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B-Learning Under Examination:
Advantages, Disadvantages and Opinions

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Abstract: In recent years, learning management systems (LMS) have become very popular in almost all traditional universities, generating a new learning strategy approach, mixing elements from both traditional and online learning: the blended learning or b-learning. How these new environments influence teaching activities and learning processes are the main topic of this paper. References about this subject are also analyzed, enriching them with the expertise and opinion of authors and other teachers. Finally, the students' point of view is presented, through the results of a survey of Polytechnic School students at Universidad Europea de Madrid.

Keywords: b-learning, blended learning, virtual campus, LMS, learning management system

Introduction

Nowadays, it is almost impossible to conceive an educational center that does not possess its own Virtual Campus (VC) at the service of teachers. The discussion on whether or not these tools were useful to on-site teachers was especially lively during the latter part of the last century and the early part of this century. Its generalized introduction may well be an indication of the prevailing opinion. However, does it bear any relationship to teachers' or administrators' opinions? Are they really a helpful learning resource, or are they just a way of cutting costs? What are the opinions of teachers and students on the subject? In what way do these resources help?

Does a VC that is available to a teacher become the main medium for the transmission of documents, in detriment to traditional reprographics? The possibility of pushing documents without having to get up from the office table, and the immediacy of publication represent major advantages of the new system for the professor. But does the learning process benefit from a VC? Does the use of the Virtual Campus in teaching present any advantages in the learning process?

Many studies have discussed the influence the Virtual Campus has had on teaching practices. Just by entering the words university virtual campus (656,000 entries in Google), the advantages of online education (45,000) or e-learning (9.610.000) one can feel overwhelmed by the sheer number of references.

The so called "Bangemann Report" (1994; Rojo Villada, 2003), which aimed to guide Europe towards a knowledge based society, recommended that at least 70% of European

universities should be connected to telematic networks by the year 1997. It is now very evident that this objective has been fulfilled very successfully. However, one thing is to connect research groups and professors, while another is to use Internet as a teaching resource.

There are many references to the advantages of using online teaching systems (Cabero, 2006; Left Brain Media, 2010; Marquès, 1999 [to cite just a few]) over face-to-face teaching. The advantages cited in these articles focus on flexibility in terms of time, space and location, the decentralization of knowledge and the possibility of adapting knowledge to student requirements (just in time and just for me education). The data provided by some of the empirical studies published on the subject (Left Brain Media, 2010) seem to reinforce and support these advantages.

However, many of the references encountered, point out that with the advantages of e-learning there are also risks or disadvantages. Some references even point to a failure in e-learning in favor of a campaign for b-learning or blended-learning (Pérez-Batista & Mestre-Gómez, 2007).

B-learning is essentially a combination of online learning tools and methods with face-to-face teaching, in an attempt to benefit from both systems (close contact between teacher and student on the one hand, and flexible access to knowledge on the other).

Twigg (2003) carried out a study in 10 different institutions to assess the impact of b-learning. Although improvements in learning were observed in only half of the cases studied, in all cases a more active and focused approach was observed in students, with students taking on a more dynamic role.

Students appear to assess b-learning (Bravo-Ramos, Sánchez-Núñez, & Farjas-Abadía, 2004) positively, highlighting the easy access to contents in contrast to their quality.

The main body of this article is focused on the analysis of VC applied to b-learning listing advantages and disadvantages.

Virtual Campus and Communication

One of the most marked characteristics of VC from a teaching perspective (López, Ucar, & Garikoitz, 2000; Onrubia, 2005) is the ability to communicate its offers its participants: Professor-student, student-professor, student-student and professor-group. The VC offers both synchronous communication (such as chat services) and asynchronous communication (such as forums). Other services, such as user blogs, allow indirect communication between their author and hypothetical readers. Furthermore, the possibility of sending messages to a specific user, who will receive the message immediately when connected, or at a later time, when not connected, facilitates communication between participants on the same course.

All applications destined for use in communication are useful in the attempt to reduce the drop-out rate caused by feelings of loneliness and lack of motivation, due to an excessive individualistic attitude. However, the drop-out rate for distance learning courses, with or without VC, is much higher than it is for face-to-face teaching.

Virtual Campus and Teaching Material

It is important to analyze not only the dissemination ability of the VC, but also its potential as an environment for the development of new teaching material.

