ARTICLE

Contributions to e-Learning from a Best Practices Study at Andalusian Universities

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Abstract

The presence and development of ICTs in higher education is ever greater, and so are the efforts that universities everywhere have been making to incorporate them into areas such as management, research and teaching. It is within this context that the study presented in this article falls. The main objectives of the study were stated in the following terms: a) To identify how lecturers who were recognised for their best practices in e-learning made use of such practices; b) To ascertain the technical, didactic and organisational problems that they found when incorporating this teaching-learning modality; and c) To analyse the characteristics of the materials that were designed for that purpose.

To do that, several data collection strategies were used, such as lecturer bios, individual lecturer interviews, an analysis of materials, and a group student interview.

The results allowed a number of conclusions to be drawn, such as positive lecturer and student attitudes towards e-learning in general and towards blended learning in particular. Both the lecturers and the students highlighted their usefulness, the flexibility they allow, and the increase in student involvement and participation. Likewise, the need for both the lecturers and the students to have didactic training was identified, as was the urgent need to set up units and services to assist teaching staff with the use of tools, with the design of materials and with the resources available. Finally, the implementation of blended learning was found to increase the students' academic performance.

Keywords

distance education, blended learning, best practices, higher education

Aportaciones al e-learning desde un estudio de buenas prácticas en las universidades andaluzas

Resumen

La presencia y el desarrollo de las tecnologías de la información y la comunicación (TIC) resulta cada vez más apreciable en todos nuestros ámbitos, y son muchos los esfuerzos que las universidades de todos los países efectúan para incorporarlas a actividades tales como la gestión, la investigación o la docencia. Es en este contexto en el que surge el estudio que exponemos en el presente artículo, cuyos propósitos principales se declararon en los siguientes términos: a) identificar los usos que hacen los profesores denominados como de «buenas prácticas» del e-learning; b) conocer qué problemas técnicos, didácticos y organizativos encontraban a la hora de incorporar esta modalidad de enseñanza-aprendizaje; c) analizar las características de los materiales diseñados para tal fin.

Para ello se emplearon diferentes estrategias de recogida de información, tales como el biograma, la entrevista individual al profesorado, el análisis de los materiales y la entrevista grupal a los alumnos.

En síntesis, podríamos decir que los resultados obtenidos nos permitieron llegar a algunas conclusiones, como, por ejemplo, una actitud favorable, tanto por parte de los profesores como de los alumnos, hacia metodologías en línea, pero, más especialmente, hacia modelos mixtos o semipresenciales, de las cuales destacaron su utilidad, la flexibilización que permiten, y el aumento de la implicación y la participación del alumnado. Asimismo, se identificó la necesidad de formación didáctica por parte de los docentes y los estudiantes, y la urgencia de servicios y unidades de ayuda para el profesorado en lo que se refiere al uso de herramientas, el diseño de materiales y los recursos disponibles. Por último, se detectó un incremento del rendimiento académico de los estudiantes mediante la implementación de acciones formativas semipresenciales.

Palabras clave

educación a distancia, aprendizaje semipresencial, buenas prácticas, educación superior

1. Introduction. Significance of e-learning

In recent years, universities have been making ever greater efforts to incorporate information and communication technologies (ICTs) into areas of management, research and teaching. This is demonstrated by the various reports commissioned by the Conference of Spanish University Rectors (CRUE), which clearly show how ICT penetration has grown (Uceda & Barro, 2010). The different causes of such growth were identified and specified in the *Universidad Digital 2010* White Paper (Laviña & Mengual, 2008). According to the White Paper, the three basic objectives of ICTs are: 1) To serve as a medium that facilitates the development of the teaching-learning process; 2) To increase the competitiveness of universities by attracting students through online educational processes; and 3) To facilitate mobility through the development of student e-portfolios.

