

## ARTICLE

# Students' Learning Experience on the Virtual Andalusian Campus

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## Abstract

Based on the study “e-Learning Uses at Andalusian Universities: State of the Art and Analysis of Good Practices”, the main aim of the article is to establish what perceptions students have of their experience of participating in the Virtual Andalusian Campus (CAV), particularly in relation to a number of variables like their satisfaction with e-learning, their expectations before and after the experience, and the elements that they considered to be more or less appropriate with regard to the development of the experience. Some of the conclusions drawn from the research project underscored the potential of these types of action to foster students' virtual mobility and showed that the existence of different platforms was not a problem for the majority of students, that the success of the experience was due to the involvement of university teaching staff, and that students' attitudes at the start conditioned the results obtained and the perceptions of dynamics used by lecturers.

## Keywords

e-learning, student satisfaction, higher education, university experiences

## *La experiencia formativa de los alumnos en el Campus Andaluz Virtual (CAV)*

### *Resumen*

*A partir del estudio «Usos del e-learning en las universidades andaluzas: estado de la situación y análisis de buenas prácticas», el artículo que presentamos a continuación tenía como objetivo principal conocer cuáles son las percepciones que los alumnos participantes en el mismo tenían con respecto a diferentes variables, tales como su satisfacción hacia la formación en línea, cuáles eran sus expectativas antes y después de la experiencia o qué elementos consideraban que habían sido más adecuados o inadecuados en el desarrollo de la experiencia del CAV. A través de la investigación realizada, algunas de las conclusiones a las que hemos podido llegar son que la experiencia ponía de manifiesto la posibilidad que plantean este tipo de acciones para favorecer la movilidad virtual de los estudiantes, que la existencia de diferentes plataformas no ha sido un*

*problema señalado por la gran mayoría de los alumnos, que el éxito de la experiencia se debió a la implicación del profesorado o que la actitud con la cual comenzaron los estudiantes condicionó los resultados alcanzados y las percepciones respecto a las dinámicas empleadas por los profesores.*

### **Palabras clave**

*formación en línea, satisfacción del alumnado, enseñanza superior, experiencias universitarias*

## 1. Some Initial References

The research presented here was fundamentally based on two components: first, the Virtual Andalusian Campus (CAV) and, second, the perceptions and views that students had of it, taking account of the fact that students as a group were one of the main participating stakeholders of e-learning actions carried out in that environment.

Right from the very start, we would like to underscore the fact that collaboration between universities in carrying out joint educational activities is something that has been strengthened in recent years, thanks mainly to the ever greater presence of information and communication technologies (ICTs) in universities and the development, in our context, of a variety of experiences, such as Universia, G7, IUP, ADA-Madrid, CatCampus and so on.

In 2007, Cabero and Llorente suggested that collaborative efforts between university institutions could be made through distance education actions. Specifically, these authors suggested the following lines of action: doing joint research projects on shared interests and questions at various universities and institutions; producing/exchanging digital materials (learning objects); carrying out joint educational actions; fostering students' virtual mobility; developing virtual communities for specific problems connected with the application of ICTs to teaching; setting up e-observatories for the analysis of specific problems; and creating a virtual library for educational technology. In the same year in this journal, Rodríguez and De Miguel (2007) also suggested the need for university institutions to jointly offer degrees in cooperative e-learning environments.

These experiences are bringing a series of positive aspects to universities, lecturers and students, some of which are: optimising university resources; fostering students' virtual mobility, being able to transfer teaching staff of renowned prestige and quality to other university schools at very little cost, conveying a university image to other contexts and drawing attention to its educational model, and fostering an exchange of experiences, to name but a few.

It is from this perspective that, in the Andalusian context, the CAV came into being as part of the Government of Andalusia's Digital University project. The aim of the CAV was to get students from different Andalusian public universities to take, through e-learning, a series of subjects given by university teaching staff, either from the universities at which they were enrolled or from others, and to receive not only content, but also e-support through their learning platforms and the necessary passwords to access content. Therefore, we could say that the experience was based on using each of the different Andalusian universities' own resources in terms of technology, human resources and administration, which were subsequently made available to other members of the Andalusian university community.