Numerous authoring tools are available for the creation of teaching material that maybe used in VC. A good example of this type of software is exelearning (http://exelearning.org/) which allows the creation of SCORM learning objects (Sharable Content Object Reference Model) to be subsequently incorporated into moodle.

Because SCORM objects are utilized within a VC, interactive functionalities may be introduced into its design, such as:

- Image galleries that allow the professor to construct a set of images under one same name. Subsequently, the student will find sequential navigation buttons for that gallery.

- Image processing functions. For example, an interesting feature of exelearning, called image enlargement, provides a magnifying function used to enlarge one particular area of the image. This utility allows the professor to upload a very large image among the teaching materials provided (lesson plan designs, an architectural design, a complete circuit diagram) for later examination with the magnifying function.

- Questions for self-assessment.

This type of versatility, combined with the possibility of including video and hyperlinks to other documents from the course or to external documents, enable the contents created for a VC to be more comprehensive and attractive than material designed for hard copy presentation.

Some of the consulted references remarked on the possible loss of content, due to the volatility of information on Internet. However, one of the most highly valued features of VC by students was the "permanent availability" of contents despite of the fact that an Internet connection is required to access them.

Another drawback that is usually associated with VC is too much information. Professors usually fall into the temptation of making more documentation available to students than the information that would normally be handed out (external hyperlinks or multimedia contents). This may cause difficulties in the organization of learning and effective time management: the student could be sidetracked into devoting too much time to aspects of little importance, such as exploring more hyperlinks than necessary.

Analysis of the material provided is required, in order to be able to estimate the time required for students to absorb the information satisfactorily. The VC also enables professors to make remarks about the material provided, thus enabling guided learning and the opportunity to warn students of the risks of erratic navigation.

Subject Planning and Organization

A major advantage of computer systems, which are fundamentally the supporting platform of the virtual environment, is the ability to manage time and data efficiently (Martínez-González, Iglesias-García, Álvarez-Blanco, & Sampedro-Nuño, 2007; Onrubia, 2005).

Of the tools offered on virtual environments, the most highly valued according to some authors are calendars (Oliver-Cuello & Delgado-García, 2009), which allow professors or students to add notes, permitting the marking of deadlines or reached milestones. However, perhaps one of the most interesting advantages of calendars is the fact that they function autonomously. The activities proposed by professors may be organized by date, allowing professors or coordinators of course material to graphically avoid periods of excessive study loads and to distribute study material more equally throughout the study period.

A closely related subject to calendars is events, consisting of a chronological list of upcoming events, such as deadlines for activities, programmed tutorials, etc.

The possibility of showing the distribution of study material on a time scale is another advantage that most VC offers, enabling the learning process to be organized into daily or weekly time periods. Subject material may therefore be organized in terms of the time required for learning, thus facilitating continual assessment.

Activities are the heart and soul of teaching within the EHEA and their appropriate chronological planning is essential in guiding students through the learning process (Onrubia, 2005; Portela, Paniagua, Vàlios, & Cruzado, 2008). Virtual environments offer a series of opportunities for setting tasks, such as deliverables, self-assessment questionnaires, surveys, forums, glossaries, workshops, etc. All these featuring planning functions that enable setting deadlines and activity start dates, calendar representations of upcoming events, communication media for team work, etc. The possibility of reusing templates and activities from previous years is especially helpful for professors in course planning. Through a process of assessment and improvement, study material can be lengthened, shortened or new material introduced to modify planning for the following year, without having to plan the whole course again.

Learning Assessment

According to surveys conducted on users of this type of training, the immediacy of feedback in systems that incorporate autocorrect into tests is highly valued (Bravo-Ramos et al., 2004) as a means for self-assessment. This type of assessment should be used to evaluate the knowledge and skills acquired by students as a guide to how the student is performing throughout the academic year. Moreover, in combination with adaptation tools, different students can be given different learning schedules in accordance with their performance.

However, this type of system is sometimes met with reticence by some students, who have little faith in the confidentiality of the results, and believe that poor results in intermediate self-assessment tests may cause professors to form prejudices that could affect the student's final assessment.

