effect of this constraint is not enough documented and it requires more research initiatives. (Astin et al, 2003; Stephen, 2003; Suskie, L. 2000).

Innovative educational tools are needed to efficiently reach AgF professionals working in distant areas with modern knowledge and working skills, enabling them to combine work, family and study activities, to pursue updating knowledge programs, at reasonable costs and with a maximum time flexibility (Rumble, 2001, Hezel, 1992, Grant et al, 2000; IICA, 2004).

A preliminary market research enabled us to calculate that about 100,000 Latin-American undergraduate professionals on Forestry and Agricultural Engineering programs exist today; over 95% of these engineers are involved in private professional activities, or work at private companies and governmental institutions. The number of new professionals in the work market is increased each year by 2,500 new engineers, that will require in less than 5 years, professional updating, considering the accelerated scientific development, new knowledge and production technologies that characterize modern AgF industry. Work presented in this paper is also oriented to satisfy a significant demand of regional, private and public Latin American universities, offering academic degrees in Forestry and Agricultural Engineering, and that do not have a complete academic staff with postgraduate training.

The objective of the work reported here is to present the main features of the ICT based educational platform UC Virtual developed by us, and the results of the experience obtained by its use in an accredited academic Diploma on Agro-forestry Technology. These results are analyzed with the scientific methodology and software developed within the platform, to evaluate formative and educational impacts of distance education programs based on ICT tools.

2 Material and methods

The UC Virtual platform is a digital tool, developed entirely by a Chilean multidisciplinary team, aimed to provide and assist the access, creation, publication, administration, supervision and interaction of faculty and students both in "on campus" and "distance education" courses, based on information technology tools and provided through the Internet. The platform consists on several integrated and interactive software developments (Fig. 1).

Main platform characteristics include digitalized teaching material presentation (text, photos, graphs and videos), video conferencing, slide presentations, interactive workshops with agronomic information databases, as well as specific agronomic software applications, on-line evaluation tools, Internet references (links), on-line seminars and professional projects, interactive communication systems by e-mail, telephone, video conferencing and fax, e-News, FQ&A, virtual chat, virtual meeting room, software for on-line administrative and academic information personalized for each student, grading information and student accomplishments, academic and commercial administration software and tools, tutor training and tutor administration methodology. Also, data warehousing statistical software tools to develop education research are included, enabling teachers and program administrators evaluate student motivations and study habits, as a feedback to improve different technical aspects included on each specific class or complete course.

The platform also includes a virtual library, indexed with an approach to provide easy access to academic and technical publications on AgF research and development; this library is updated continuously and is available to every present or former student participating on any of our educational programs. A special section of the software enables teachers and tutors to create teaching materials, with on-line instructional and web design support.
3 Results

**UC Virtual** platform evaluations indicate that it is a highly flexible educational tool, considering the success of our first version of the Diploma, attended by 40 students from different Latin American countries. All platform options performed as planned, with not even one interruption during a 6 month period, characterized by an active participation of students, tutors and teachers (Fig. 2). A second version of our Diploma is being promoted, attending information requests of 1500 potential students in less than 2 weeks. Also, the platform has enabled us to offer two additional Diploma programs for de AgF industry, with a total of 35 different courses.

Information provided in Fig. 2 indicate the effort given by teachers and tutors to provide a personalized support to registered students, with an average of 1.28 teacher and tutor support visits, for each student visit to the Diploma web site. Average registered student visits to the site were 219.1, representing 34,4% of all visits, and 2.74 visits student day$^{-1}$ considering only 5 days a week, for 16 weeks. Considering the average connection time for each visit, each registered student spent on the average, 87.27 hours connected to the Diploma web site, during the 4 month period. Teachers and tutors devoted to course preparation and student support an average of 129.42 and 62,25 hours, respectively. Total Internet connection time used by all participants accounted for 5850.8 hours. Additional features are included in the platform, to enable traffic accountings, like a visitor origin accounting by country and by ISP (Fig. 3), a monthly and daily traffic summary (Table 1) and visitor’s study habits (Table 2).
TOTAL VISITORS: 25471
TOTAL INTERNET CONNECTING TIME: 5850,8 hours

1. Teachers (course production) [16,5]
2. Teachers (student support) [7,9]
3. Tutors (student support) [12,4]
4. Tutors (evaluation tools) [3,1]
5. Tutors (other activities) [2,8]
6. Potential students [1,8]
7. Registered students [23,9]

Numbers in square brackets indicate average connection time (min) for each user group.