The experience began in the 2007-2008 academic year with three subjects per university incorporated into the project, to which a further three per academic year were added, until reaching a maximum of nine per university. Each university offered 10 places per subject to students from other universities, and the subjects were taken as free-elective ones.

The subjects offered were from several knowledge areas. The current list can be found on the CAV website (<http://www.campusandaluzvirtual.es/>). It is worth pointing out that the lecturers who took part in the experience did so voluntarily. They had a positive attitude towards e-learning and had several years' experience of teaching e-learning actions (Cabero, 2010).

Besides the subjects mentioned previously, now the intention is to make "learning pods" available to everyone in the Andalusian university community. As explained on the portal, these learning pods are: "... very short educational actions designed for individual use in a virtual way, without support from a tutor, using a range of technologies and formats to present the content."

As part of the experience, two meetings were organised for participating lecturers to exchange information and to do an "analysis of good practices"; the first, held in 2008 in Huelva, was organised by the University of Huelva, and

the second, held in 2009 in Baeza, was organised by the International University of Andalusia.

Following on from all of the above, a process of assessing and standardising all the subjects taught on the CAV is currently being carried out. This means that all good practices developed so far can be transferred to other participating lecturers (Aguaded et al., 2009).

Having made these brief comments about the CAV, we shall now concentrate on the other component of our research project mentioned at the beginning of the article. This is the component referring to the students' views on the effectiveness of e-learning actions. In this regard, the first thing we would like to do is to point out that the approach to the research question has gone through several stages, starting with a study of technical aspects and of platforms to be used, followed by ways to structure content, and then moving on to strategies and methodologies that lecturers could use. Now it is a matter of looking into student behaviour and interest in learning in these ICT-mediated environments; a line of research that, in recent years, has become quite significant (Ellis et al., 2010).

On this particular aspect, various authors have referred to some of the characteristics that students need to possess in order to carry out successful learning actions in the field of e-learning, such as: being able to learn independently and, therefore, having a self-directed learning capacity; ensuring compliance with a study plan that has been proposed in advance, in accordance with the planned programme for the course (self-regulated learning); learning collaboratively; being self-disciplined, with the ability to manage time and enjoy working alone; knowing how to express oneself clearly in writing; having certain skills and a prior knowledge of using computers, and positively valuing the role that technology plays in education; having a positive attitude to small technical problems that arise and being able to solve them; and having a clear objective on the course, such as being awarded a certificate (Horton, 2000; Lee et al., 2002; Meyer, 2002; Mir et al., 2003).

In a meta-analysis that we (Cabero, 2008) performed on e-learning research, we came across a series of student-related findings that suggested a number of ideas in this respect, such as: the fact that their participation in e-learning experiences is usually very satisfactory, and that their initial attitudes to this educational approach are very positive.

Along these lines, in recent years a number of studies focusing on a variety of aspects connected with students carrying out e-learning actions have been done. These include, for example, their degree of satisfaction of having taken part in these experiences (Arenas et al., 2009; Llorente et al., 2009; García et al., 2009), and the impact of their learn-

ing and cognitive styles on interaction in these learning environments (Del Moral et al., 2005; Recio et al., 2005).

## 2. The Research

Our research was done on the subjects taught on the CAV in the 2008-2009 academic year. The information was gathered in the first four months of 2009. The intention was to obtain information on a series of aspects, such as: a) the students' overall score for the experience; b) their views on the learning undertaken; c) their degree of satisfaction of having taken part in the project and whether they thought that they would continue on it; and d) whether their scores were conditioned by a number of variables, such as gender, university of origin, etc.

The instrument that we used was the Llorente (2008) Questionnaire on Students' Satisfaction with e-Learning (Cusauf). The author's approach to its construction was divided into three distinct phases: reviewing the literature, creating the first version and submitting it to expert review and, finally, obtaining a reliability index and producing the final version. It should be pointed out the reliability index, obtained using Cronbach's alpha, was 0.901.

A series of items were added to this instrument to find out, for example, if students had previously taken another subject via the Internet, what their expectations were before starting the experience, their scores for the relationship between the dynamics of the work and the expectations they had of this type of learning before starting the experience, and the elements that they considered more or less appropriate to the development of the CAV experience.