Professors on the other hand, believe that this type of online test helps simplify the task of correcting midterm tests. In addition, they believe that the collection of deliverables through VC facilitates assessment (Chronos comunication, 2002; Iahad, Dafoulas, Milankovic-Atkinson, & Murphy, 2004). Another advantage is the possibility of carrying out automatic assessments, in which attendance (number of visits, time employed, etc.), the degree of student participation, number of messages sent, participation in forums, etc. can be measured.

With regard to learning assessment, the challenge of online assessment lies in the configuration of systems of validation and assessment strategies that do not require physical attendance to guarantee the veracity of authorship of an exam or test.

Student Opinions

What do students think of these tools? A survey with students coursing the 1st and 2nd years of Computer Engineering, the 2nd, 3rd, and 4th years of Industrial Engineering and the 1st and 2nd years of Telecommunications Engineering was conducted to answer this question. As observed, the survey was directed towards students in the early years of their studies with a clearly technical profile. The survey consisted of 20 closed-response True or False, or multiple choice type questions on the usability and functionality of the main tools used in Virtual Campus

environments, with the aim of obtaining opinions and the degree of usage of the facilities for study, planning and preparation offered by them.

The main results obtained are shown in the following epigraph.

Assessment of the Usefulness of VC

Figure 1 shows ratings for the virtual campus of all items under analysis are always positive (a scale of 1 to 5 was used, in which a rating of 5 indicates the highest degree of satisfaction or agreement with the statement). The only exception was the assessment of VC in student-student communication. This may be due to the fact that students prefer to communicate among themselves using other non-university associated communication channels (private email, messenger services, Twitter or Facebook, etc.).

Figure 2 shows that students prefer professors to provide learning material through virtual campus, rather than hard copy material (photocopies). Electronic format provides greater accessibility to information (regardless of time or place), less volume and weight, immediate availability (students always carry portable computers), etcetera.

With regard to the assessment tools used by students, Figure 3 shows that the majority only revise individual grades of tasks rather than global grade logs. It seems that students are mainly concerned with succeeding at small individual tasks, whilst verifying they used the correct methodology.

According to the results shown in Figure 4, students prefer tasks to be corrected manually with the intervention and comments provided by the professor, rather than using automatically corrected questionnaires. In automatic correction systems, students always doubt whether the system has corrected all of their responses, or whether they have provided a solution that the system has registered as incorrect, simply because the problem was resolved differently than expected.

The information indicated in the Figure 5 only concerns students who are acquainted with these tools, given that a high percentage state that they have no knowledge of some of them (see Figure 6). Within this percentage of students, there is a clear difference between Computer Science students and students from other engineering courses.

There is considerable disparity in student knowledge of forums and instant messaging as communication tools, compared with Computer Science students and those studying other subjects. Chat services are equally unknown. An explanation for this is that new WEB 2.0 applications, such as social networks (Facebook or Twitter) have made classical communication tools obsolete, and new generations do not recognize the name. However, the backend applications behind these, are forums or messaging services (as in the case of Twitter), but students do not associate the name to the tool. Only some students who are more familiar with the terminology (like the Computer Science engineers) make the association between modern and classical applications.

