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DO GENDER AND AGE AFFECT THE LEVEL OF DIGITAL COMPETENCE? A STUDY WITH UNIVERSITY STUDENTS

¿Condicionan el género y la edad el nivel de competencia digital? Un estudio con estudiantes universitarios

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ABSTRACT

The characteristics of Information and Communication Technologies (ICT) and their implementation at a global level have led to significant changes in different areas, especially institutional ones. This article presents the results of a research study whose purpose was to observe the level of digital competence of university students of education and to verify whether the variables of gender and age have any influence on it. A quantitative methodology was used, with a non-experimental, descriptive and inferential method, and the digital questionnaire was employed as an instrument for collecting information on the dimensions of knowledge and management of ICT as well as attitudes towards them. The data were analyzed based on a comparison of mean values, using non-parametric tests. The results show that the sample studied self-evaluated their knowledge of ICT concepts negatively, considered their management of devices, tools and services positively, and showed a very positive attitude toward technology. Regarding the variables studied, significant differences were found in favor of men in relation to knowledge and management, and in favor of older respondents with regard to attitude.

Key words: Digital competence, Information and Communication Technologies, initial training, gender, age.

RESUMEN

Las características de las Tecnologías de la Información y la Comunicación (TIC) y su implantación a nivel global han originado cambios significativos en diferentes ámbitos, de manera especial en los institucionales. En este artículo se presentan los resultados de una investigación cuyo propósito es el de conocer el nivel de competencia digital de estudiantes universitarios de titulaciones de educación y verificar si las variables de género y edad tienen alguna influencia en el mismo. Se empleó una metodología cuantitativa, con un método no experimental, descriptivo e inferencial, y el cuestionario digital como instrumento para la recogida de información sobre las dimensiones de conocimiento, manejo y actitudes hacia las TIC. Los datos fueron analizados a partir de una comparación de medias, uti-

lizando pruebas no paramétricas. Los resultados manifiestan que la muestra estudiada se autoevalúa de manera negativa en el conocimiento de conceptos TIC, positivamente en el manejo de dispositivos, herramientas y servicios, mostrando una actitud muy positiva hacia la tecnología. Respecto a las variables estudiadas, existen diferencias significativas en el conocimiento y el manejo, a favor de los hombres y respecto a la actitud, a favor de los sujetos de mayor edad.

Palabras clave: Competencia digital, Tecnologías de la Información y la Comunicación, formación inicial, género, edad.

1. INTRODUCTION

In 1997, Castells wrote: «for the first time in history, the human mind is a direct productive force and not just a decisive element in the production system» (1997, p. 62). Currently, this statement is still in effect and can be interpreted within the context of a society in which economic and social changes have transformed its material basis, and where information processing and transfer have become essential pillars of productivity and power. Here, the essence of productive processes is based on the knowledge of individuals (Alonso, 2013, Castells, 2006).

In this scenario which we call the Information and Knowledge Society, which is characterized by its complexity and its increasing globalization, Information and Communications Technologies (ICT) have originated deep changes on the construction of knowledge and learning (Guillén, 2014), which reveal the need to implement a different training of the industrial and post-industrial society (Cabero, 2014; Gisbert, Spuny & González, 2011), which develops new knowledge, procedures and attitudes, and in which digital competence is an essential element for academic literacy (Roldán & Zabaleta, 2016).

The characteristics of ICT and their global implementation have led to significant changes in different areas, and particularly in the field of institutions. The possibility to store information and to transmit it fast, the disappearance of space and time barriers or the use of multiple media and formats, among others, are some of the characteristics that explain the enormous transformative potential presented by these technologies.

In this context, it seems necessary to include the following into the list of essential skills that university students must develop: (a) competence to understand complex concepts and problems; (b) digital literacy; (c) advanced use of ICT; (d) social and communicative abilities for personal, social and professional development; (e) collaborative work (Dumont, Istance & Benavides, 2010).

The European Union (2007) defines eight fundamental skills for continuous training, which includes digital competence with the following definition:

> set of skills, attitudes, strategies, awareness and knowledge required to use ICT and digital media to perform tasks; solve problems; communicate; manage information; collaborate; create and share contents; and build knowledge in a way that is effective, efficient, appropriate, critical, creative, autonomous, flexible, ethical, reflective for work, leisure, participation, learning and socialising (Ferrari 2012, p. 30).

