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Use of the ICTs and the Perception of E-learning among University Students: a Differential Perspective according to Gender and Degree Year Group.

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1. Introduction

Information and Communication Technologies (ICTs) have gradually become part of our lives, creating new point of encounters, leading to new needs and to new products which cover them. What has been called the digital culture has had an extensive influence on education, with technology being included in attendance-based classes and training processes being generated using ICTs (e-learning).

E-learning is generically defined as the use of telematic tools in teaching, which may combine attendance-based sessions with distance sessions and include various educational aspects (theoretical conceptualisation, practice, synchronised and non-synchronised contacts, etc.) (Relan, A. and Ginalli, B.B., 1997; Khan, B.H., 1997; McCormak, C. and Jones, D., 1998; FUNDESCO, 1998:56; Alcantud, F., 1999).

E-learning has spread to various levels of teaching. In fact, practically all Spain's autonomous regions have begun to use e-learning or ICTs for non-university teachers, as have most universities (see Study of Virtual Campuses in Spain: <http://www.edulab.ull.es/campusvirtuales/universidades/mapa.htm>)

E-learning has various advantages for teaching and learning: the reduction of long-term costs, time-space independence, increased flexibility and the opportunity to adapt the learning

process, increased opportunities for access to various sources of information, increased opportunities for communication and personalisation of the teaching process, etc. (Adell, J., 1997; Alcantud, F., 1999; Pérez, E, Rubio, C. and Rubio, F., 1999; Gonzáles, S. and Salas, M, 1999; Rubio, F, 2000;).

However, this teaching method also has a number of disadvantages, such as the high initial cost of its infrastructure, the complex nature of access to resources, the lack of quality regulations for training, the complexity of privacy and safety conditions on the Internet, the effort involved in using telematic tools for the student and the teacher, the lack of learning and teaching habits using telematic tools, etc. (Salis, C. and Masili, G., 1997; Marcelo, C. and Lavié, J.M., 2000; Marcelo, C., 2003):

As mentioned above, the lack of familiarity with the use of telematic tools on the part of users (teachers and students) is a disadvantage in implementing e-learning processes. It is therefore necessary that at the same time as ICTs are included in teaching, the potential e-learning user is trained, as familiarity with the use of the technology is an important factor in carrying out online learning processes. In this respect, the European Union mentions the need to develop its teaching staff's necessary skills and abilities for using the technology, by means of initial and continuous training.

In order to implement e-learning processes, it is therefore essential to familiarise users with the technology, as for example technological competence is one of the various skills requested of the online tutor (Marcelo, C., 2003). This idea is corroborated by the participants on a course concerning the application of ICTs in training and employment, who felt that including a module on the use of the technology was essential for its success (Hernández-Jorge, C.; Cruz, C. and Rodríguez, E., 2001). Moreover, in an e-learning project for the physically handicapped, a difficulty often pointed out to us by users, mentors and e-tutors was confirmed - students' lack of familiarity with using the technology (Hernández-Jorge, C.; Jurado, M. and Rodríguez, E., 2001).

However, not only the use of ICTs is important in e-learning processes. Users' attitudes are also important. Some studies point to the importance of these attitudes, because as well as the importance of the use of the technology is the frustration with technological problems or feelings of insecurity due to unfamiliarity with it; as well as the advantage of not attending classes, there is the feeling of lack of communication or isolation, etc. the question is considered in these terms by authors including Román, E. (2001) and Azcorra, A; Bernardos, C.; Gallego, O and Soto, I., (2001).

For example, in these studies mentioned above, we observe that the users' initial motivation is important to the success of an e-learning course for disabled people (Hernández-Jorge, C.; Jurado, M. and Rodríguez, E., 2001).

What has been mentioned up to this point led us to investigate the level of use and knowledge of ICTs among university students and the advantages and disadvantages they notice as a potential user of e-learning. For this reason, we undertook a study with students at the University of La Laguna (González, E.; Borges, M.; Acosta, C.; Rodríguez, E. and Hernández-Jorge, C., 2002).

We were able to confirm that the student body is familiar with the use of ICTs, has used computers for some time, especially for study tasks, and it has become an instrument of work rather than one of leisure or pleasure. There is clearly room for improvement in terms of their Internet connection level, and although they know various programmes and services, there are

gaps that must be covered which are currently being dealt with by friends or classmates. On the other hand, university students have a range of "fears" concerning e-learning, related to the lack of communication (not seeing teachers or classmates, isolation, etc.).