The analyses performed were: a) descriptive statistical analysis (frequency, percentage, mean and standard deviation) and b) the Kruskal-Wallis chi-square test and the Dunn test (Siegel, 1976; Escottet, 1980) to test the different hypotheses. These were done using the latest version of SPSS statistics software.

## 3. Results

First of all, we should point out that a total of 672 students completed the questionnaire, all of whom attended Andalusian public universities: Malaga (136), Seville (102), Almería (101), Jaén (35), Cadiz (62), Cordoba (54), Huelva (87) and Pablo Olavide (28).

To start the analysis of the results obtained, it should be noted that the first question in the questionnaire was

designed to establish whether or not the students taking part in this experience had previously taken other subjects via the Internet. And it is worth pointing out that 60% had indeed had experiences of this type of learning before taking part in the CAV. However, we would also like to point out that, for a large percentage of students, it was the first time they had taken part in an experience like this one, which made us initially think that this type of experience was very appealing to them.

As was to be expected, the expectations that students had at the start of their participation in the various subjects was very high; to be precise, 87.2% said that they were "very high" or "high". In this respect, we would like to point out that few students (less than 13%) said that they started with "low" or "very low" expectations.

Regarding the question as to whether or not the initial expectations had been met by the end of learning modules, the results obtained from students' responses show that the experience had been very successful; to be precise, 85.7% were happy with it, and only 14.3% were not.

In order to find out the sources and reasons for not being happy with it, we asked students who replied negatively to explain why they had given such a score. We can classify the responses they gave regarding problems into four major groups: the platform, lecturer-tutor attentiveness, students and co-students, and the subject. Presented below are some of the reasons that students gave us, for each of the results obtained, when we asked them those questions.

### a) The platform

Students said that some of the platforms used for studying the subjects were not very intuitive compared to others like Moodle, and that the information appearing in the content was badly classified through the platforms' menus, as explained by one of the students: "UJAEN ELIAS platform, very hard to follow the subject clearly".

Students also felt confused by having to use two different learning environments (the one chosen by the university offering the subject, and the one that students usually used at their own universities to take their diplomas, undergraduate degrees, etc.): "...using two completely different platforms caused confusion and wasn't very effective".

### b) Lecturer-tutor attentiveness

Students said that they were unhappy with lecturers because they did not reply immediately to their queries, which is the opposite of what usually happens in face-to-face sessions.

This caused a degree of anxiety among students. Consequently, this suggests that some type of "friendlier" communication system should be included, such as the one that videoconferencing offers: "The simple fact of explaining something; it isn't the same by e-mail as it is in person, when you can discuss a query in the same section. What's more, sometimes they take a long time to reply, and the degree of explanation isn't the same as it is in face-to-face lectures".

They also said that they could feel that lecturers were a little disorganised, and that lecturers assumed, fairly unrealistically, that their students had abilities that they did not actually have, particularly when it came to coping with software: "Lecturer was disorganised and of little help to virtual students; we were very lost".

Students also said that there were times when the lecturers moderated but did not present the subject. With e-learning subjects, they felt that greater care should be taken over such matters, and that they should be made more dynamic: "Very demanding – the lecturer acts as a moderator but does not teach the subject". And that lecturers' demand and impose, rather than encourage learning: "The lecturer did not encourage participation; the lecturer demands and imposes, meaning that you don't enjoy the subject".

### c) Students and co-students

Regarding student and co-student problems, we also obtained several self-critical student opinions about why they did not keep up to date with work, leaving it right to the end, and they themselves said that they had not prepared the subject in question well: "Not keeping up to date with things".

### d) The subject

One of the most general complaints that students made referred to the syllabus being excessive, and they drew attention to the fact that they were free-elective subjects, which they believed could have been a little less difficult: "The need to spend a lot of time in front of the computer, even though they were free-elective subjects; spending more time than was really necessary".

They also said that the general dynamics of the subjects had been chaotic, that study times were not very much in keeping with what they really ended up being, and that the syllabus was neither well structured nor well organised. "I see an incredible amount of disorganisation, not only in the subject I'm taking on the Andalusian campus, but also in the other one I'm enrolled on".