Over the last years, different research studies have analyzed self-assessed digital competence in the field of education and in different contexts and levels (Cabezas, Casillas & Pinto, 2014; Edelhard, 2015; Fernández, Román & El Homrani, 2017; Fernández & Torres, 2015; Maderick, Shaoan, Hartley & Marchand, 2015; Mork & Krumsvik, 2016; Rambousek, Stìpek & Vanková, 2016). Other studies have focused on the influence between different factors and digital competence (González, Galvis & Sánchez, 2015; Nasah, DaCosta, Kinsell & Seok, 2010; Ricoy, Feliz & Sevillano, 2010). As a result of

these two lines of work, this article presents the results of a study that was carried out to know the level of digital competence of university students of education and to verify whether the variables of gender and age have any influence on it.

It is necessary to include digital competence as a transversal skill in the initial stages of professionals in the field of Education, because they will have to perform their duties in a complex and interconnected world that is constantly facing fast-paced technological, cultural, economic, information and demographic changes (Kampylis, Prunie & Devine, 2015).

2. Objectives

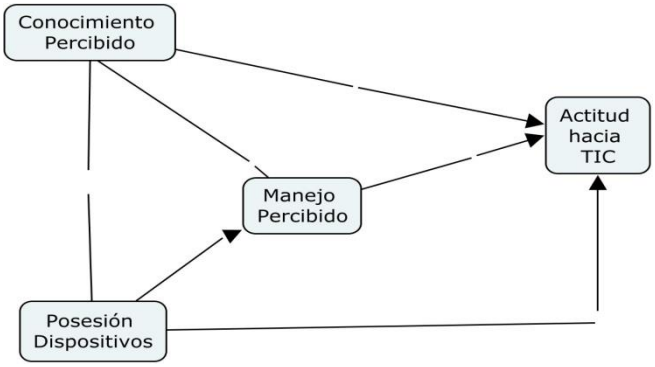
The main objective of this study is to know the level of digital competence shown by university students in different undergraduate and graduate programs of the Faculty of Psychology and Sciences of the University of Porto (Portugal).

From an operative perspective, we want to find out whether their self-perceived knowledge, management and attitudes towards ICT differ based on the variables of gender and age.

3. Methods

The study used a quantitative non-experimental, descriptive and inferential methodology (Arnal, del Rincón & Latorre, 1992; Kerlinger & Lee, 2002), and the collection of data was performed through a digital questionnaire (Berends, 2006; Kerlinger & Lee, 2002). The dimensions analyzed in the study are shown in figure 1.

Fig. 1. Research model



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3.1. Sample

The collection of data was targeted at all the students of Education who were studying an undergraduate or graduate course in the Faculty of Psychology and Education Sciences of the University of Porto (Portugal). With simple randomized sampling (Fraenkel, Wallen & Hyun, 2012), the final sample included 70 students (Table 1), 13.4% of whom were men and 86.6% were women, with ages

ranging from 18 to 57 years. 22.4% of the subjects come from a rural environment and 77.6% from an urban environment.

Table 1. Degrees studied by the subjects

DEGREES TAKEN BY STUDENTS IN THE SAMPLE
Undergraduate
Equivalência à licenciatura
Licenciatura contabilidade e gestao
licenciatura de Tradução e Interpretação em Língua Gestual Portuguesa
Licenciatura Educação Básica
Licenciatura em Matemática (Ensino de)
Licenciatura em terapêutica da fala
Master's Degree
Mestrado Educação Especial: Multideficiência e Problemas de Cognição
Mestrado Educação Pré-Escolar
Mestrado Educação Pré-Escolar e Ensino do 1º Ciclo do Ensino Básico
Mestrado em Ensino do 1º e 2º ciclo do Ensino Básico
Mestrado Ensino do 1.° Ciclo do Ensino Básico e de Matemática e Ciências Naturais no 2.° Ciclo do Ensino Básico
Mestrado Estudos Profissionais Especializados em Educação - Especialização em Administração das Organizações Educativas

Source: Compiled by author

In the group of future education professionals in the sample, 98.5% have a laptop, 82.1% have a smartphone, 59.7% have a desktop computer, 74.6% have a digital photographic camera for personal use, and 59.7% and 56.7% have a tablet and a global positioning system (GPS) device, respectively. There are less participants with a digital video camera (35.8%), and almost none of them have an e-book reader (9%). Only 6% have some type of wearable or electronic device that is attached to any part of the body and interacts constantly with the user and with other devices in order to perform some specific function.

