EVALUATION OF THE IMPLEMENTATION OF ICT IN THE PROFESSIONAL TEACHING AND RESEARCH DEVELOPMENT OF UNIVERSITY FACULTY

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Abstract: This article shows results obtained after evaluating the integration of ICT in the professional, teaching and research development of university faculty members.

The research has been implemented in the frame of the IRNET European Project. A questionnaire designed ad hoc has been applied to a number of universities that join the mentioned project. The questionnaire was validated by experts from member institutions. Reliability was accomplished by using Cronbach's Alpha procedure and the coefficient obtained was 0,879. Faculty members from the University of Extremadura, Spain composed the sample.

The results confirm beliefs and attitudes of faculty staff concerning the following items: teaching, educational work, research, in-service training, professional development and understanding the role of ICT in education, knowledge of information tools.

Keywords: ICT, Higher Education, Professional development, Teaching, Research.

INTRODUCTION

In our society, teaching is becoming one of the most challenging occupations, as knowledge is expanding rapidly and modern technologies demand teachers to learn how to use such technologies to teach. While new technologies increase teachers' training needs, they are, however, not sufficient. Information and communication technology (ICT) can provide more flexible and effective ways for professional development for teachers, and connect teachers to the global teacher community (Jung 2005).

Guasch, Alvarez & Espasa attempted to shed light on the competencies a university teacher must have in order to teach in virtual learning environments. They consider the fact that a teacher training experience should involve the methodological criteria established in line with theoretical principles. The main objective in their study was to assess a conceptual-methodological framework for the design of training proposals aiming to develop teachers' competencies for virtual environments in higher education.

Others, as Harris & Sass (2007) suggest that policy investments in the quality of teachers may be related to improvements in student performance They believe that policies adopted by states regarding teacher education, licensing, hiring, and professional development may make a significant difference in the qualifications and capacities that teachers adopt in their teaching philosophies.

The international community is aware of the necessity of investing in lifelong learning for teachers, and one of their main priorities is ICTs. It is undeniable that current society requires updating teachers in order to train future students to face professional life and the labour market. E-learning and b-learning are impacting in universities in order to create more flexible curricula and target as many international students as possible. ICTs are not an option anymore; therefore it is a responsibility of every university to address the best procedures in order to train their workforce and staff to face new society's requirements. As Cech & Bures (2004, p.25) believe, "*today's economic and social changes force universities to try to find new learning approaches*".

Universities should be conscious of how their teachers utilize ICT in their training in order to easy the use of technology and facilitate updated methodologies. It is well known that specific fields of knowledge can customize technology to approach research and findings to students, nevertheless: How is this being done at the different universities analysed in this study?

The frame of the study is the "International research network for study and development of new tools and methods for advanced pedagogical science in the field of ICT instruments, e-learning and intercultural competences (IRNET)", developed by ten universities within and outside the European Union. The objective of the study is to "develop new tools for advanced pedagogical science in the field of ICT instruments, distance learning and intercultural competences" (Kommers et al., 2014). The project, designed by packages, aims in Pakage 4 the "analyses and evaluation of the level of ICT, e-learning and intercultural development in every partner countries". A number of studies were developed in order to meet objective 4. The one presented here is related to the evaluation of university faculty mentioned below.

With this in mind, the main goal of our study is to evaluate teaching, research and intercultural of the implementation of ICT by IRNET member universities' faculty.

METHODOLOGY

The design of the study is descriptive and uses surveys developed through the implementation of a questionnaire described as follows: (Cubo, Martín, & Ramos 2011).

The sample consists of faculty members from the following institutions:

1. Borys Grinchenko Kyiv University (BGKU), Ukraine.

2. Herzen State Pedagogical University of Russia, St. Petersburg.

3. University of Silesia, Katowice, Poland.

4. University of Ostrava (OU), Czech Republic.

5. Constantine the Philosopher University in Nitra (UKF), Slovak Republic.

6. University of Extremadura, Spain.

The results showed in this article are based on 34 responses by University of Extremadura (Spain) professors. The reference population is 1.911 university professors and the return rate is 1,77%. The distribution by employment status is:
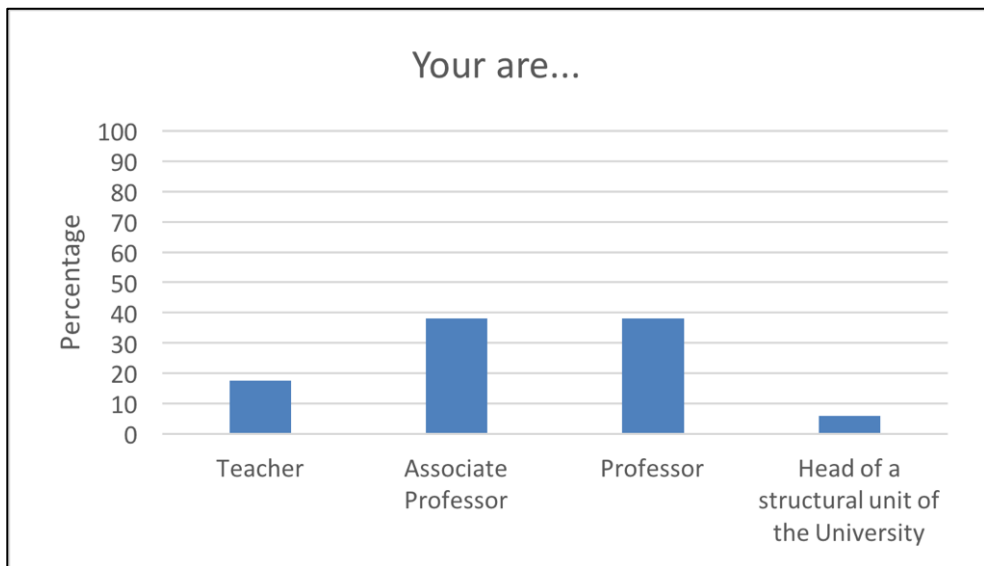

Figure 1. Faculty distribution by professional status

The applied questionnaire was composed by 18 grouped questions in a 4-dimesion structure:

1. Teaching, educational work.

2. Research.

3. In-service training, professional development.

4. Understanding the role of ICT in education, knowledge of information tools.

The complete version of the questionnaire can e located at:

https://docs.google.com/document/d/1KhC-_eZuJ9EsRmdZLLchYIkfD3iy8Nr BZC0PYzIRZmA/edit?usp=sharing

Every dimension contains multiple choice questions, valuation questions trough a 5-point Likert scale. The questionnaire was implemented on line through resources and tools offered by University of Silesia, Katowice, Poland.

The validity of the questionnaire was achieved by consulting with faculty members of IRNET joining institutions. A query procedure was developed in order to agree upon the structure and content of the questionnaire from the first to the latest version.

The reliability was obtained by means of using Cronbach's Alpha coefficient. Results shown below indicate an appropriate credibility:

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,879	,874	18

Figure 2. Questionnaire's reliability

RESULTS

Results achieved from some of the four dimensions' most representative are shown below.
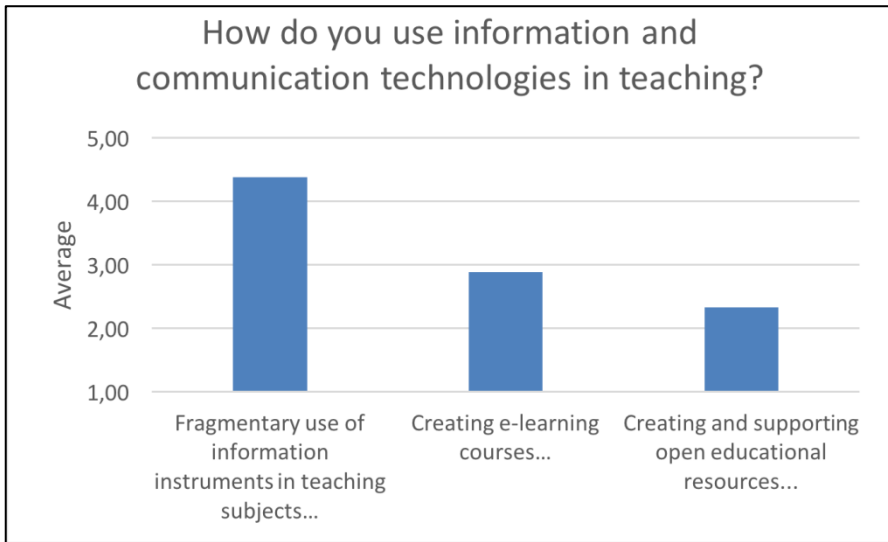
Dimensión 1. Teaching, educational work.