The activities that students carried out while taking the subjects were, in their own opinions, not very interesting, badly explained and excessive (too much work for students in the time they say they had available for these types of subject). They also referred to the fact that they did not get any confirmation of receipt of the assignments they had done and sent to the lecturers: "Too many weekly activities; activities proposed by the lecturer were unclear and badly documented".

The assignments and activities that were designed did not need to have contemplated doing group work using the tools that the platform offered, since each group managed its own pace of work and the students might even have been from different universities: "What's more, it's hard to do group work through forums. I don't think that this type of work should be done. A good option would be to do work where you give your opinion on a subject, which the lecturer then assesses depending on what you've said".

Apart from all of the above, students complained about the lack of extra materials to expand on topics that they were studying, and about the huge difficulties in getting access to the recommended reading listed in the content. They said that there were a lot of cited books and chapters, and that they felt that it was hard to get access to them: "I feel that subjects taken online should facilitate access to the syllabus and the necessary materials. In my case, I'm studying for a higher diploma in a village, and I'm being asked to locate certain books that are hard for me to find".

Students also said that the way materials had been put together online was not the best, since they felt that there was too much content and, in some cases, that the subject syllabus did not match up with what subsequently appeared on the platform: "The people in charge of the subjects shouldn't fall into the trap of thinking that everything goes, and the more the better, simply because it's easy to provide documentation. A subject needs to be based on a clear objective and be adapted to it. A subject doesn't gain in quality simply because it covers a lot of things; quite the opposite in fact, because students find that they've not covered anything in any depth. They've simply done enough for the transcript and that's all, but they haven't been able to enjoy the subject and are even less likely to recommend it as a subject that teaches very much".

Having dealt with the different problems pointed out by students with regard to the platform, lecturer-tutor attentiveness, students and co-students, and the subject, we shall now go one to offer some of the results obtained after applying the Questionnaire on Students' Satisfaction with e-Learning (Cusauf).

First of all, we should point out that the mean scores obtained and their standard deviations are given in Table 1. In order to interpret these properly, account should be taken of the fact that the options we gave the students were to score them from 1 (completely disagree) to 4 (completely agree).

In this respect, the mean obtained for all items was 3.1438 with a standard deviation of 0.58397, which allows us to assert, on the one hand, that the scores given by students were high and, on the other, that there was a great deal of similarity in the responses given to all questions.

The first thing we need to point out is that there were no "disagree" scores for any item with regard to the development of the experience; to be precise, except for four items, the mean scores for the rest were over 3. It is also important not to lose sight of the fact that the values obtained in the standard deviations are not very high, which indicates a degree of consistency in the students' opinions.

One of the aspects of the results analysis that we could underscore is the fact that students scored the lecturers' conduct very highly, both in terms of mastering the content and of handling the various communication tools:

- "The lecturer-tutor of the e-learning modules mastered the subject well." (3.51)
- "Communication with the lecturer-tutor provided information and explained the content presented." (3.36)
- "I feel that the lecturer-tutor's use of the various online resources was appropriate." (3.14)
- "The lecturer-tutor of the e-learning modules facilitated my understanding of platform-related technical issues." (3.51)

It is worth pointing out that, even though they worked with platforms provided by the universities offering the subjects and not with their own university's platform, the students did not have any problem with them, as we were able to establish from the scores for the following items:

- "I think that the look and feel of the environment (font size, colours, etc.) was appropriate." (3.16)
- "The environment's technical operation was easy to understand." (3.14)
- "I feel that the platform was appropriate because I found it easy to handle." (3.4)

Another aspect that we would like to underscore, and to which not much attention is paid at times, is the quality

Table 1. Mean scores and standard deviations.