These initial results raised some questions that we have tried to resolve in this paper and which are the objective of this study. A large proportion of the student population is female, but some studies point out that the profile of e-learning students in Spain is male (Azcorra, A; Bernardos, C.; Gallego, O and Soto, I., 2001). At the same time, there are studies which established gender differences in the use of ICTs among university students, both in terms of Internet use time and in the perception of telematic tools (Vilchez, C., 2002). We therefore ask the question of whether in our case there are differences in the use of technology according to gender.

We also consider out whether there is an "a defect" on the use of ICTs, due to the speed of the changes that have taken place in digital culture (Area, M.; 2001), and we question whether there are differences in the use of technology depending on the year of their degree which the students have reached.

Our objective in this paper is to discover whether there are gender and age differences among university students in the use of ICTs and in the advantages and disadvantages that they observe with regard to e-learning.

2. Method

2.1 Participants

730 students participated in this study, and the average age was 22 years old. 72.8% were women, and 27.2% were men, 54.9% were in the first year of their degree and 40.2% were in their second year. They are studying for various university qualifications, although there was a greater presence of social sciences, law and human sciences students.

2.2 Procedure, instrument and analysis of the data used

a) Sample

In order to carry out the study, a quantitative methodology was chosen, as our aim was to measure a wide range of students. They were selected using a stratified and proportional sample of the student body registered at the ULL, in which the strata were the degree courses.

b) Production of the questionnaire

A structured questionnaire of 15 questions with simple and compound items was produced. It was felt that the number of items was not excessive, in order to make it easy to complete in teaching hours and to avoid strange variables related to the size of the questionnaire which would distort the results.

In order to guarantee the external validity of the questionnaire, it was given to experts in the ICT world, so that it could be improved upon. Finally, the questionnaire was piloted in a group of students to improve the instrument's internal validity and reliability (González, E.; Borges, M; Acosta, M.C.; Rodríguez, E. and Hernández-Jorge, C., 2002) (see Appendix 1).

c) The analysis of the results was carried out by T-Test using the SPSS statistical package for Windows (version 11.0).

3. Results

The aim of our study was to discover if there are differences in the use of ICTs and in the perceived advantages and disadvantages of e-learning between men and women, on the one hand, and between first and second-year students on the other. We will first present the results concerning the use of ICTs and then those referring to the perception of the advantages and disadvantages of e-learning.

3.1 Use of ICTs

The results show that there are no significant differences between men and women in the use of technologies such as mobile telephones or computers. Differences are only established in Internet use, which is used more by men than by women ($t(725)=4.105$ $p<.001$). However, there appears to be no significant differences in the use of ICTs between first and second-year students (see Table 1).

| Variables | Women | | Men | | T |
|--|------------|------|-------------|------|--------------|
| | X | Sx | X | Sx | |
| Do you have a mobile telephone? | 5.09 | .220 | .107 | .309 | -2.316 |
| Do you have a computer? | .176 | .381 | .157 | .365 | .586 |
| Do you have Internet? | .538 | .499 | .371 | .484 | 4.105 *** |
| Variables | First year | | Second year | | T |
| | X | Sx | X | Sx | |
| Do you have a mobile telephone? | 5.66 | .231 | 5.96 | .237 | -.170 |
| Do you have a computer? | .173 | .378 | .182 | .387 | -.328 |
| Do you have Internet? | .493 | .501 | .509 | .501 | -.390 |
| X: Average; Sx: Standard deviation. Probability: *:5%, **:1%, 1%: *** No. of men: 198 No. of women: 531; No. of first-year students:390 of second-year students:286 * A higher points score in the average shows less use | | | | | |

There are no differences between men and women with regard to the time they have been using computers. However, there are differences with regard to the time they have been using the Internet. The men have been using the Internet for longer than the women ($t(682)=-4.046$ $p<.001$). There is also a difference between the first- and second-year degree students, with the second-year students having used computers for longer ($t(668)=-2.166$ $p<.05$) (see Table 2).