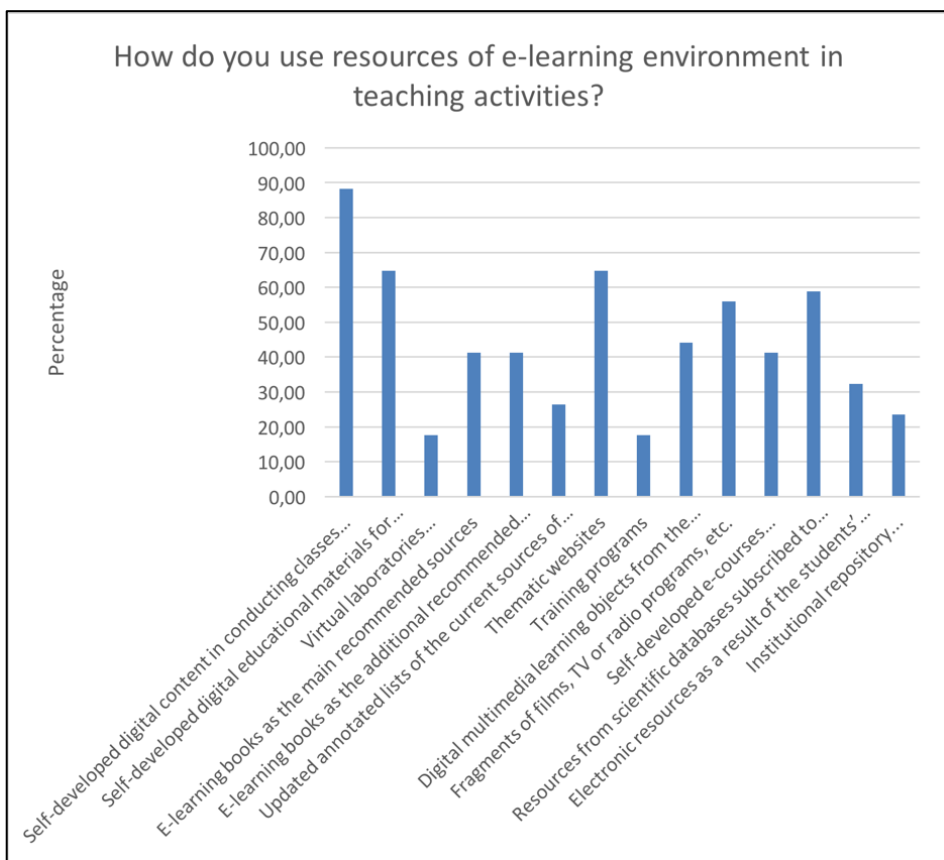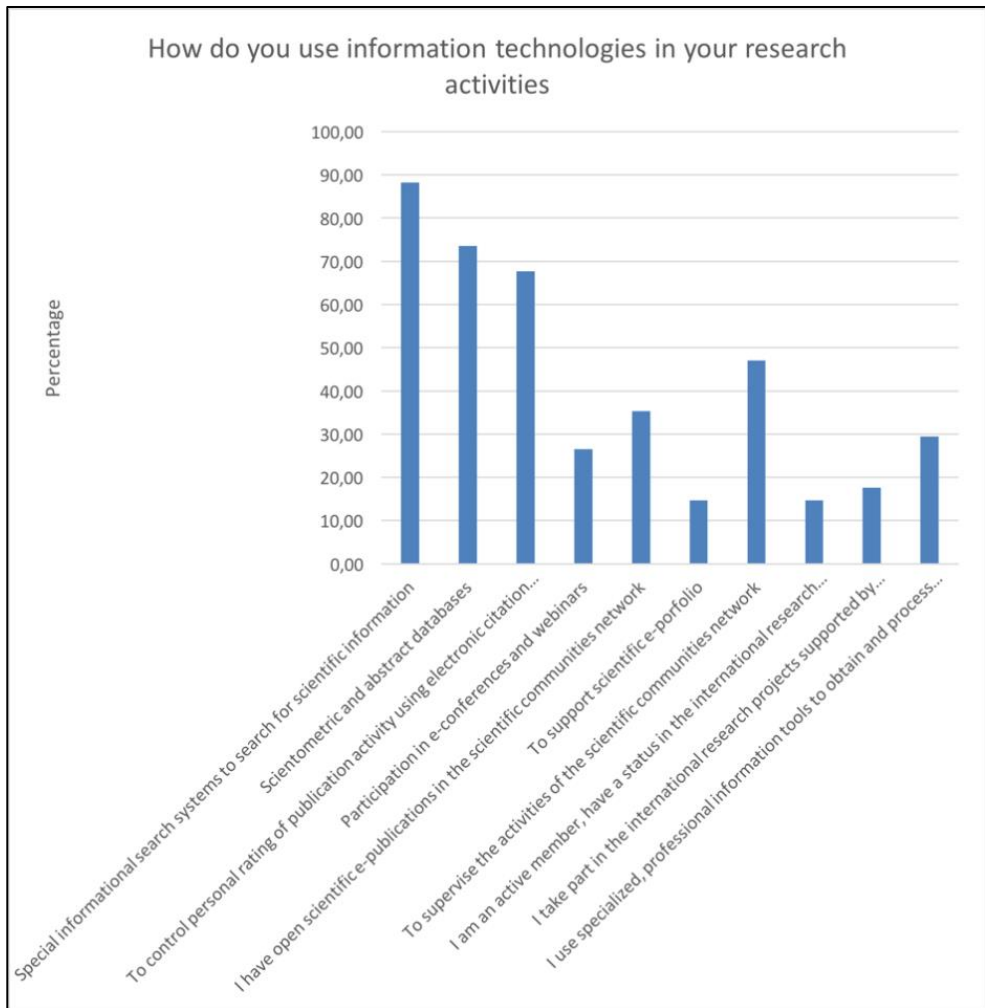**Figure 3.** Use of information and communication technologies in teaching