Cusauf	Mean	St. dev.
The subject programme was appropriate.	3.27	0.800
The assignments and practicals in the various modules were valuable in terms of being able to use the knowledge gained.	3.16	0.862
The lecturer-tutor of the e-learning modules facilitated my understanding of platform-related technical issues.	3.18	0.917
I feel that the lecturer-tutor's use of the various online resources was appropriate.	3.30	0.821
The lecturer-tutor of the e-learning modules mastered the subject well.	3.51	0.720
Communication with the lecturer-tutor provided information and explained the content presented.	3.33	0.833
The lecturer-tutor did appropriate assessments of the activities carried out.	3.18	0.845
I feel that the lecturer-tutor's explanation of the environment's operating rules was appropriate.	3.18	0.858
The lecturer-tutor's public and private recommendations about the work and its quality were appropriate.	3.17	0.825
The lecturer-tutor facilitated and encouraged participation appropriately.	3.09	0.931
Activities were carried out for students on the e-learning modules to get to know each other.	2.99	0.915
The various items of content presented were up to date.	3.40	0.720
The volume of information in the content presented was sufficient for the learning required.	3.20	0.892
The content presented was easy to understand.	2.86	0.839
I feel that the originality of the content offered was appropriate.	2.95	0.831
The content was sufficiently interesting from a theoretical viewpoint.	3.04	0.808
I feel that the content was sufficiently interesting from a practical viewpoint.	3.04	0.859
I feel that the content was pleasing.	3.02	0.849
The relationship between the objectives and the content offered was appropriate.	3.10	0.827
The relationship between the timing and the content offered was appropriate.	3.03	0.897
I feel that the scientific and teaching-educational quality of the content covered was appropriate.	3.14	0.785
I found it easy to communicate with the lecturer-tutor using the communication tools: mail, forums, chats, etc.	3.36	0.828
Online communication with my co-students was easy for me.	3.27	0.838
Virtual spaces for informal communication between co-students were appropriate.	2.87	0.922
The environment's technical operation was easy to understand.	3.14	0.896
I feel that the platform was appropriate because I found it easy to handle.	3.14	0.926
I think that the look and feel of the environment (font size, colours, etc.) was appropriate.	3.16	0.874
The combination of text, images, graphics, etc. used on the platform was appropriate.	3.13	0.824
The platform's response times (access times to links, various tools, etc.) were appropriate.	3.01	0.924

of content conveyed by lecturers; the scores obtained for the following items bear this out:

- "The subject programme was appropriate." (3.27)
- "The various items of content presented were up to date." (3.40)
- "The content presented was easy to understand." (2.86)
- "The content was sufficiently interesting from a theoretical viewpoint." (3.04)
- "I feel that the content was sufficiently interesting from a practical viewpoint." (3.04)
- "I feel that the content was pleasing." (3.02)
- "I feel that the scientific and teaching-educational quality of the content covered was appropriate." (3.14)

One of the final questions in our questionnaire was an open one, the intention of which was to gather information to establish which elements the students considered to be more appropriate to the learning received through the experience developed on the CAV.

In the same way as we classified previous open questions referring to aspects the students disagreed with, the aspects that students referred to as being most appropriate were classified into four major groups: the platform, lecturer-tutor attentiveness, students and co-students, and the subject.

### a) The platform

The students pointed out that forums and chats were the tools that most facilitated their task of taking a subject properly: "I think that chats and forums were the most appropriate elements for doing these subjects".

Proper use of the platforms' internal mail systems made it possible to separate private messages from messages about subjects: "Communication via the platform, without using e-mail. Explanatory videos".

Something that also drew their attention was the fact that they were working, for the first time, with an e-learning platform and a system of sending assignments through it: "It gives you a good picture of the assignments you've got to do, as well as the delivery deadlines, in an eye-catching way. So, you only have to go into the web page to find out what you've got to do".

### b) Lecturer-tutor attentiveness

The positive communication that developed between students and lecturers was a very important dimension in this approach to studying, as pointed out by the students taking part in the experience: "Good communication with lecturers, activities that help you to understand concepts, and good, clear timing".

They also referred to the high degree of preparation that lecturers had in order to be able to teach subjects of this type: "Teaching staff capable of distance teaching" and "The tutor's motivation".

### c) Students and co-students

The work done by students themselves and the organisation of their time were crucial to passing the subject: "The work done by a student to understand the syllabus" and "Organising my time".

The relationships struck up between co-students also represented a fairly positive aspect, which was valued by CAV students: "The e-learning workshops and practicals, together with activities for us to get to know other students using the platform".

### d) The subject

For many students, taking a subject via the Internet meant that this educational approach became a solution to their lack of time and the impracticalities of travel. "The ease of doing a subject", "Time available to do the assignments", "Flexibility and compatibility with schedules".