| Variables | Women | | Men | | T |
|---|-------|-------|-------|-------|-------|
| | X | Sx | S | Sx | |
| How long have you been using computers? | 3.350 | 1.144 | 3.420 | 1.134 | -.739 |

| | | | | | |
|---|------------|-------|-------------|-------|---------------|
| How long have you been using the Internet? | 1.302 | 1.548 | 1.848 | 1.609 | -4.046 *** |
| Variables | First year | | Second year | | T |
| | X | Sx | X | Sx | |
| How long have you been using computers? | 3.279 | 1.204 | 3.470 | 1.066 | -2.166 * |
| How long have you been using the Internet? | 1.386 | 1.550 | 1.468 | 1.609 | -.650 |
| X: Average; Sx: Standard deviation. Probability: *:5%, **:1%, 1%: *** No. of men: 198 No. of women: 531; No. of first-year students:390 No. of second-year students:286 | | | | | |

As far as the frequency of use of the technologies is concerned, significant differences were established between men and women for using computers ($t(700)=7.353$ $p<.001$) and the Internet ($t(579)=6.139$ $p<.001$). In both cases, women make less use of these technologies (see Table 3).

| | | | | | |
|--|------------|-------|-------------|-------|--------------|
| Table 3 Difference in averages in the frequency of ICT use between men and women and between first- and second-year students (T-Test) | | | | | |
| Variables | Women | | Men | | T |
| | X | Sx | X | Sx | |
| How often do you use the mobile phone? | .264 | .775 | .423 | 1.042 | -1.918 |
| How often do you use the computer? | 1.458 | 1.121 | .811 | 1.003 | 7.353 *** |
| How often do you use the Internet? | 2.083 | 1.294 | 1.358 | 1.320 | 6.139 *** |
| Variables | First year | | Second year | | T |
| | X | Sx | S | Sx | |
| How often do you use the mobile phone? | .267 | .808 | .337 | .886 | -1.054 |
| How often do you use the computer? | 1.269 | 1.100 | 1.356 | 1.164 | -.981 |
| How often do you use the Internet? | 1.881 | 1.376 | 1.903 | 1.310 | -.190 |
| X: Average; Sx: Standard deviation. Probability: *:5%, **:1%, 1%: *** No. of men: 198 No. of women: 531; No. of first-year students:390 No. of second-year students:286 * A higher points score in the average shows less use | | | | | |

There is also a difference in the place where computers and the Internet are used. Both at home ($t(329)=6.058$ $p<.001$), and at the University ($t(312)=3.539$ $p<.001$), they are used more by men and women. As far as the year group is concerned, the difference lies in the use of computers at university ($t(477)=3.340$ $p<.001$), with second-year students using them most in the place of study (see Table 4).

| | | | | | |
|---|-------|-------|------|-------|-------|
| Table 4 Difference in averages in the place of computer use between men and women and between first- and second-year students (T-Test) | | | | | |
| Variables | Women | | Men | | T |
| | X | Sx | S | Sx | |
| Do you use the computer at home? | 1.464 | 1.192 | .847 | 1.140 | 6.058 |

| | | | | | |
|--|------------|-------|-------------|-------|--------------|
| | | | | | *** |
| Do you use the computer in a cybercafe? | 3.436 | .807 | 3.250 | 1.006 | 1.715 |
| Do you use the computer at work? | 3.663 | 1.004 | 3.416 | 1.291 | 1.508 |
| Do you use the computer at university? | 2.697 | 1.130 | 2.299 | 1.207 | 3.539 *** |
| Variables | First year | | Second year | | T |
| | X | Sx | S | Sx | |
| Do you use the computer at home? | 1.313 | 1.227 | 1.359 | 1.213 | -.448 |
| Do you use the computer in a cybercafe? | 3.404 | .809 | 3.391 | .902 | .155 |
| Do you use the computer at work? | 3.671 | 1.019 | 3.522 | 1.143 | 1.094 |
| Do you use the computer at university? | 2.758 | 1.171 | 2.410 | 1.103 | 3.340 *** |
| X: Average; Sx: Standard deviation. Probability: *:5%, **:1%, 1%: *** No. of men: 198 No. of women: 531; No. of first-year students:390 No. of second-year students:286 * A higher points score in the average shows less use | | | | | |