Figure 4. Use of resources of e-learning envionment in teaching activities

Dimensión 2. Research.

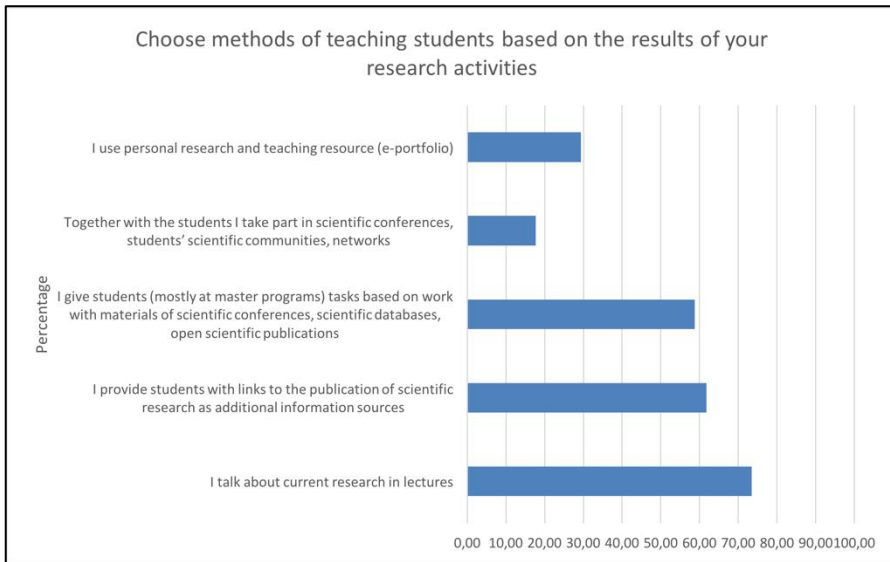**Figure 5. Use of information technologies in the research activities**

Figure 6. Methods of teaching students based on the results of the research activities