They also positively valued the chance to gain access to other studies offering other degrees at the same university or elsewhere: "The chance to make cross-disciplinary knowledge compatible, without having to spend too much time going to other faculties several times a week" and "Having access to different things at the university".

Furthermore, they felt that the topics of the content were appropriate, appealing and interesting, as was the way they were put together. They also felt that the recommended reading list supplied was appropriate: "From my point of view, the topics covered are quite interesting, since there are topics that are very useful for education in my field".

The wide variety of audiovisual resources and practical activities helped them to get a greater and better understanding of the subjects: "The variety of practicals done in each of the subject topics".

All of the above meant that the students assimilated educational models that they could subsequently apply to their lectures in the future: "Doing this subject is like practicing the experience for future lectures of mine".

We shall now go on to offer the various results connected with the final question of the questionnaire, the intention of which was to gather information about the elements that students underscored as being less appropriate to the learning received through the experience developed on the CAV. Using the same classification as before, we divided them into four major groups: the platform, lecturer-tutor attentiveness, students and co-students, and the subject.

### a) The platform

The look and feel of the platform was one of the main problems that a lot of students had, because they said that it was not easy for them to work with. They also pointed out that forums and chats were aspects that they felt were

inappropriate. "The interface", "The technologies are still pretty undeveloped. Particularly the e-learning platform used (ILIAS)" and "Access problems".

### b) Lecturer-tutor attentiveness

In this section, students felt that the dynamics of holding various organised chat sessions while an educational action was being carried out was fairly inappropriate. The students' participation in them was included as one of the subject assessment criteria. They also pointed out the lack of attentiveness that they got from lecturers: "Incompatible schedules for activities like group chat sessions", "Very little communication with students from some lecturers".

### c) Students and co-students

The way that the first few days of being in the environment panned out was, in the students' opinion, inappropriate. This led to disorientation on the CAV and a lack of communication between co-students of the same subject, whether as a consequence of not knowing how to use the communication tools or how to take part in this type of media: "I think that sometimes the initial disorientation of all participants...", "A lack of direct communication between co-students".

### d) The subject

This section was one of the most highly criticised by students, who argued that the content was not up to the standard of the subject. They said that the content was fairly inappropriate in most cases, or excessive, and that the activities were inappropriate because they were also excessive: "An occasional lack of understanding of the syllabus", "The most inappropriate element is the lack of information at the start. Until a certain amount of time has gone by, it's hard to get a clear idea of the syllabus, the content, and how these are supposed to be done", "An abusive amount of assignments".

Having done these analyses, the intention of the next part of the study was to test the various statistical hypotheses that we had put forward, such as:

- Students' scores for the experience differ depending on their universities of origin.
- Students' scores for the experience differ depending on whether or not they had previously taken a subject via the Internet at their universities or elsewhere.
- Students' scores for the experience differ depending on the expectations they had before starting it.
- Students' scores for the experience differ depending on their views on the relationship between the dynamics of the work done in the subject modules and the expectations they had before starting them.
- Students' scores for the experience differ depending on their views on whether or not their initial expectations had been met by the end of the e-learning modules.

It is worth pointing out that, in all cases, the statistical hypotheses we tested were:

- H0 (null hypothesis): there are no significant differences between the tested variable and a student's perception of significance, with an alpha margin of error of 0.05.
- H1 (alternative hypothesis): there are significant differences between the tested variable and a student's perception of significance, with an alpha margin of error of 0.05.

Presented below are the results obtained for each hypothesis put forward. To make them easier to read, we are not going to present the statistical differences obtained for each one; rather, we shall present them in summary form.

*Students' scores for the experience differ depending on their university of origin.*

Regarding the issue of whether students' scores for the experience differed depending on their university of origin, the values obtained allowed us to reject H0 and H1. Consequently, we can assert that the scores that students gave for their experience of taking part in the CAV differed depending on their university of origin.

The mean range values allowed us to establish that the highest scores, in descending order, were given by students at the following universities: Pablo de Olavide, Granada, Cadiz, Cordoba, Malaga, Almería, Seville and Huelva.