Regarding research and studies conducted on this topic, their focus of interest has shifted from technical aspects and the type of platform that should be used, to the analysis of other problems in the field of education. The Directorate General for Education and Culture of the European Commission (PLS Ramboll, 2004) has indicated that research should focus on pedagogical and didactic issues; didactic interaction between students and their lecturers; organisational issues related to ICTs and e-learning in higher education; innovation management; solution sustainability; cost-benefit studies of ICTs and e-learning; modification of exam and assessment rules as a result of ICT use; analysis of whether the physical context constitutes a barrier to intensive ICT use in university campuses; development of new methods to evaluate and assess the quality of e-learning; modification of the culture and attitudes of lecturers; gender issues; and implementation issues.

Within the Spanish context, we have found that topics of research into the field of e-learning are very diverse. Furthermore, they focus on a variety of aspects, such as the influence that gender and level of education have on students' preferences towards methods of this type (Duart et al., 2008); the level of student and lecturer satisfaction with their participation in such educational experiences (Llorente & Cabero, 2008; Cabero, 2010); or their impact on performance (ascertaining whether more, less or equal learning was achieved when comparing e-learning with face-to-face instructional actions). Relevant to the issue in hand is an analysis performed by the U.S. Department of Education (Means et al., 2009), which included more than 1,000 studies of non-university levels conducted between 1996 and July 2008. One of the most significant conclusions drawn from the analysis asserted that students achieved better results from e-learning than from face-to-face instruction.

In one of our previous studies, a meta-analysis of studies conducted over a ten-year period on the issue of the educational effects of e-learning (Cabero, 2008), we found that the following topics stood out above all others: e-learning environments and platforms; design of materials and digital objects used in e-learning; and didactic methods and strategies used in e-learning. However, there were very few studies on other important issues such as tutoring and advice in e-learning; technical uses and evaluation strategies in e-learning; organisational and institutional aspects of e-learning; and accessibility and usability, and their influence on e-learning.

The satisfaction expressed by teaching staff towards the incorporation of distance education or blended learning processes is one of the factors that has been – and continues to be – widely studied.

Indeed, it is key to the success of both modalities. In this respect, as Bolliger & Wasilik (2009) point out, there are certain factors that contribute to the success of such instructional actions. These authors have identified the following: a) Student-related ("online education affords access to higher education for a more diverse student population" and "an opportunity for students to engage in highly interactive communication with the instructor and their peers"); b) Instructor-related ("faculty believe that they can promote positive student outcomes". Other intrinsic motivators include "intellectual challenge, and an interest in using technology […] and research and collaboration opportunities with colleagues"); c) Institution-related ("workload issues are the greatest barrier in the adoption of online education because educators perceive the workload to be higher than compared to that of traditional courses"). An element also noted in several other studies (Llorente & Cabero, 2008; Lu & Chion, 2009; Ginns & Ellis, 2009; Ballesteros et al., 2010) is the high level of student satisfaction when participating in experiences of this type.

2. Method

Within the framework of the excellence project entitled *Usos del e-learning en las universidades andaluzas: Estado de la situación y análisis de buenas prácticas* (e-Learning Uses at Andalusian Universities: State of the Art and Analysis of Best Practices, PO7-SE-J.02670), several studies were conducted (Cabero, 2010; Ballesteros et al., 2010) to ascertain the perceptions that the different universities' managerial and teaching staff had of the way in which e-learning was being incorporated into the universities, the level of student satisfaction when participating in e-learning and the specific experience of the Andalusian Virtual Campus; and to perform an analysis of some of the experiences that were being implemented, which were recognised as best practices.

The study presented in this article is a best practices case study involving multiple cases (Stake, 1998; Pérez Serrano, 1994; Bisquerra, 2004). Studies of this type can provide us with a range of important data, enabling us to learn more about issues such as ICT use, the problems that ICT implementation poses, or ICT solutions to the communication problems that lecturers encounter in classrooms. In addition, such studies provide us with the opportunity to gather the opinions of the main actors of the didactic act (Rodríguez et al., 1996).

One of the most important aspects of these studies is the selection of cases. In our study, we therefore considered a series of criteria that had to be taken into account, such as representativity, suitability to the objectives, time allowed for the study and, of course, the desire for those involved to collaborate. Since it was impossible for us to gain direct access to the lecturers, we decided to ask those in charge of e-learning at each university to provide us with information about those lecturers who: had a track record of successfully using e-learning in their respective universities; had at least one year of experience in instructional actions of this type; and were recognised by their fellow-lecturers for their best practices. In other words, an ecological rather than a statistical representativity.

