Personal-Professional Use Towards Teaching Use and ICT Integration in Higher Education.

N. Orellana[1], **I. Gastaldo**[1], **G. Almerich**[1], **M. Sobrecases**[1], **M.I. Diaz**[1], **R. Bo**[1] and **J.P. Gonzalez-Gomez**[2]

[1] Educational Technology Unit (UTE-UV) University of Valencia, Av. Blasco Ibáñez, 30, 46010 Valencia, Spain. http://ute.uv.es/ute; natividad.orellana@uv.es .

[2] University of Alicante. Dpt. Health Psychology. Apdo. Correos 99, 03080 Alicante, Spain

In this paper we show the results obtained about personal-professional use (in research and management) of ICT by faculties and ICT use and integration in their teaching. The study is based on a survey design, using a questionnaire which could be filled in paper or on web. Specifically, we focus on the section about use of different technological resources for this study. The sample refers to lecturers from university of Alicante and University of Valencia –-prototypical of some structural and contextual characteristics in Comunidad Valenciana-. Results point out an important difference between personal-professional use and teaching use and ICT curricular integration. On the other hand, the level of ICT use is higher in basic applications than in ones which require design and programming on teachers' side. Besides, this last aspect means a higher level of ICT competency. In face of the results and the European Convergence Process, we think that university faculty's training needs to be done, giving them the support and adequate training to facilitate this change of faculty's role in the Information and Communication Society

Keywords ICT use; Higher Education; European Convergence Process; Faculty

1. Introduction

The quick social changes and the technological evolution that have taken place in the last decades, together with the reflection on the educational system, that is carried out from the university, verify the necessity of and the faculty's adaptation and innovation. The European Convergence supposes a challenge for the innovation and ICT integration. ICT turn up as some good tools that make easy the teaching-learning process which is student -centered. So one of the basic priorities of the university, as educational institution, is the analysis of how to carry out these innovations, to get an education of quality.

The impact of ICTs on higher education has been considerable, but also very diverse in their effects with considerable variation between individual institutions in the use which they are making of the technologies [1]. The changes that take place are this way gradual and usually slow, related with the perception of the own institutions starting from their necessities and their demands [2].

The objective of the present work is to know the personal-professional use (in research and management) of ICT by faculties and ICT use and integration in their teaching using a similar model to ones made in other previous works [3] for the non university faculty and to be able to have a set of common indicators for the different educational levels of the Comunidad Valenciana.

2. Methodology

The questionnaire of use is part of a wider questionnaire, structured in eleven sections: teachers' characteristics, pedagogical philosophy, accessibility to the computer equipment, knowledge, use, integration, training needs as much in technological resources as in the integration of ITC, attitudes towards ICT and obstacles.

The study is based on a survey design with pilot sampling. The sample refers to faculties from university of Alicante and University of Valencia –-prototypical of some structural and contextual charac-

teristics in Comunidad Valenciana-,and it is composed of 26 teachers with 43 years old on average (26-62) and 16, 27 years old of professional experience on average (1-39).
The use is covered by three sections – see table 1 and 2- of the questionnaire: use that the teacher makes of technological resources, consists of 26 items, differing among personal-professional use (without students) -13 items- and use in the classroom (with students)-13 items. The third section, the integration of the TIC as much in the classroom as in the design of the curriculum of the educational institution, consists of 11 items. Use and integration of ICT, rated on to five point Likert scale (Use: nothing, a little, regular, enough, much; Integration: never, hardly ever, sometimes, almost always, always).
The statistical analyses, obtained by means of the program SPSS 11.5, that have been carried out are: statistical descriptive and t analysis, with the purpose of detecting the differences among personal-professional use and with the student one.

The results, collected during April 2005, were mainly gathered through on-line questionnaires http://ute.uv.es/unitic/cuestionario , besides some faculties answered and sent them to us in paper.

3. Results

3.1 Use of technological resources by faculties

Results show that there are significant differences in all technological resources between personal-professional use and teaching use- see table 1-, except for multimedia presentations and audiovisual media. Maybe these both resources are more used for personal-professional use and then use them in the classroom with students and for that reason, there is no significant differences.

In relation to the use that faculties make at level personal-professional-see table 1 and figure 1- we point out a high level of use of word processor, followed by other group of resources- Spreadsheet, Database, Multimedia presentations, Documental base and Audiovisual resources – with a medium level of use between “sometimes” and “almost always”. The rest of resources are used “a little” or “nothing”. We can say that the professors are users but non producers.