Fig. 2. *UC Virtual* platform. Visitor information. June – December 2004

Fig. 3. Visitors by Country and by ISP, during December, 2004

<table>
<thead>
<tr>
<th></th>
<th>Today</th>
<th>Yesterday</th>
<th>Average</th>
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<tr>
<td>Page views</td>
<td>41</td>
<td>24</td>
<td>32,5</td>
</tr>
<tr>
<td>Sessions</td>
<td>424</td>
<td>329</td>
<td>376,5</td>
</tr>
<tr>
<td>Visitors</td>
<td>189</td>
<td>173</td>
<td>181,3</td>
</tr>
<tr>
<td>Connecting time, min</td>
<td>428</td>
<td>371</td>
<td>399,5</td>
</tr>
</tbody>
</table>

Table1. Monthly and daily *UC Virtual* traffic summary

In Table 1:
**Page view**: Unfolding of a HTML document in a navigator window, resulting from the interaction of a visitor with an Internet site.

**Session**: Each visit that an user makes to a specific Internet site Internet. When entering the site, the session begins and it concludes automatically after thirty minutes of inactivity on the part of the user.

**Unique visitor**: Different users who during a certain period of time have visited the site.

**Connecting time**: Time that the visitor has remained connected to the site. It is calculated on the basis of the duration of the sessions, with a minimum of permanence of a minute, corresponding to a specific page view.
Table 2: Visitor’s habits for December 13, 2004 to January 9, 2005

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Page View * session</th>
<th>Minutes * session</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>W. 51 (13 Dic - 19 Dic)</td>
<td>27</td>
<td>51</td>
</tr>
<tr>
<td>2</td>
<td>W. 52 (20 Dic - 26 Dic)</td>
<td>31</td>
<td>36</td>
</tr>
<tr>
<td>3</td>
<td>W. 01 (27 Dic - 02 Jan)</td>
<td>31</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td>W. 02 (03 Jan - 9 Jan)</td>
<td>28</td>
<td>39</td>
</tr>
</tbody>
</table>

Platform modularity has enabled us providing distance education services to private companies in the AgF industry, willing to update their staff on different production and quality control subjects. The platform is already generating support for other distance education initiatives at the University, as well as providing help to education development companies; also, it will be the core tool for a new teaching - learning Methodology Research Center (CITEDUC) for information technology applications in education, including accreditation and certification activities for e-learning instruments and programs. Likewise, the use of the UC Virtual platform has started to develop integration capacities to create inter - institutional networks in the Latin American environment, reaching strategic alliances with the Inter American Institute for Cooperation in Agriculture (IICA), the American Distance Education Consortium (ADEC), the National Agricultural Society (SNA), the National Service for Employment Training (SENCE) and with several public and private institutions, to generate and administrate ICT education platforms.

The philosophy of our program is to integrate a community of professionals, whose common denominator will be its participation at least in one of the program courses, to obtain access by a period of several years to updated information and developments on the subject studied, including access to our virtual library, discussion forums, virtual chat room and to receive periodically an electronic publication related to AgF industry technological news. This professional community or network will provide in the future interactive activities among our students; for example, the exchange of technical opinions on some agronomic or forestry problem, to create a platform network delivering direct multidisciplinary advice to farmers and to create a technical network of information, continuously updated, to promote and supply the AgF industry with different products and services based on up-to-date technology.

5 References