Table 5 shows significant differences in the knowledge of various types of software according to the gender variable: operating systems (t (706)= -5083 p<.001), word processors (t (703)= -3.039 p<.001), spreadsheets (t (666)=-3.142 p<.001), presentations (t (679)=-2.984 p<.01), Internet (t (679)=-7.176 p<.001) and educational software (t (617)=-4.110 p<.001). In all cases, men have greater knowledge of software than women. However, there are no differences as a result of the students' year group.

| Variables | Women | | Men | | T |
|---|------------|------|-------------|------|---------------|
| | X | Sx | S | Sx | |
| At what level do you use operating systems? | 1.586 | .760 | 1.917 | .799 | -5.083 *** |
| At what level do you use word processors? | 1.678 | .762 | 1.900 | .800 | -3.039 *** |
| At what level do you use databases, spreadsheets,...? | .876 | .790 | 1.097 | .879 | -3.142 *** |
| At what level do you use presentations? | .785 | .790 | 1.000 | .920 | -2.984 ** |
| At what level can you use Internet? | 1.335 | .869 | 1.872 | .886 | -7.176 *** |
| At what level can you use educational software? | .460 | .728 | .787 | .933 | -4.110 *** |
| Variables | First year | | Second year | | T |
| | X | Sx | S | Sx | |
| At what level do you use operating systems? | 1.655 | .749 | 1.661 | .809 | -0.91 |
| At what level do you use word processors? | 1.709 | .767 | 1.742 | .781 | -.546 |
| At what level do you use databases, spreadsheets,...? | .944 | .772 | .891 | .860 | .801 |

| | | | | | |
|---|-------|------|-------|------|------|
| At what level do you use presentations? | .835 | .807 | .830 | .838 | .076 |
| At what level can you use Internet? | 1.480 | .914 | 1.443 | .867 | .525 |
| At what level can you use educational software? | .564 | .789 | .498 | .797 | .998 |
| X: Average; Sx: Standard deviation. Probability: *:5%, **:1%, 1%: *** No. of men: 198 No. of women: 531; No. of first-year students:390 No. of second-year students:286 | | | | | |

But what do the students use computers for? As far as the purpose of the use is concerned, there appear to be significant differences in terms of gender, but not depending on which year group the student belongs to (see Table 6). Women use the computer more for study activities ($t(695)=3.764$ $p<.001$); while men use it for work ($t(532)=-3.147$ $p<.001$) and as a hobby or for leisure ($t(504)=-5.592$ $p<.001$).

| Table 6 Difference in averages in the type of computer use between men and women and between first- and second-year students (T-Test) | | | | | |
|--|------------|-------|-------------|-------|---------------|
| Variables | Women | | Men | | T |
| | X | Sx | S | Sx | |
| How often do you use it for study? | 6.967 | 2.795 | 6.075 | 2.707 | 3.764 *** |
| How often do you use it for work? | 2.733 | 3.364 | 3.812 | 3.742 | -3.147 *** |
| How often do you use it for leisure or as a hobby? | 4.779 | 3.178 | 6.533 | 2.957 | -5.592 *** |
| Variables | First year | | Second year | | T |
| | X | Sx | S | Sx | |
| How often do you use it for study? | 6.542 | 2.925 | 6.907 | 2.572 | -1.685 |
| How often do you use it for work? | 2.758 | 3.482 | 3.377 | 3.498 | -1.949 |
| How often do you use it for leisure or as a hobby? | 5.320 | 3.126 | 5.038 | 3.267 | .937 |
| X: Average; Sx: Standard deviation. Probability: *:5%, **:1%, 1%: *** No. of men: 198 No. of women: 531; No. of first-year students:390 No. of second-year students:286 | | | | | |

Table 7 shows the differences between men and women in terms of Internet use. Men use it the most for playing games ($t(452)=4.293$ $p<.001$); while women use in most for e-mail ($t(476)=-2.610$ $p<.01$). As far as the students' year group is concerned, first-year students use Internet mostly for "playing" ($t(422)=-2.387$ $p<.05$) and chatrooms ($t(428)=-2.305$ $p<.05$), while second-year students use it mostly for e-mail ($t(446)=2.822$ $p<.01$).