Our objectives were stated in the following terms: a) To identify the use that these lecturers made of best practices in e-learning; b) To ascertain the perceived technical, didactic and organisational problems of incorporating e-learning; and c) To analyse the characteristics of the materials they used in their teaching.

In order to do that, we decided to use four types of data collection strategy, which, due to space constraints, we shall not elaborate on here. However, should the reader be interested in learning more about them, they are described in Cabero (2010). In short, they were: a) A bio of the lecturer teaching the subject; b) An in-depth interview with the lecturers delivering the experience; c) An analysis of the materials produced; and d) An interview with groups of students. Regarding interviews, it is worth clarifying that they are considered one of the most commonly used tools in education research for collecting participants' data (Cohen & Manion, 1990; Denzin & Lincoln, 2000). So, in our case, semi-structured interviews covering the issues shown in Table 1 were used for both the lecturers and the students (Rodríguez et al., 1996).

Table 1. Issues covered in the interview protocols on e-learning

LECTURERS	STUDENTS
Concept Experience and training Motives for use Positive aspects Negative aspects Necessary competencies for lecturers Necessary competencies for students University demands Perception in their university Fellow-lecturers' perceptions Comparisons with other modalities Changes in performance	Positive aspects Negative aspects Recommendations to lecturers Recommendation to the university Needs covered by this instructional action

Regarding the processing of data collected from the various techniques, we used the HyperRESEARCH program developed by Hesse-Biber (1994). The stages were pre-analysis, category system (CS) formation (Table 1), coding and data analysis (Pérez Serrano, 1994).

The study sample comprised 30 lecturers (14 female, 16 male) from several Andalusian universities, 53% of whom taught an online subject. Of these subjects, 36% were taught by a single lecturer, 27% by two and 23% by three.

Regarding length of service, 63% of the lecturers had been teaching at universities for between five and 15 years, and 37% for longer than 15 years. Regarding e-learning, 43% had been delivering it for between two and five years, 54% for more than five and just 3% for one year. Furthermore, 54% of the lecturers taught in the field of Social and Juridical Sciences, 23% in Science and Technology, 20% in Health Sciences and 3% in Arts and Humanities.

To complete the sample description, we would like to point out that 33% of the lecturers were tenured university lecturers, 27% were contracted doctor lecturers, 23% were temporary lecturers, 13% were tenured university school lecturers and 7% were adjunct lecturers.

A total of 141 students were interviewed. The distribution among the universities was as follows: Malaga (40%), Pablo de Olavide University (36%), Huelva (9%), Seville (8%), Jaén and Cadiz (3% each) and Cordoba (1%). In every case, the instruction was delivered in the blended learning modality (Llorente & Cabero, 2008).

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Table 2. Category System

DIMENSIÓN		CATEGORÍAS
LECTURERS	e-Learning modality	1) Motives (infrastructure, ICT potential, personal interest, subject content and ICT knowledge). 2) Face-to-face/e-learning: communication, time, effort, productivity, face-to-face add-on and content. 3) Platform: system personalisation, compatibility with other programs, advice and subject. 4) Positive aspects: relating to students, speed (ease, individualisation and availability of materials). 5) Negative aspects: work, use made, confusion and organisation of students. 6) Changes in performance: yes, no and other. 7) Ratio: between 10 and 25, between 35 and 40, between 50 and 65, between 70 and 80, and tasks. 8) Assessment: student satisfaction, results from different assessments, assignments and practicals, and supplementary assessment. 9) Fellow-lecturers' perceptions: sceptical, offers advantages, involves extra work and does not replace face-to-face education.
	Lecturer	1) Competencies: didactic training, technical mastery, group work and interest. 2) Training: centre course, university course, self-directed learning and projects.
	Students	1) Competencies (motivation, documents, technical mastery and participation). 2) Training: technical use and virtual teaching.
	Measures	Training, assessment, platform, technical resources, staffing resources, teaching staff's interest, making a general improvement, ICT potential and platform capabilities.
STUDENTS	e-Learning modality	1) Positive aspects ('e-Learning modality': immediacy, communication, accessibility, student-monitoring, convenience, simplicity, collaboration. Specific experience: assessment, motivation, continuous work, methodology). 2) Negative aspects ('e-Learning modality': impersonal, technical problems, lack of approach, Internet connection, lack of information. Specific experience: information and assessment system).
	Suggested improvement	1) Lecturer (information, training, related to reality). 2) Institution (techniques, information and proposals).
	Needs covered	Time, communication and technology.