With regard to tools that students find most useful for learning (Figure 7), the availability of documentation is the most highly valued resource, followed by task completion through the Virtual Campus. The least valued tools were questionnaires, a result that clearly coincides with that shown in Figure 4.
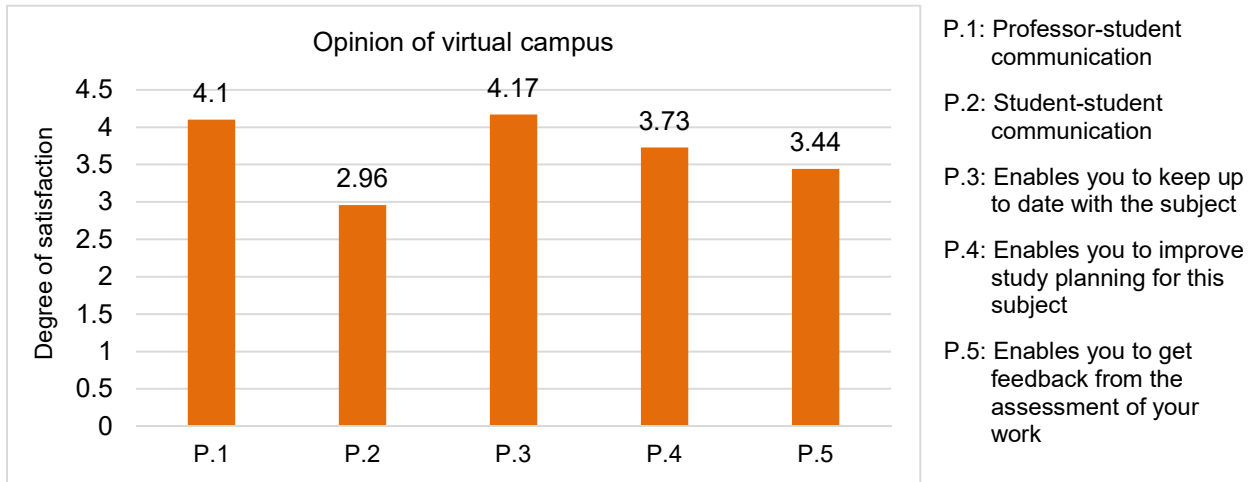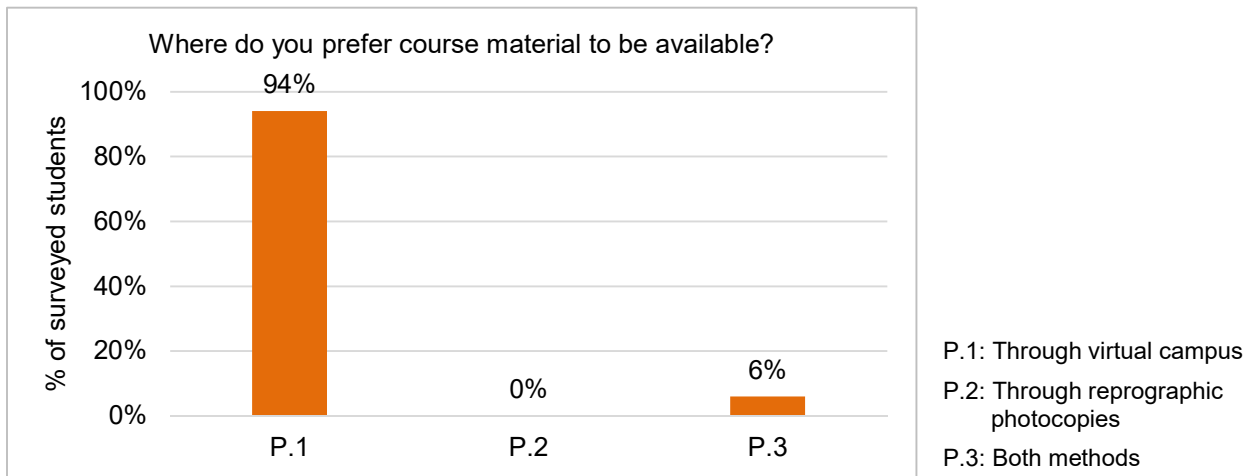
Figure 1. Assessment of the usefulness of VC.

P.1: Professor-student communication

P.2: Student-student communication

P.3: Enables you to keep up to date with the subject

P.4: Enables you to improve study planning for this subject

P.5: Enables you to get feedback from the assessment of your work

Figure 2. Material availability preference.