3.2. INSTRUMENT TO COLLECT INFORMATION

We used a direct, pre-coded and cross-sectional questionnaire which was designed *ad hoc* for the analysis of the knowledge, management skills and attitudes towards ICT of university students.

This instrument includes 91 items, three of which were identification variables. Two scales were used: a closed, dual scale with yes/no options and a Likert scale from 1 to 10 to assess the items as if it were an academic assessment (with which students are familiarized). In the section about the management of devices, the scale describes 1 as "very incompetent" and 10 as "very competent"; in the section about attitudes, 1 is defined as "strongly disagree" and 10 as "strongly agree". The initial questionnaire was improved after a pilot experiment and it was submitted to a panel of experts for validation. In order to ensure that the students completed the questionnaire correctly and individually, it was administered directly by the researchers. The reliability of the scale, measured with Cronbach's alpha, was very satisfactory ($\alpha = .963$).

All the competences analyzed from the different items in the questionnaire are classified into five general sections:

Section 1. Identification (ID). Data to identify the respondents: gender, age, place of origin, level of studies completed by the parents, university entrance mark, degree and year of studies.

Section 2. Possession (PS). ICT devices they have.

Section 3. Knowledge (KN). Self-assessment of their knowledge about concepts related to ICT (KN_01) and of their knowledge about ICT devices (KN_02).

Section 4. Management (MG). Self-assessment of their ability to manage ICT devices (MG_01), ICT tools (MG_02) and ICT services (MG_03).

Section 5. Attitude (AT). Assessment of ICT according to their needs and their importance in their future career in Education.

3.3. ANALYSIS OF DATA

The statistical analysis was performed with the Statistical Package for the Social Sciences (SPSS v.22), and the data were subject to inferential analysis through a comparison of average values with the non-parametric Mann-Whitney U test for the dual variable of gender and the non-parametric Kruskal-Wallis test for the variable of age.

These tests were used due to the size of the sample and after verifying that there were no signs of normality with the Kolmogorov-Smirnov test and of homogeneity of variance with Levene's test.

4. RESULTS

This section is divided into two subsections. On the one hand, we present the results obtained with the descriptive analysis of data, and on the other, the results obtained with the inferential analysis. These results focus on sections 3, 4 and 5 (KN, MG and AT).

4.1. DESCRIPTIVE ANALYSIS

4.1.1. KNOWLEDGE ABOUT ICT CONCEPTS AND DEVICES (KN)

Table 2 shows the basic descriptive statistical results of the self-assessment provided by students of their knowledge about ICT concepts and devices.

Table 2. Descriptive statistical results about ICT knowledge.

KNOWLEDGE (KN)				
Concepts (KN_01)	**$\bar{x}$**	**SD**	**Minimum**	**Maximum**
Sei o que são as TIC (Tecnologias da Informação e da Comunicação)	**8.82**	1.585	4	10
Sei o que são as TAC (Tecnologias da Aprendizagem e do Conhecimento)	4.42	2.960	0	10
Sei o que são as TEP (Tecnologias para o Empoderamento e a Participação)	2.34	2.626	0	10
Sei o que é a Web 2.0	3.76	3.504	0	10
Sei o que é Web 3.0	3.75	3.560	0	10
Sei o que é Wikipedia	**9.49**	1.006	6	10
Sei o que é a blogosfera	**6.28**	3.700	0	10
Sei o que são é um podcast	4.99	3.776	0	10