3. Results

In order to present the most significant results of the study, we have taken the Category System (CS) as the reference. So, regarding the analysis of the 'e-Learning modality' dimension, the results for the lecturers are shown in Table 3.

These values allow us to get a first impression of the importance that the interviewed lecturers placed on the different topics. Worthy of note among these are the positive aspects of e-learning, the elements of blending face-to-face instruction and e-learning, and the problems that such blending involves. Significantly, the problem of e-learning platforms, which, as mentioned at the beginning of this article, has been a major concern of research into the incorporation of e-learning, did not have as much impact or significance for the teaching staff.

Regarding the 'Lecturer' dimension, the aim was to gather all the comments that the lecturers made about themselves and their work when it came to incorporating one or several subjects in e-learning modality into their teaching (Table 4).

Table 3. Categories forming part of the 'e-Learning modality' dimension of the lecturers' CS

CATEGORIES		F	%
Motives		30	10,23
Face-to-face/e-learning		45	15,35
Platform		19	6,48
Aspects	Positive	54	18,43
	Negative	25	8,53
Changes in performance		27	9,21
Ratio		30	10,23
Assessment		27	9,21
Fellow-lecturers' perceptions		36	12,28
TOTAL		**293**	**100%**

Table 4. Categories forming part of the 'Lecturer' dimension of the lecturers' CS

CATEGORIES	F	%
Competencies	47	54,65
Training	39	43,35
TOTAL	**86**	**100%**

The 'Competencies' category considers all references to relevant aspects that need to be taken into account for the successful delivery of e-learning. Of the subcategories forming part of it, the one with the highest frequency, with almost 60% of the references being made to it, was *Technical mastery* (comments referring to the need to have a technical mastery of computer and platform use). This is followed by *Didactic training* (comments stating that one of the basic competencies for delivering e-learning is didactics), with nearly 30% of the references being made to it, thus indicating the importance that the teaching staff placed on it.

Another dimension of our CS is 'University', the aim of which was to gather all the comments made about the different important elements that need to be addressed when delivering e-learning. Table 5 shows the frequencies and percentages of the two categories forming part of it.

Table 5. Categories forming part of the 'University' dimension

CATEGORIES	F	%
Measures	47	68,12
Perception of e-learning	22	31,88
TOTAL	**69**	**100%**

Our final dimension is 'Student', with the lowest frequency of all: there were 56 references to be precise, a figure that represents 11.11% of the total of references made to it in the interviews. Table 6 shows the frequencies and percentages of the categories forming part of it.

Table 6. Categories forming part of the 'Student' dimension of the lecturers' CS

CATEGORIES	F	%
Competencies	31	55,36
Training	25	44,64
TOTAL	**56**	**100%**

In the 'Competencies' category, the *Technical mastery* subcategory (comments referring to the need to have a technical mastery of computer and platform use) had a higher percentage (45.16%). This is followed by *Documents* (comments referring to the ability to use documentation stored on the platform in order to deliver the subject, which included working with documents in different languages), with 25.81%.