| Table 7 Difference in averages in the type of Internet use between men and women and between first- and second-year students (T-Test) | | | | | |
|--|-------|-------|-------|-------|--------------|
| Variables | Women | | Men | | T |
| | X | Sx | S | Sx | |
| How often do you use the Internet for playing games? | 4.091 | 1.967 | 3.222 | 1.980 | 4.293 *** |
| How often do you use the Internet for consulting search engines? | 2.799 | 1.891 | 2.819 | 1.741 | -.109 |
| How often do you use the Internet | 4.006 | 1.639 | 4.029 | 1.667 | -.136 |

| | | | | | |
|---|------------|-------|-------------|-------|--------------|
| for visiting portals? | | | | | |
| How often do you use the Internet for reading the press? | 4.754 | 1.735 | 4.612 | 1.875 | .772 |
| How often do you use the Internet for chatrooms? | 4.155 | 2.067 | 4.529 | 2.008 | -1.795 |
| How often do you use the Internet for e-mail? | 2.626 | 2.014 | 3.153 | 2.053 | -2.610 ** |
| Variables | First year | | Second year | | T |
| | X | Sx | S | Sx | |
| How often do you use the Internet for playing games? | 3.609 | 2.028 | 4.075 | 1.952 | -2.387 * |
| How often do you use the Internet for consulting search engines? | 2.940 | 1.935 | 2.660 | 1.738 | 1.596 |
| How often do you use the Internet for visiting portals? | 4.013 | 1.680 | 4.016 | 1.633 | -.022 |
| How often do you use the Internet for reading the press? | 4.724 | 1.778 | 4.753 | 1.787 | -.165 |
| How often do you use the Internet for chatrooms? | 4.067 | 2.069 | 4.526 | 2.031 | -2.305 * |
| How often do you use the Internet for e-mail? | 3.028 | 2.081 | 2.482 | 1.965 | 2.822 ** |
| X: Average; Sx: Standard deviation. Probability: *:5%, **:1%, 1%: *** No. of men: 198 No. of women: 531; No. of first-year students:390 No. of second-year students:286 | | | | | |

3.2 Perceived advantages and disadvantages of e-learning

As far as the usefulness of e-learning is concerned, there are no significant differences between men and women. Differences only arise in the year group that the student belongs to. First-year students rather than second-year students consider that e-learning may be a useful tool for obtaining information complementary to their degree ($t(644)=-2.038$ $p<.05$) (see Table 8).

| Variables | Women | | Men | | T |
|--|-------|-------|-------|-------|-------|
| | X | Sx | S | Sx | |
| To do tests (checking) of the subjects | 4.852 | 2.412 | 4.621 | 2.423 | 1.102 |
| To consult the subject programme | 4.489 | 2.158 | 4.667 | 2.305 | -.940 |
| As support in the library | 4.401 | 3.920 | 4.382 | 2.283 | .063 |
| To communicate with classmates using forums | 4.943 | 2.452 | 4.831 | 2.348 | .538 |
| To download or have access to notes on the net | 2.605 | 2.134 | 2.638 | 2.272 | -.179 |
| To look for complementary information | 3.119 | 2.018 | 3.289 | 2.146 | -.969 |
| For computer classes | 5.261 | 2.408 | 5.320 | 2.505 | -.279 |

| | | | | | |
|--|------------|-------|-------------|-------|-------------|
| To communicate with the teacher | 5.239 | 2.403 | 4.913 | 2.396 | 1.569 |
| Variables | First year | | Second year | | T |
| | X | Sx | S | Sx | |
| To do tests (checking) of the subjects | 4.852 | 2.378 | 4.686 | 2.461 | .850 |
| To consult the subject programme | 4.434 | 2.178 | 4.643 | 2.180 | -1.193 |
| As support in the library | 4.508 | 4.446 | 4.290 | 2.071 | .750 |
| To communicate with classmates using forums | 5.025 | 2.431 | 4.787 | 2.405 | 1.218 |
| To download or have access to notes on the net | 2.633 | 2.142 | 2.460 | 2.150 | 1.016 |
| To look for complementary information | 3.051 | 2.017 | 3.385 | 2.118 | -2.038 * |
| For computer classes | 5.099 | 2.413 | 5.424 | 2.428 | -1.656 |
| To communicate with the teacher | 5.191 | 2.340 | 5.071 | 2.501 | .617 |
| X: Average; Sx: Standard deviation. Probability: *:5%, **:1%, 1%: *** No. of men: 198 No. of women: 531; No. of first-year students:390 No. of second-year students:286 * A higher points score in the average shows less use | | | | | |

There is also little difference between men and women in the perceived advantages of e-learning. They only see the opportunity to have access to subject material differently ($t(281)=1.755$ $p<.05$) and to define their own study timetable ($t(677)=-2.456$ $p<.01$). In both cases, women have a greater perception of these advantages than men (see Table 9).