P.1: Through virtual campus

P.2: Through reprographic photocopies

P.3: Both methods
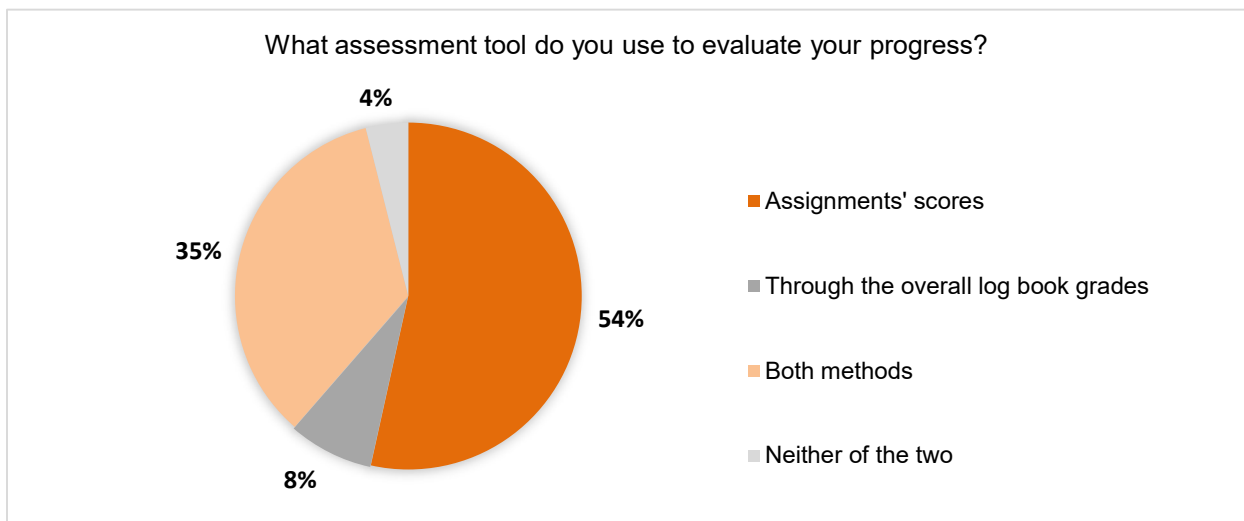
Figure 3. Verification of assessment results.

What type of assessment helps you to find out your daily progress?

Questionnaires with automatic grading: 6%

Tasks graded by the professor with feedback: 87%
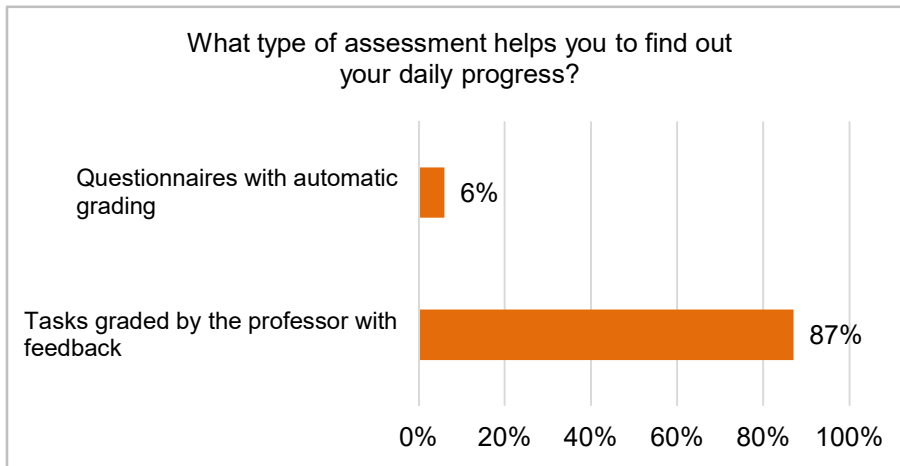
P.1: Tasks graded by the professor with feedback [87%]

P.2: Automatic grading of questionnaires [6%]

Figure 4. Preferred feedback.

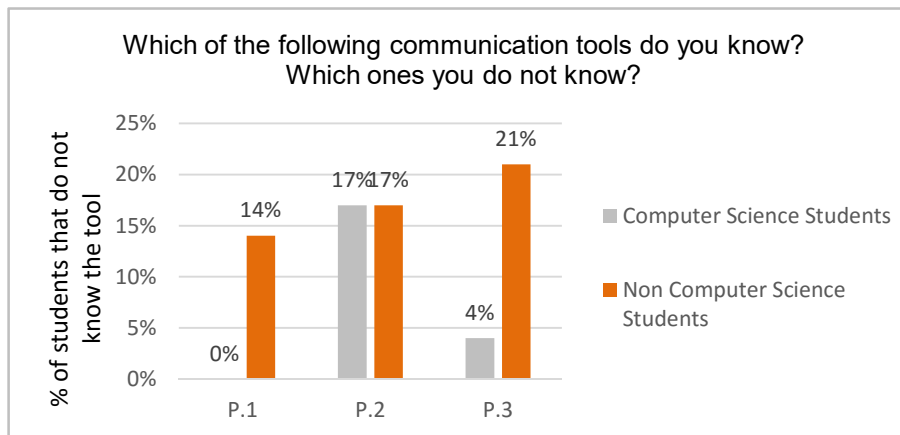**How useful do you consdier the communication tools to be?**