Turning to the results of the student interviews, the dimension with the highest representativity was 'e-Learning modality' (*f* = 521, 68.37%). This was followed by 'Suggested improvement' (*f* = 146, 19.16%) and 'Needs covered' (*f* = 95, 12.46%). The aim of this dimension was to gather the references that the students made to the instructional system. After analysing all of the interviews, the resultant categories were the following: 'Positive aspects', with the highest frequency (*f* = 355, 68.13%), followed by 'Negative aspects' (*f* = 166, 31.86%). And as we can see in Table 7, within each category, the references made to 'e-Learning modality' had the highest frequency: *f* = 275 (52.78%) for 'Positive aspects' and *f* = 135 (25.91%) for 'Negative aspects'.

Table 7. Categories forming part of the 'e-Learning modality' of the students' CS

CATEGORIES		F	%
Positive aspects	e-Learning modality	275	52,78
	Specific experience	80	15,35
		355	68,13
Negative aspects	e-Learning modality	135	25,91
	Specific experience	31	5,95
		166	31,86
TOTAL		**521**	**100%**

Likewise, another dimension that had a higher frequency was the one referring to 'Suggested improvement' (*f* =146, 19.16%) (Table 8).

Table 8. Categories forming part of the 'Suggested improvement' dimension

CATEGORIES	F	%
Lecturer	79	54,10
Institution	67	45,89
TOTAL	**146**	**100%**

Finally, we come to the 'Needs covered' dimension, which accounted for 12.46% of the references that the students made (Table 9).

Table 9. 'Needs covered' subcategories

CATEGORIES	SUBCATEGORIES	F	%
Needs covered	Time	38	40
	Communication	28	29,47
	Technology	29	30,52
TOTAL		**95**	**100%**

If a more qualitative supplementary analysis of the results is performed on what the lecturers generally perceived as this instructional modality's most useful positive aspects, then the following points can be underscored:

a) The potential to place a large volume of materials at the students' disposal for their education. Furthermore, such materials can be made available in a variety of resource formats (text, audiovisual and multimedia). [*The advantage for lecturers is that we know we're placing the best possible resources at our students' disposal, and we have information available about our students' progress and ways of working, and about the amount of work they do too, which we simply don't have in face-to-face instruction*. (A. P. I-1)][1]

b) The fact that students can consult materials whenever they want. This allows the instructional action to be more flexible. [*Basically, to ensure that students have real-time access to all the information that we're able to place at their disposal. To all the information and all the tools, so that they aren't constrained by place or time*. (A. P. I-2)]

c) The potential to communicate with students, both synchronously and asynchronously, and to be able to deliver tutoring and perform student-monitoring more successfully. [*The positive thing is that we're able to interact with students too, basically through communication systems; that would by very hard to do without technology*. (A. P. E-2)]

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1. The original Spanish text of the interviews/comments has been translated into English from this point on.

But, as is only to be expected, the lecturers also pointed out a series of negative aspects. Of these, they emphasised the enormous effort and excessive workload that this instructional modality involves for them. This impacts on a number of aspects such as time spent on producing quality educational materials and on constantly updating them, the need to always be aware of the latest technology in general and of the platform's possibilities in particular, and the constant attention required to respond to all of the students' demands and queries. Indeed, the lecturers tended to consider the time and effort they spent on such tasks by comparing the modalities: they perceived that e-learning demanded more time and effort than face-to-face instruction.

At the same time, the lecturers drew attention to the poor use that can made of e-learning, by making the mistake of turning into "homespun reprography", as one lecturer put it. This teaching modality should not simply be used as repository for notes and documents. Rather, it should be considered as a tool to make the students' educational process more flexible, to develop educational innovations and to transform assessment processes.

It could be said there was some agreement among the lecturers about the need to have small groups of students participating in experiences of this type (the majority put the number at 10 to 25). Furthermore, almost all the lecturers agreed that the use of e-learning had a significant impact on changing the students' performance, since the students get involved, participate more and are more active in the instructional action.

While the lecturers in the sample had experience of designing e-learning materials, most of them perceived that it was *"very important to have a good lecturer support service for e-learning issues, some good virtual teaching centres, technologically competent staff to help teaching staff to develop the different types of material they need, to provide them with new guidance, etc., etc."* (M. E. 18).