Sei o que é um marcador social	3.64	3.467	0	10
Sei o que é a sindicação ou a redifução web	1.90	2.394	0	8
Sei o que é um mashup	2.57	3.281	0	10
Sei o que é um objecto de aprendizagem	6.43	3.201	0	10
Sei o que é o E-learning	**7.69**	3.056	0	10
Sei o que é o M-learning	3.51	3.665	0	10
Sei o que é o B-learning	**5.30**	4.000	0	10
Sei o que é um MOOC	1.40	2.431	0	10
Sei o que é o armazenamento numa nuvem	**7.42**	3.702	0	10
Sei o que é a realidade virtual (RV)	**6.42**	3.363	0	10
Sei o que é a realidade aumentada (RA)	4.12	3.629	0	10
Sei o que é o copyleft	1.76	2.877	0	10
Sei o que é uma licença Creative Commons	1.51	2.464	0	10
Sei o que é a brecha digital	1.64	2.353	0	10
Sei o que é a E-exclusão	3.60	3.774	0	10
Sei o que é a E-inclusão	3.72	3.741	0	10
Sei o que é a alfabetização digital	4.84	3.616	0	10
Sei o que é o ciberativismo	4.16	3.383	0	10
Sei o que é a E-participação	3.37	3.274	0	10
Sei o que é o empoderamento	2.76	3.238	0	10
ICT Devices (KN_02)	**$\bar{x}$**	**SD**	**Minimum**	**Maximum**
Sei o que é uma tablet	**9.52**	1.133	4	10
Sei o que é um Smartphone	**9.63**	.850	6	10
Sei o que é um e-Book	**8.48**	2.727	0	10
Sei o que é uma PDI (Lousa Digital Interactiva/Quadro Branco Interativo)	**7.78**	3.316	0	10
Sei o que é um GPS	**9.40**	1.244	5	10
Sei o que é um wearable (que se pode levar ou mesmo vestir)	3.81	3.967	0	10

Source: Compiled by author

Students do not know most concepts related to technology (KN_01). They rate themselves with the highest marks when they are asked about the concept of Wikipedia (9.49), followed by their knowledge about ICT (8.82), e-learning (7.69) and cloud storage (7.42). They reveal lower scores when they are asked about their knowledge of the blogosphere, virtual reality and b-learning. In the remaining items, they rate their answers below 5 points.

When they are asked about their knowledge of devices (KN_02) their assessment is much higher. They give themselves very high marks when asked about their knowledge of a Smartphone, an eBook reader, a GPS, a tablet and an interactive digital whiteboard, but they admit not knowing what a wearable device is.

4.1.2. MANAGEMENT OF ICT DEVICES, TOOLS AND SERVICES (MG)

With regard to the management of devices (MG_01), they gave themselves generally high scores (Table 3) over 7 points, and they consider that they have a high capacity to manage computers and tablets, and a lower capacity to manage eBook readers. They give themselves a very low score, below 5 points, with regard to the management of wearables.

Table 3. Descriptive statistical results about the management of ICT devices

MANAGEMENT (MG)				
Devices (MG_01)	**$\bar{x}$**	**SD**	**Minimum**	**Maximum**
Sei usar computadores	8.88	1.581	4	10
Sei usar uma câmara digital de fotos	8.66	1.771	2	10
Sei usar uma câmara vídeodigital	7.90	2.541	0	10
Sei usar smartphones	8.58	2.203	1	10
Sei usar tablets	8.82	1.833	2	10
Sei usar um leitor de eBooks	6.21	3.391	0	10
Sei usar um GPS	7.87	2.552	0	10
Sei usar wearables	2.45	3.032	0	10

Source: Compiled by author

If we consider tools (MG_02), the scores are still high (Table 4). The respondents consider that they have the capacity to manage the ICT tools in the study, particularly in the case of social networks, communication tools (WhatsApp, e-mail, videoconference, chats, forums, etc.) and text editing tools. The worse scores refer to the management of tools to edit image and sound. If we focus on the standard deviations, we can observe that they are high in most cases, which shows that there is not a consensus regarding the responses.