When we did the analyses using multiple correlations between the overall score for the item and the students' university of origin, some of the data we were able to extract from the results obtained were the following:

- The highest number of significant differences was found for the universities of Seville, Jaén and Huelva, and the remaining Andalusian universities.
- Regarding the scores for the experience, there are two major groups: a) Almería, Cadiz, Cordoba, Granada,



Malaga and Pablo de Olavide, and b) Huelva, Jaén and Seville.

*Students' scores for the experience differ depending on whether or not they had previously taken a subject via the Internet at their universities or elsewhere.*

Presented below are the data obtained from analysing whether students' scores for the experience differed depending on whether or not they had previously taken a subject via the Internet at their universities or elsewhere, or whether having done so had an impact on the students' scores in terms of the degree of agreement or disagreement with the CAV experience.

The values obtained allowed us to reject H0. Consequently, we can assert that there were no differences between the fact that students might or might not have taken a subject via the Internet and their degree of agreement or disagreement in general with the experience; this can be seen more clearly in Table 2, which shows the mean range values obtained in each case. Nevertheless, we need to acknowledge that, even though no significant differences were found, the scores given by students who had previously taken a subject via the Internet were indeed higher, which may suggest a finer scoring of this item because they had valued the experience.

**Table 2.** Mean ranges depending on whether or not students had taken a subject via the Internet before the development of the CAV experience

	No	Mean range	Sum of ranges
Yes	335	286.08	95,836.00
No	223	269.62	60,125.00

*Students' scores for the experience differ depending on the expectations they had before starting it.*

The chi-squared values and the level of significance obtained (14.048 and 0.003, respectively) allowed us to reject H0 and H1. Consequently, we can assert that there were differences between students' scores for the experience depending on the perceptions they had before starting the experience. The fact that students who started with low expectations radically changed their perceptions was also significant.

As we can clearly see from the results obtained, the fact of having started with "high" or "very high" expectations led students to consider the experience to be more significant.

In order to find the values between which the experiences were more significant, we applied the Dunn test (1964) for multiple comparisons, through which we obtained the results shown in Table 3.

**Table 3.** Multiple comparisons for the variables level of education and of use of technological options and age (1 = very high; 2 = high; 3 = low; 4 = very low) (significant relationships are bolded)

	1	2	3	4
1		<b>0.003</b>	0.165	<b>0.004</b>
2	<b>0.037</b>		0.079	<b>0.015</b>
3	0.510	0.079		0.008
4	0.049	0.015	0.008	

The observation in the table above allows us to assert that the fundamental differences could be found between the "very high" and "high" scores and the "very low" scores, which confirms the comments made previously.

*Students' scores for the experience differ depending on their views on the relationship between the dynamics of the work done in the subject modules and the expectations they had before starting them.*

The values found allowed us to reject H0 and accept H1. Consequently, we can assert that there were significant differences between the perceptions that students had of the experience and the perceptions of their views on the relationship between the dynamics of the work done in the subject modules and the expectations they had before starting them.

In this case, the mean ranges showed that the highest values, that is to say, those for students who were in greater agreement with the experience, were obtained for those who considered that the relationship between the dynamics of the work done in the subject modules and the expectations they had before starting them was very high.

*Students' scores for the experience differ depending on their views on whether or not their initial expectations had been met by the end of the e-learning modules.*

In this case, the statistical test we used was the Mann-Whitney U test, to test H0 and H1. The results obtained are shown in Table 4.

**Table 4.** Mann-Whitney U test to test whether or not students felt that their initial expectations had been met by the end of the e-learning modules and their degree of agreement in general with the development of the experience (\*\* = significant with alpha set at 0.01)

Mann-Whitney U	4,488.500
Wilcoxon W	7,338.500
Z	-10.439
Level of significance	0.000 (**)

The values obtained allowed us to reject H0 and accept H1. Consequently, we can assert that there were differences between whether or not students felt that their initial expectations had been met by the end of the e-learning modules and their degree of agreement in general with the development of the experience.

From the results obtained, we can assert that the highest scores were given by those students who felt that the experience had met their expectations.

As a summary, Table 5 shows accepted hypotheses H0 and H1.