As far as the students' year group is concerned, more differences can be seen. The first-year students feel that e-learning would motivate them to study more than second-year students ($t(619)=-3.281$ $p<.001$) and would improve the quality of teaching ($t(598)=-2.452$ $p<.05$). The second-year students, more than first-year students, feel that they would not have to attend classes regularly ($t(605)=2.621$ $p<.01$) (see Table 9).

| Variables | Women | | Men | | T |
|--|------------|-------|-------------|-------|--------------|
| | X | Sx | X | Sx | |
| I would have access to course material | 1.736 | 1.413 | 2.021 | 1.755 | -2.000 * |
| I could learn at my own speed | 3.468 | 2.037 | 3.681 | 2.043 | -1.215 |
| I wouldn't have to always attend class | 3.744 | 2.071 | 3.703 | 2.104 | .230 |
| I could define my own study timetable | 3.386 | 1.828 | 3.856 | 3.033 | -2.456 ** |
| It would motivate me to study more | 5.331 | 1.846 | 5.188 | 1.969 | .876 |
| It would improve the quality of teaching | 5.208 | 1.989 | 4.984 | 2.090 | 1.284 |
| It would help classes to make progress | 4.860 | 1.918 | 4.725 | 1.890 | .808 |
| Variables | First year | | Second year | | T |
| | X | Sx | X | Sx | |
| I would have access to course material | 1.876 | 1.608 | 1.654 | 1.282 | 1.883 |
| I could learn at my own speed | 3.623 | 2.152 | 3.398 | 1.867 | 1.371 |
| I wouldn't have to always attend class | 3.896 | 2.143 | 3.468 | 1.942 | 2.621 |

| | | | | | |
|---|-------|-------|-------|-------|---------------|
| | | | | | ** |
| I could define my own study timetable | 3.578 | 1.919 | 3.420 | 2.617 | .878 |
| It would motivate me to study more | 5.112 | 1.869 | 5.597 | 1.747 | -3.286 *** |
| It would improve the quality of teaching | 5.000 | 2.059 | 5.389 | 1.874 | -2.452 * |
| It would help classes to make progress | 4.800 | 1.899 | 4.913 | 1.865 | -737 |
| X: Average; Sx: Standard deviation. Probability: *:5%, **:1%, 1%o: *** No. of men: 198 No. of women: 531; No. of first-year students:390 No. of second-year students:286 * A higher points score in the average shows less use | | | | | |

As far as the difficulties perceived in e-learning are concerned, there are some significant differences between men and women. Women have greater difficulty in not having the teacher and their classmates present ($t(669)=-2.073$ $p<.05$). Women are also more worried about lack of knowledge of Internet use than men ($t(658)=-3.769$ $p<.001$) (see Table 10). The students' year group does not seem to make a difference in the perception of difficulties in using e-learning (see Table 10).

| Variables | Women | | Men | | T |
|---|------------|-------|-------------|-------|---------------|
| | X | Sx | X | Sx | |
| You would feel more isolated | 3.851 | 2.272 | 4.120 | 2.383 | -1.346 |
| The relationships between people would be dehumanised | 2.895 | 2.030 | 3.222 | 2.182 | -1.822 |
| You couldn't "see" the teacher and classmates | 3.501 | 1.868 | 3.842 | 1.992 | -2.073 * |
| You would spend less time in the study centre | 4.880 | 1.923 | 4.950 | 1.913 | -.419 |
| Lack of knowledge concerning Internet use | 4.279 | 2.317 | 5.045 | 2.334 | -3.769 *** |
| You wouldn't have your own resources (computer, Internet) | 4.689 | 2.370 | 4.656 | 2.312 | .659 |
| You wouldn't easily have access to media in the faculty or in the centres | 6.378 | 5.407 | 4.140 | 2.225 | -.940 |
| Variables | First year | | Second year | | T |
| | X | Sx | S | Sx | |
| You would feel more isolated | 3.818 | 2.311 | 4.099 | 2.278 | -1.505 |
| The relationships between people would be dehumanised | 2.992 | 2.047 | 2.958 | 2.027 | .202 |
| You couldn't "see" the teacher and classmates | 3.565 | 1.882 | 3.572 | 1.889 | -.043 |
| You would spend less time in the study centre | 4.886 | 1.915 | 4.931 | 1.914 | -.289 |
| Lack of knowledge concerning Internet use | 4.537 | 2.340 | 4.449 | 2.339 | .463 |
| You wouldn't have your own resources (computer, Internet) | 4.603 | 2.342 | 4.742 | 2.408 | -.718 |