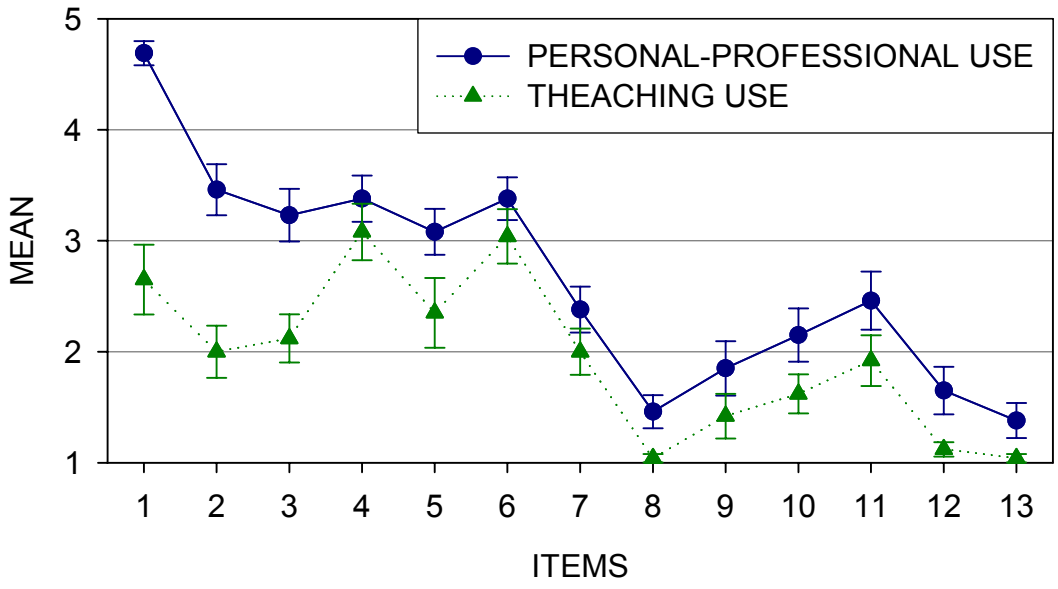

Fig. 1 *Representation of the averages (means) and standard error in the items of use (personal-professional use towards classroom use). Scale of answer:1= nothing,2= a little, 3=regular, 4=enough, 5=much*

Table 1 Results of the items on the use of technological resources at personal-professional level and at classroom level. It is noted the significance level of the difference of means in the last column.

Technological resources	personal-professional use		with classroom use with students		Sig.
	Mean	STD	Mean	STD	
1. Word processor	4,69	,549	2,65	1,599	,000
2. Spreadsheet.	3,46	1,174	2,00	1,200	,000
3. Database	3,23	1,210	2,12	1,107	,000
4. Multimedia presentations	3,38	1,061	3,08	1,294	,058
5. Documental base.	3,08	1,055	2,35	1,093	,003
6. Audiovisual means (videos, CD,.)	3,38	,983	3,04	1,248	,071
7. Educational software.	2,38	1,061	2,00	1,058	,030
8. Languages and author's systems for the design of multimedia applications	1,46	,761	1,04	,196	,005
9. Simulation programs	1,85	1,255	1,42	1,027	,019
10. Tutorial programs	2,15	1,223	1,62	,898	,016
11. Platforms or virtual environments of learning.	2,46	1,334	1,92	1,164	,001
12. Design of web pages: editors	1,65	1,093	1,12	,326	,010
13. Advanced design of web pages: languages and programs of responsibility.	1,38	,804	1,04	,196	,036

We find a similar profile to the previous one but with a lower level of use with the students in the classroom. As already we have noted, only in the use of multimedia presentations and audiovisual media we find similar use and that reaches a medium level, around “sometimes”. The other resources are used “little” or “nothing”. This implies low levels of use with the students and we should think about which are the reasons for this low use.

3.2 Integration of technological resources in curriculum and classroom

The results related to ICT integration in the curriculum design and development and educational planning and organization –see figure 2 and table 2- show us certain coherence with the results commented previously. The faculties use the technology but they create little from the technological resources.

Thus we find that the four first items are the ones that get higher scores–between “sometimes” and “almost always”- These items refer to bear in mind material and resources for the carrying-out of activities. Nevertheless, when the items refer to a greater level of integration –items 5, 6 and 7- they have lower scores –Between “sometimes” and “almost never”-.

We highlight that the item that get a smaller value is the 8 one that refers to the use of technology to carry out a more individualized training. Perhaps the faculties are wasting one of the greater potentialities of the ICT.