Table 5. Generally accepted H0 and H1

Relationship between variables	Accepted H
Students' scores for the experience differ depending on their university of origin.	H1
Students' scores for the experience differ depending on whether or not they had previously taken a subject via the Internet at their universities or elsewhere.	H0
Students' scores for the experience differ depending on the expectations they had before starting it.	H1
Students' scores for the experience differ depending on their views on the relationship between the dynamics of the work done in the subject modules and the expectations they had before starting them.	H1
Students' scores for the experience differ depending on their views on whether or not their initial expectations had been met by the end of the e-learning modules.	H1

## 4. Conclusions and Implications

One of the first conclusions we were able to draw from our project was that carrying out educational actions on shared virtual campuses is an option that can be implemented and can indeed be significant. In addition, we can clearly assert that the CAV experience was and still is successful, as shown by the students' high scores for it, whether in response to specific questions or to the satisfaction questionnaire they were asked to complete. This aspect is even more notable if we bear in mind that almost 40% of the students were taking part in e-learning actions for the first time.

This assertion can be strengthened by a series of aspects that, although not directly arising from our project, do indeed reinforce the idea of how "successful" the experience was: the fact that the students' views tended in the same direction as the lecturers' regarding the success of the experience (Cabero, 2010), and that the lecturers were happy

with the students' academic results (García et al., 2009; Aguaded et al., 2009).

The positive attitudes found in our study are in keeping with those found in other projects in the international arena: Rovai et al. (2004), Orham (2008), Lu et al. (2009), Ginns et al. (2009) and Ellis et al. (2010); or those found by Del Moral et al. (2009) for another shared virtual campus in Spain.

From our point of view, the experience clearly underscored the potential of these types of action to foster students' virtual mobility, although, to do that, a series of measures needs to be adopted to promote and strengthen such actions. To a large extent, these measures will need to be organisational, such as unifying the virtual platforms or creating platform instruction manuals to make them easier for students to understand and to prevent students' initial disorientation.

However, regarding the existence of different platforms, we should point out this was not a problem for the majority of students. Therefore, we still believe (Cabero et al., 2005) that, in most cases, using one platform or another is irrelevant when it comes to the learning results achieved through them. As pointed out recently by Twed-dell (2007), studies show that technical obstacles are easier to overcome than the lack of communication skills. In our case, however, our students informed us that lecturers did indeed have such skills.

Our project agrees with contributions made by other authors in asserting that students considered e-learning experiences to be positive, because they facilitate greater student-lecturer and student-student interaction (Means et al., 2009).

Furthermore, in keeping with contributions made by other authors like Packham et al. (2006), we found that the role of the tutor is the key to the success of e-learning actions.

The validity of creating shared virtual campuses in general, and the CAV in particular, was also supported by the fact that none of the problems we encountered were ostensibly any different from those arising in e-learning situations for subjects taught by a single university via its virtual campus. In this respect, we are referring to situations like the need for lecturers to be attentive, the lecturers' reactive attitudes in e-tutoring, problems with tutors' response times, too much content presented and too many activities to do, lecturer dynamics when delivering a subject, and so on (Borges, 2007).

Neither can we overlook the fact that the success of the experience, particularly with this type of learning approach, is due to the involvement of the teaching staff, something which, moreover, the majority of students acknowledged.

This aspect could be further explained if we take into account the experience of e-learning they had and the positive attitude they had towards it (Cabero, 2010). Consequently, through the study carried out, we can conclude that a factor for the success of experiences of this type is the selection process for participating lecturers.

It was also relevant to see how students' attitudes at the start conditioned the results obtained and the perceptions of dynamics used by lecturers. Hence, on the basis of the results obtained through the various analyses done, we would dare to suggest that it is necessary to adopt measures to motivate and help students in the initial e-learning stages.

There is no doubt that the study helped us to establish how successful the experience actually was for the students. However, we would like to end this section by making several proposals for its enhancement and potential transfer to other contexts. These proposals refer to highly significant aspects like standardising the platform through which courses are offered to students, expanding educational offerings, and providing training for teaching staff to ensure that their teaching, methodological and tutorial conduct on the CAV is standardised. We also believe that it would be interesting to start developing the idea that lecturers from different universities could collaboratively design and teach the same subject.

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