Dimension 3. In-service training, professional development.
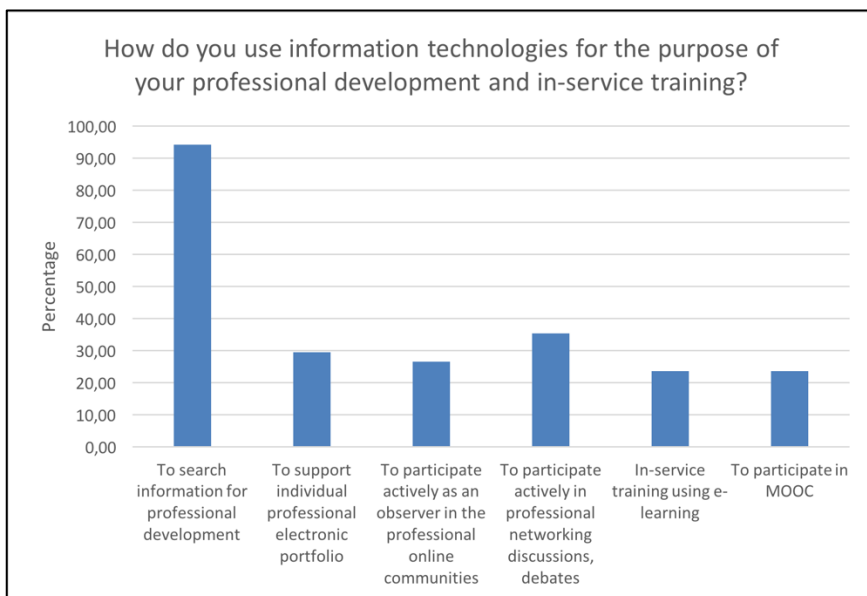

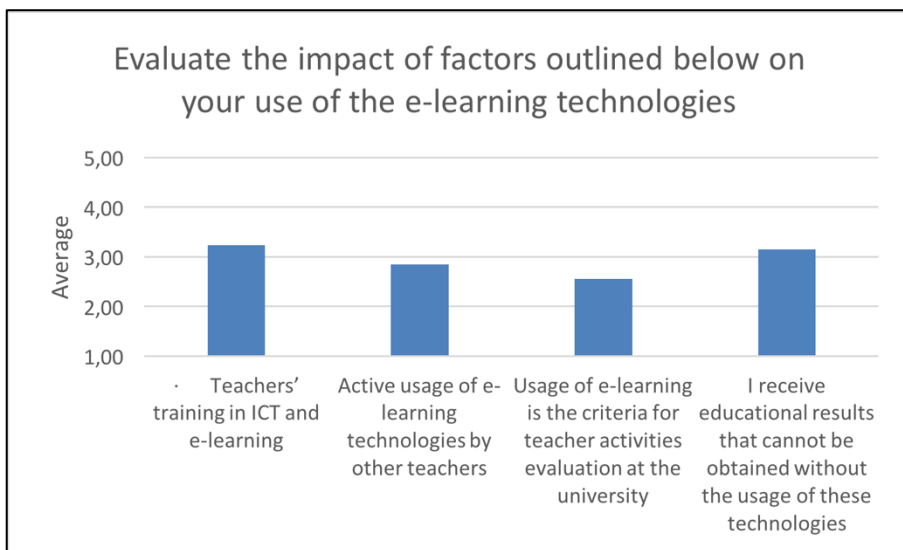**Figure 7. Use of information technologies for the purpose of the profesional development**