Utility value

P.1: 2.44
P.2: 1.67
P.3: 2.42
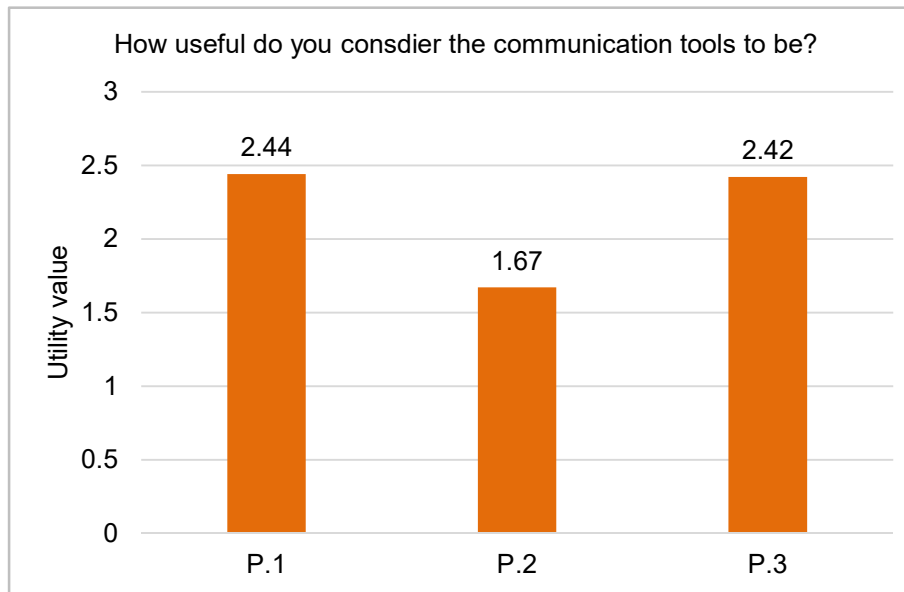
P.1: Forums
P.2: Chats
P.3: IM services

Figure 5. Communication tools.

Which of the following communication tools do you know? Which ones you do not know?

% of students that do not know the tool

Computer Science Students

Non Computer Science Students

P.1: Forums 0% / 14%
P.2: Chats 17% / 17%
P.3: IM services 4% / 21%

P.1: Forums
P.2: Chats
P.3: IM services

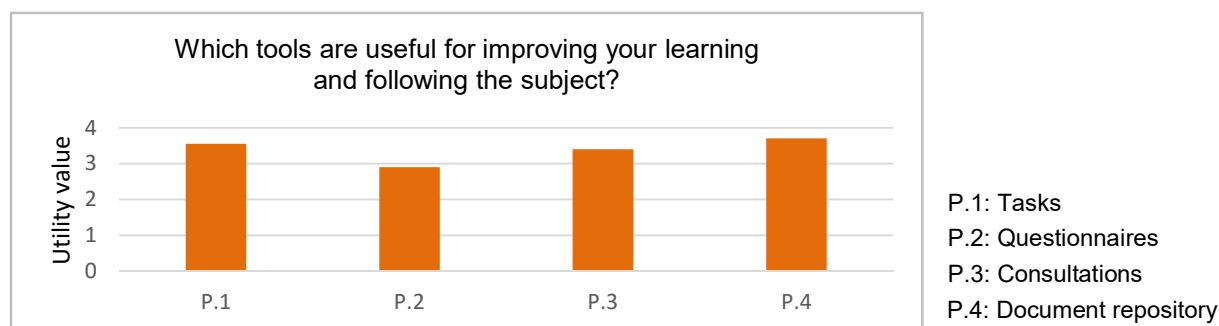*Figure 6*. Knowledge of communication tools.

Figure 7. Learning and monitoring tools.

Conclusions

In light of the references found, it seems that b-learning presents the same advantages that gave rise to e-learning as an additional resource for face-to-face teaching. Both b-learning and e-learning allows the student to have an active role in his own learning and seem to be well accepted. These teaching models appear to provide opportunities to poor countries, with serious deficiencies in infrastructure (Oliver-Cuello & Delgado-García, 2009; Onrubia, 2005).

Judging from the results of the student survey and the UEM, the virtual campus has a positive influence on student learning, or at least it is perceived as having this influence. The convergence of opinions between what is highly valued by universities and student perception of these systems seems to indicate that these virtual resources will become more widespread in the near future.