| | | | | | |
|---|-------|--------|-------|-------|------|
| You wouldn't easily have access to media in the faculty or in the centres | 6.952 | 52.997 | 4.385 | 2.203 | .780 |
| X: Average; Sx: Standard deviation. Probability: *:5%, **:1%, 1%: *** No. of men: 198 No. of women: 531; No. of first-year students:390 No. of second-year students:286 * A higher points score in the average shows less use | | | | | |

4. Discussion and conclusions

The results of this study show that the use of ICTs is more closely related to gender than the student's year group.

In general, it seems that women make less use of technology, while they use it for different reasons to men.

Men usually become familiar with technology before women, they use it more frequently in various places (home, the university, etc.) and have a wider knowledge of different types of software. These results confirm the findings of previous studies, which point to a tendency in the influence of gender on the use of technology (Vilchez, C., 2002) and continue to confirm the user profile shown in this study by Azcorra, A; Bernardos, C.; Gallego, O and Soto, I., (2001).

However, what is striking is the differential use made by men and women of technology, as women use the computer more for studying and the Internet for communication (such as e-mail) and many use it for leisure or as a hobby, or for playing games. Men seem to see the ICTs as a leisure instrument, while women see them as a working tool.

The student's year group is less closely related with technology use. Only a few differences are established. For example, those in the second year are the first to have become familiar with technology, which may be an effect of age - they are older and therefore have obtained it first.

There is the differential use of technology between the younger (first year) and older (second year) students. First-year students use the Internet more for playing games and chatting, while second-year students use it more for e-mail. Perhaps this result can give us a clue regarding whether the use of technology for leisure may be due to its earlier incorporation in their lives, although the age differences in this population are minimal. This could lead us to analyse this data in more depth, using the age variable as continuous in order to observe differences in this area.

On the other hand, there are no excessive differences in the perception of university students regarding the uses, advantages and difficulties of e-learning between the students due to their gender or year group.

For example, women mention more advantages related to autonomy and learning, such as having access to complementary material and establishing their own study timetable. But some women also mention more concerns or difficulties of a technological nature (not knowing how to use the Internet) and of a "communicative" nature (not "seeing" the teacher and classmates). As mentioned above, the "masculine profile" of both the actual and potential e-learning user is once again confirmed (Azcorra, A; Bernardos, C.; Gallego, O and Soto, I.,

2001). We feel that women's lack of use or familiarity may be related to less positive attitudes or to the increased perception of "concerns" or difficulties.

Some differences are established with regard to the students' year group. First-year students mention uses and advantages related to more internal aspects of the learning-teaching process. They point out that e-learning would help them to have information complementary to their degree course, which may indicate some degree of autonomy in learning. They also feel that e-learning would increase the quality of learning and students' motivation. However, second-year students emphasise more external aspects of the learning and teaching process, saying that e-learning has the advantage of not having to attend classes regularly.

In future studies, we are considering studying the differences established in the type of degree course study by students in more depth, as it is a variable for consideration in the use and familiarity with technology, as well as the attitude to it. Our working hypothesis is that increase familiarity with technology is positively related to the advantages perceived in its use for learning.

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APPENDIX 1

QUESTIONNAIRE ON THE USE OF ICTS AMONG STUDENTS OF THE UNIVERSITY OF LA LAGUNA

This questionnaire forms part of a study on Information and Communication Technologies and its objective is to find out the use made of them by students at the University of La Laguna, in order to provide current response to the **training needs** in this area. It is **very important** that you follow the instructions and that you are **truthful** in your answers.