Figure 8. Impact of these factors on the use of the e-learning technologies

Dimension 4. Understanding the role of ICT in education, awareness of information tools.
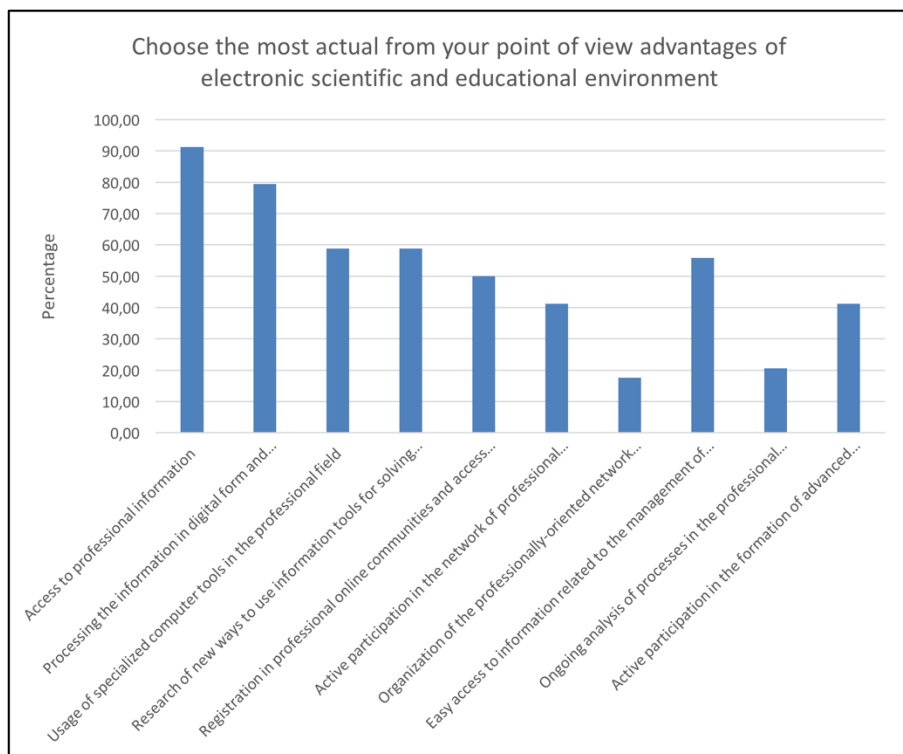

Figure 9. Advantages of electronic scientific and educational environment
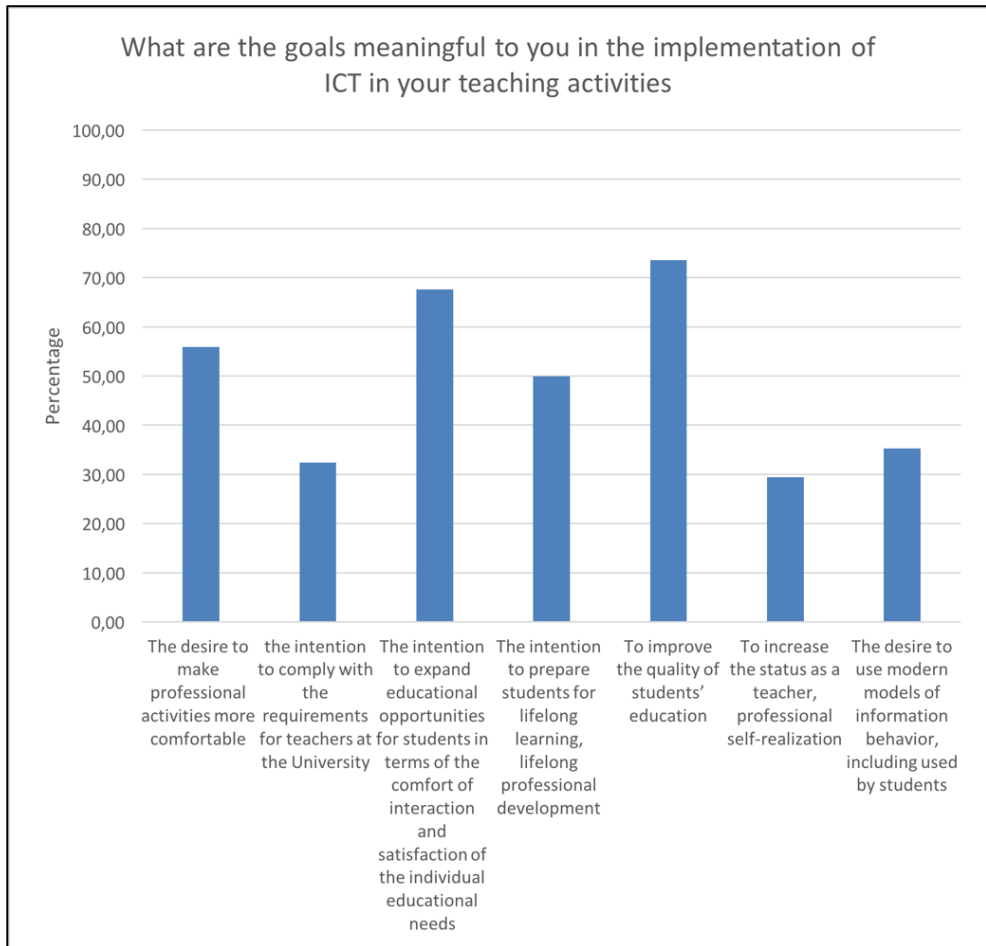
Figure 10. Goals meaningful in the implementation of ICT in the teaching activities