Regarding the competencies that lecturers need to have in order to work in this instructional modality, the interviewees pointed out two types: technical (basically a technical mastery of using the platform and the tools it contains) and didactic (content design, the development of environments that are attractive to students, and communication and interpersonal competencies to foster the students' participation and time management).

Indeed, it is worthwhile drawing attention to the lecturers' perception of the need to provide teaching staff with proper training. While the focus is often on the technological component, they pointed out that what they actually needed and demanded was training in the didactic and educational use of the medium. In particular, they requested an increase in the universities' training actions and in the amount of aids and resources. They also requested that personalised support should be provided for lecturers who were starting to use this instructional modality, and that this should be recognised.

Likewise, it is also important to consider the students' training. On this issue, the lecturers pointed out that students should have the following competencies: the ability to design their own learning strategies and to work in teams; interpersonal skills; and the ability to search for information on the Internet.

From the interviewed students' perspective, e-learning was perceived as truly useful and interesting, since it allowed them to work without the constraints of class timetables and to access information anywhere. Regarding the positive aspects that they perceived as most useful,

the following can be underscored: that virtual teaching allowed a large volume of materials (text, audiovisual and multimedia) to be placed at their disposal for their education. This made their work easier and helped them keep up to date with the subject and perfectly organised, and also facilitated individualisation and personal treatment through e-tutoring (different types of communication tool, including chat, e-mail, discussion boards, etc.). So, it is an instructional modality that enables them to stay in touch with their lecturers and fellow-students, which was also perceived as useful for their education.

Among the students' demands, we should highlight, firstly, the need for teaching staff to have the proper training to be able to use the platform, and secondly, the problem of Internet connection availability and poor platform operation. In short, the negative aspects as perceived by the students were: the problems encountered by those students who were unfamiliar with computers (not all students have the same instrumental technological competencies); the scarce aids and resources existing in the universities; fitting teaching around the platform: that the lecturers were unable to grade the assignments given to students through this instructional modality, and that they overloaded the students with tasks and activities (requiring the students to do a lot of work); the lack of personal contact with the lecturer; and some lecturers' lack of experience in e-learning.

4. Discussion and conclusions

Those lecturers who were recognised by their fellow-lecturers for their best practices usually taught more than one online subject and had positive attitudes towards the delivery of instructional actions, which they perceived as useful and interesting. At the same time, they usually had two or more years of experience in delivering e-learning.

This instructional modality was found to be significant for both the lecturers and the students because of the potential to interact with a variety of materials and formats (text, audio, video, etc.), and the enormous potential to make the educational process more flexible. This study therefore validates the efforts that Andalusian universities have been making to incorporate this method into their teaching practice.

We should also highlight the fact that the teaching staff's discourse was rather more educational (didactic use of e-learning) than technological, which enables us to confirm the evolution that the implementation of e-learning and blended learning is undergoing in the field of higher education, where the focus of interest has shifted from technical aspects to didactic and curricular aspects. At the same time, when assessing the variety of communication tools at their disposal, both synchronous and asynchronous, the lecturers underscored the potential that such tools offered them to relate to their students, because they facilitated individual treatment and strengthened e-tutoring.

We consider this to be a significant finding, since it is an unfortunate fact that many academic authorities are still placing more emphasis on the instrumental aspects (server acquisition, the platform to be used, etc.) than on the didactic and educational aspects (assisting teaching staff with the production of materials, teacher training, etc.).

Their criticisms tended to focus on the enormous effort that implementing e-learning or blended learning involved for them, and ultimately, the fact that such instructional modalities were more time intensive than face-to-face instruction. This position leads us to point out that, if we want instructional actions of this type to be rolled out across the board, then services supporting their incorporation and assisting with the design of materials need to be set up.

Likewise, the lecturers indicated that the students did not usually have the skills to use these tools for educational purposes; this aspect coincides with the findings from other studies on the topic (Tejada et al., 2007; OCLC, 2008).

Our study also draws attention to the need to think about the organisational aspects of this type of teaching, which are very often the root cause of its failure.

Finally, it is worth noting the fact that both the lecturers and the students favoured the implementation of blended learning (e-learning and face-to-face instruction) over any other type of instructional modality.

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