Many thanks for your help.

| | |
|---|--|
| Age: _____ Degree: _____ Highest course in which you are registered: _____ | Sex: <input type="checkbox"/> M <input type="checkbox"/> F Do you work?: <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, what do you do? _____ |
|---|--|

1. Please tell us which type of Information Technologies (ICTs) you have (you can mark several):

- Mobile phone. Computer.
 Internet. None of the above.

2. Show us which type of ICTs you use and how often:

| | Daily | 2 or 3 times a week | Once a week | Between 1 and 3 times a month | I don't use it |
|---------------------------------------|-------|---------------------|-------------|-------------------------------|----------------|
| <input type="checkbox"/> Mobile phone | | | | | |
| <input type="checkbox"/> Ordenador | | | | | |
| <input type="checkbox"/> Internet | | | | | |

3. Tell us for how long you have been using the computer:

- I don't use it 0-6 months 6-12 months 1-2 years Over 2 years

4. Tell us where you usually use the computer and how often:

| | Daily | 2 or 3 times a week | Once a week | Between 1 and 3 times a month | I don't use it |
|---|-------|---------------------|-------------|-------------------------------|----------------|
| <input type="checkbox"/> At home | | | | | |
| <input type="checkbox"/> In a cybercafe | | | | | |
| <input type="checkbox"/> At work | | | | | |
| <input type="checkbox"/> At university | | | | | |
| <input type="checkbox"/> Others _____ | | | | | |

5. What type of software or programs do you know how to use and at what level?

| | I don't know how to use it | Basic level | Intermediate level | High level |
|--|----------------------------|-------------|--------------------|------------|
| Operating systems (Windows, ...) | | | | |
| Word processors (Word, WordPerfect, ...) | | | | |
| Databases, spreadsheets (Access, Excel, ...) | | | | |
| Presentations (Powerpoint, ...) | | | | |
| Internet (Browsers, e-mail, chat, ...) | | | | |
| Educational software (English courses, ...) | | | | |
| Others (Graphic design, Image processing, ...) | | | | |

6. Rate the frequency with which you use the computer for each of the following activities (from 0= never to 10= always):

Study (Giving notes, doing work,...)

As a hobby

Work

Others: _____

7. If you have an Internet connection, how long have you been using it?:

I don't have a connection 0-6 months 6-12 months 1-2 years Over two years

8. If you use the Internet, what services do you usually use? (order them from 1='the one I use most' to 7='the one I use least')

Games, music

Chat

Search engines

E-mail

Portals

Others: _____

Press

9. Have you done any distance training using Information and Communication Technologies (ICTs)?

Yes No.

10. Have you taken any course that had a web page?

Yes

No

I don't know

11. If you receive training or advice on how to use ICTs, where does it come from? (Mark with an 'X' all the boxes you think appropriate):

From the University services

In computer academies

From other students

By myself

Friends

Others: _____

From teaching staff

12. Of the following, tell us what you would like to use ICTs for while studying (order them from 1='what I would like it for most' to 9=' what I would like it for least'):

To do tests (checking) of the subjects

To look for complementary information

To consult the subject programme

For computer classes

As support in the library

To communicate with the teacher

To communicate with classmates using forums

Others: _____

To download or have access to notes on the net

13. Now tell us what are your fears or difficulties with using ICTs during studies (order them from 1= 'what would cause me the most worry or difficulty' to 8= 'what would cause me the most worry or difficulty'):

You would feel more isolated

Lack of knowledge concerning Internet use

The relationships between people would be dehumanised

You wouldn't have your own resources (computer, Internet

You couldn't "see" the teacher and classmates

You wouldn't easily have access to media in the faculty or in the centres

You would spend less time in the study centre

Others: _____

14. Tell us what why using ICTs in study seems interesting to you (order them from 1= 'the most interesting to 8= 'the least interesting'):

I would have access to course material at any time

It would motivate me to study more

I could go at my own speed without waiting for the teacher or other classmates

It would improve the quality of teaching

I wouldn't have to always attend class

It would help classes to make progress

I could define my own study timetable for the courses

Others: _____

15. What would you ask for of an ICT-supported training programme so that you would want to use them?

a. _____

c. _____

b. _____

d. _____

**THIS IS THE END OF THE QUESTIONNAIRE.
MANY THANKS FOR YOUR HELP**