Finally, the relation between faculty members' professional status and the valuation of the university´s facilities.
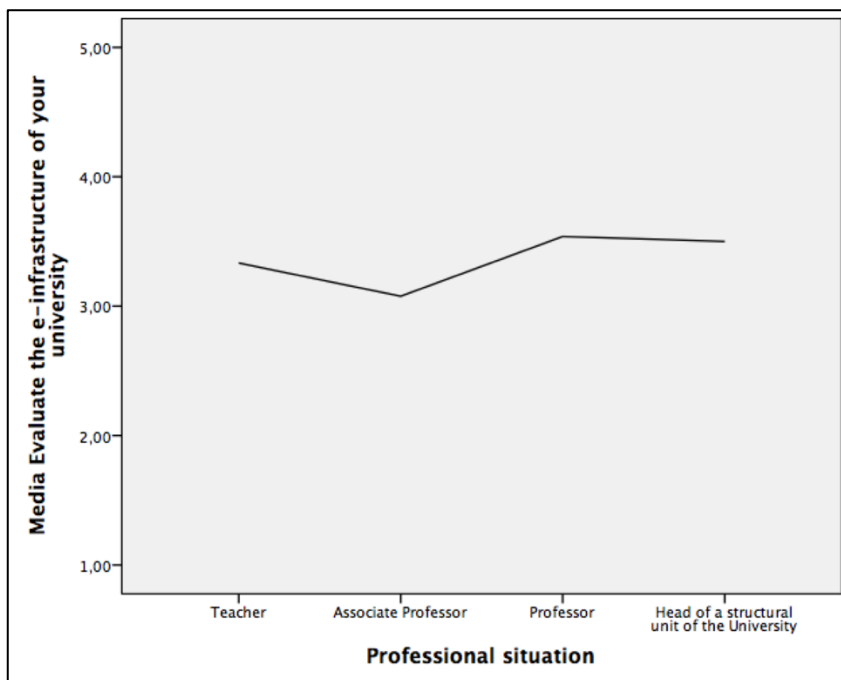
Figure 11. Relation between faculty members' professional status and the valuation of the university´s facilities

Test H by Kruskal-Wallis informs that the null hypothesis has been accepted and there are no significant differences statistically speaking between faculty professional status and their opinions on university's digital facilities and e-infraestructure.

Test statistic[a,b]

	Evaluate the e-facilities of your university
Chi-cuadrado	1,400
gl	3
Sig. asintót.	,706

a. Test H by Kruskal-Wallis

b. Grouping variable: Professional status

Figure 12. Test H Kruskal-Wallis

CONCLUSION

Considering the size of the sample, the results obtained should be considered exploratory, in other words, regarded as indicators of opinions and attitudes of university faculty on the significance of ICT regarding professional, teaching, and research development of university faculty members.

Bearing in mind the difficulties to elaborate a questionnaire among a number of universities that belong to different linguistic and cultural contexts. The instrument employed can be considered to be a starting point for this study.

The results obtained indicate that in faculties' opinions:

- In the teaching-learning processes, ICT are principally used for digital presentations and for the communication with students.

- University e-learning resources are mainly employed to share class presentations, information and teaching material with students.

- For research activities, ICT are primarily employed to search for scientific information and to evaluate scientific production.

- Results of research activity are useful and for teaching.

- Regarding professional development of ICT, they have an essential impact in the training of professors.

- The most relevant aspect of ICT in education is related to the Access to information and with the possibility to utilize digital tools such as Office, email, etc.

- The main objectives to employ ICT in education are to enhance the quality of education as well as student's ICT competences.

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