References

Bravo Ramos, J. L., Sánchez Núñez, J. A., & Farjas Abadía, M. (2004). El uso de sistemas de b-learning en la enseñanza universitaria [The use of b-learning systems in higher education]. *Web Personal de J. L. Bravo Ramos*. Retrieved from http://www.ice.upm.es/wps/jlbr/Minicio.htm

Cabero, J. (2006). Bases pedagógicas del e-learning [Pedagogical foundations of e-learning]. *Revista de Universidad y Sociedad del Conocimiento, 3*(1), 1-10.

Chronos Communication. (2002). *The business case for E- learning* [e-course]. Retrieved from http://home.teleport.com

Iahad, N., Dafoulas, G. A., Milankovic-Atkinson, M., & Murphy, A. (2004). E-learning in developing countries: Suggesting a methodology for enabling computer- aided assessment. In ICALT 2004: *Proceedings of the IEEE International Conference on Advanced Learning Technologies* (pp. 983-987), Joensuu, Finland. http://dx.doi.org/10.1109/ICALT.2004.1357734

Martínez González, R. A., Iglesias García, M. T., Álvarez Blanco, L., & Sampedro Nuño, A. (2007). Valoración de experiencias de formación universitaria apoyadas en el entorno Moodle [Valuation of university education experiences supported by Moodle]. In M. Benito, J. Romo, & J. Portillo (Eds.), Actas del *IV Simposio Pluridisciplinar sobre Diseño, Evaluación y Desarrollo de Contenidos Educativos Reutilizables* (SPDECE). Vizcaya, Spain: Universidad del País Vasco. Retrieved from http://spdece07.ehu.es/

Left Brain Media. (2010). The business case for eLearning. Retrieved from http://www.leftbrainmedia.com

López, A., Ucar, I., & Garikoitz, Z. (2000, noviembre). El campus virtual de la UPV/EHU [The virtual campus of the UPV/EHU]. *Euskonews & Media*. Retrieved from http://www.euskonews.com

Marquès, P. (1999). Sistemas de teleformación: Características, elementos, ventajas [Tele-education systems: Features, elements, advantages]. Departamento de Pedagogía, Facultad de Educación, Universidad Autónoma de Barcelona. Retrieved from http://dewey.uab.es

Oliver Cuello, R., & Delgado García, A. M. (2009). Relaciones entre la plataforma moodle y la planificación docente en las ciencias jurídicas [Relationship between Moodle and teacher planning in the legal sciences]. Presented at the III Congreso Nacional de Innovación Docente en Ciencias Jurídicas: *Innovación y Calidad en la Docencia del Derecho*, Sevilla, Spain.

Onrubia, J. (2005). Aprender y enseñar en entornos virtuales: Actividad conjunta, ayuda pedagógica y construcción del conocimiento [Learning and teaching in virtual environments: Joint activity, educational assistance and knowledge construction]. *RED*: *Revista de Educación a Distancia, No. Mon. II*, 1-16. Retrieved from http://www.um.es/ead/red/red.html

Pérez Batista, R., & Mestre Gómez, U. (2007). *Monografía sobre B- learning o aprendizaje bimodal* [Monograph on b-learning]. La Habana, Cuba: Editorial Universitaria/Ministerio de Educación Superior.

Portela Lozano, A., Paniagua, D., Vàlios, J., & Cruzado, M. (2008). Moodle en la Universidad Europea de Madrid: Diseño, evolución y adaptación del sistema a las necesidades de la comunidad universitaria [Moodle at the Universidad Europea de Madrid: Design, development and adaptation of the system to the needs of the university community]. In *Actas Moodle Moot*, Spain. http://hdl.handle.net/11268/962

Rojo Villada, P. A. (2003). Europa y la sociedad de la información: Análisis del impacto del "Informe Bangemann" sobre la política, la economía y la sociedad europea de la década de los noventa [Europe and the information society: Impact analysis of the "Bangemann Report" on politics, the economy and European society of the nineties]. *Revista Latina de Comunicación Social, 53*. Retrieved from http://www.revistalatinacs.org/

Twigg, C. A. (2003). *Improving learning and reducing costs: Lessons learned from round I of the pew grant program in course redesign*. Troy, NY: Center for Academic Transformation. Retrieved from http://www.thencat.org/