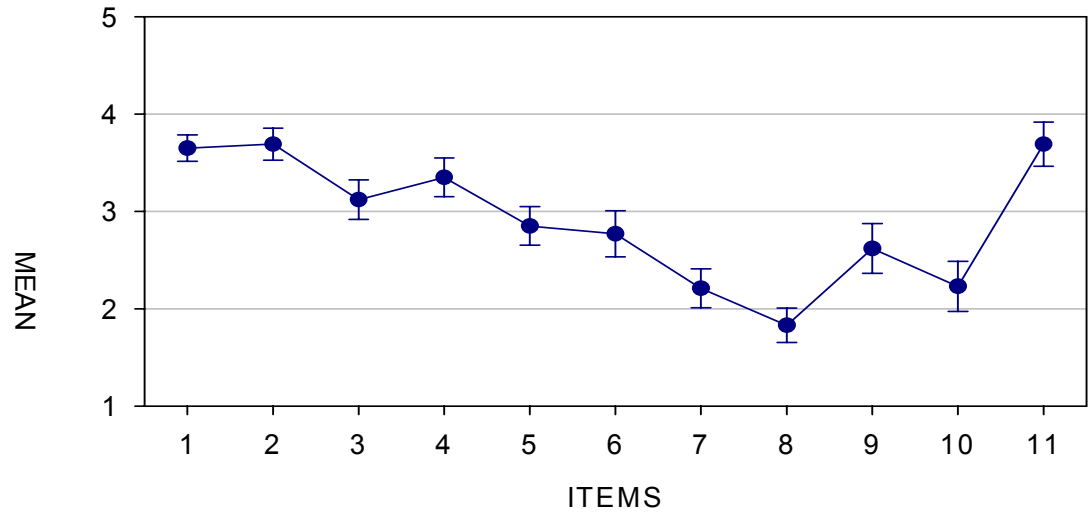

Fig. 2 *Representation of the averages (means) and standard error in the items of ICT integration. Scale of answer:1=never, 2= hardly ever, 3= sometimes, 4= almost always, 5= always.*

Table 2 Items from the section of integration of technological tools.

1. In the selection of curricular materials I take into account technological resources.
2. I evaluate the technological resources that can be beneficial for the teaching process.
3. I design curricular materials by means of technological resources.
4. I use the technology as means to carry out training activities relative to my speciality and the use of the ICT in the classroom.
5. I design learning situations in which I can use the ICT.
6. I create an environment in the classroom where the technological resources are a completely integrated component.
7. I use the technological tools as instrument of the student's evaluation.
8. I use several helping technologies and/or appropriate educational software for students with diverse educational needs.
9. I design, I coordinate and I participate in the use of the technology as form of collaboration and communication among the whole educational community (teachers, students, parents,...)
10. I participate in investigation and innovation projects through the use of different technological resources in the classroom.
11. I take into account the ethical and legal problems derived from the use of the technological resources.

4. Conclusions

It is necessary to point out that we should take the conclusions of this work with certain caution. As it is a pilot sample and it would be dangerous to do inferences from these results to the population. Even thus, and bearing in mind the results that have just been commented, we think that the faculties make a limited use of the technological resources above all in the aspect of the "production" and this aspect made that the large potentialities of the ICT in the teaching process have been wasted in Higher Education.

The use with the students is very limited. We can say that it is reduced to multimedia presentations and audiovisual resources. Perhaps they refer to these resources when they point out that they bear in mind new technologies in the planning of their subjects. But we consider that this is not enough to assume the challenges that the universities have. The group COIMBRA points out the following trends [1]:

- Growing demand more articulated of education and training (basically for adult people).
- Training models should be revised for learning more autonomous.
- Growing level of an increased awareness of the demand.
- An increase of demand of learning along the life.
- Improving the social inclusion.

It is important to bear in mind the European Convergence Process[4], in which the universities are immersed and whose objective is to highlight the importance of integrating e-learning in Higher Education and, particularly, regarding curricular development.
In face of the results and the European Convergence Process, we think that university faculty's training needs to be done, giving them the support and adequate training to facilitate this change of faculty's role in the Information and Communication Society [5].

Acknowledgements This work was founded through Project GV04-B-293 from the PVIDI Consellería de Cultura, Educación y Deporte. Generalitat Valenciana. Spain. (Regional Program R+D)

References

[1] COIMBRA GROUP OF UNIVERSITIES Report of the project "Higher Education Consultation in Technologies of Information and Communication" (HECTIC) BRUSSELS APRIL (2002) http://www.flp.ed.ac.uk/HECTIC/HECTICREPORT.PDF

[2] B. Collins and M. Van der Wende (Eds.). Models of technology and change in higher education. An international comparative survey on the current and future use of ICT in higher education. Enchede, the Netherland: CHEPS. (2002).

[3] Almerich, G., Suárez. J.M., Orellana, N., Gargallo, B., Belloch, C., Bo, R., Sáez, A., Aliaga, F., Gastaldo, I., Díaz, I., Roig, R. y González, E. Teachers' competencies in primary and secondary education. En Méndez-Vilas, A., Mesa, J. A. y Mesa, J. (Eds.): Advances in technology-based education: towards a knowledge based society. Vol. 2, 1045-1049. Consejería de Educación, Ciencia y Tecnología de la Junta de Extremadura. Badajoz. (2003).

[4] COMMISSION OF THE EUROPEAN COMMUNITIES. Proposal for a DECISION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL adopting a multi-annual programme (2004-2006) for the effective integration of Information and Communication Technologies (ICT) in education and training systems in Europe (eLearning Programme) (2002). http://europa.eu.int/comm/education/programmes/elearning/doc/dec_en.pdf

[5] Lam, I., Groep, J. Van de, Admiraal, W., Akkerman, S. Buijs, I. & Horts, S. ter. ILAB. Dutch national report. University of Utrecht: IVLOS-Centre for ICT in education. http://www.theknownet.com (2004).

...