Table 4. Descriptive statistical results about the management of ICT tools

MANAGEMENT (MG)				
Tools (MG_02)	**$\bar{x}$**	**SD**	**Minimum**	**Maximum**
Sei usar ferramentas informáticas de escritório (processadores de textos, apresentações, bases de dados, folhas de cálculo...)	**7.96**	2.041	2	10
Sei usar ferramentas de edição de imagem, som, vídeo...	6.85	2.548	0	10
Sei usar ferramentas de procura e documentação (buscadores, publicações eletrônicas, recursos didáticos, objectos de aprendizagem...)	7.72	2.282	0	10
Sei usar ferramentas de trabalho em colaboração (blogs, wikis, webquest, google drive, outlook...)	7.39	2.283	1	10
Sei usar ferramentas de organização do tempo (calendário o agenda eletrônica, programação de reuniões, programação de eventos...)	7.28	2.610	0	10
Sei usar ferramentas de comunicação (whatsApp, correio eletrónico, videoconferência, chat, foros...)	**8.12**	2.273	0	10
Sei usar ferramentas para a formação (plataformas e-learning, moodle...)	7.48	2.414	0	10
Sei usar ferramentas de armazenamento na nuvem (Dropbox, OneDrive, GoogleDrive, Box...)	7.54	2.721	0	10
Sei usar redes sociais (faceBook, twitter, linkedin, instagram, youtube...)	**8.70**	1.784	1	10

Source: Compiled by author

The self-assessment of their use of services (MG_03) shows very varied results (Table 5), with large differences between different students. One surprising result due to the low score it shows is the assessment they make about the management of WhatsApp instant messaging services. They often use Facebook, but not Twitter. They also assess, with a mark close to 7, their management of the Internet to publish and share photos and videos, and to a lesser extent, to share and publish presentations. They rate themselves below a 5 when they refer to sharing and publishing audio files, and consulting and publishing on wikis. They admit not having a blog or their own websites, and they are also not familiar with cloud storage.

Table 5. Descriptive statistical results about the management of ICT services

MANAGEMENT (MG)				
Services (MG_03)	**$\bar{x}$**	**SD**	**Minimum**	**Maximum**
Utilizo a rede social Twitter	.91	2.353	0	10
Utilizo a rede social FaceBook	8.19	2.955	0	10
Utilizo WhatsApp	5.60	4.053	0	10
Utilizo serviços da Internet para publicar e partilhar fotografias digitais	6.63	3.554	0	10
Utilizo serviços da Internet para publicar e partilhar vídeos	5.70	3.750	0	10
Utilizo serviços da Internet para publicar e partilhar apresentações	5.16	3.768	0	10
Utilizo serviços da Internet para publicar e partilhar arquivos de audio	4.07	3.661	0	10
Utilizo serviços de chat, comunicação, videoconferência (Skype, Gooogle Hangouts...)	6.33	3.431	0	10
Tenho o meu próprio blog	1.12	2.821	0	10
Tenho o meu próprio sitio web	.75	2.312	0	10
Consulto wikis	2.70	3.402	0	10
Publico conteúdos nas wikis	.57	1.777	0	10
Utilizo serviços da Internet para agregar e alojar conteúdos (Diigo, Mr. Wong, Delicious)	.54	1.761	0	10
Utilizo a nuvem para alojar e partilhar arquivos (Google Drive, One Drive, Dropbox, Box...)	6.28	3.334	0	10

Source: Compiled by author

4.1.3. ATTITUDE TOWARDS ICT

Their attitude is very positive for all items (Table 6). If we focus on the mean values for each of the items in this variable, the respondents consider that ICT are necessary and useful for their future career (8.43), and that they will help them to save efforts both in their academic situation at the University and in their future career (8.07 and 7.87, respectively). Similarly, they believe that the use of ICT can help them in their professional development and they can be a useful tool to continue with their education (8.48 and 8.09). To a lesser extent, they declare that ICT are a cold and distant medium (5.75).

Table 6. Descriptive statistical results about their attitude towards ICT

ATTITUDE TOWARDS ICT (AT)				
	$\bar{x}$	SD	Minimum	Maximum
As TIC são um meio de comunicação frio e distante. Não há nada como o face a face	5.75	2.566	0	10
As TIC são necessárias e úteis para a minha futura profissão de educador	8.43	1.734	3	10
As TIC ajudam-me a economizar o esforço e o trabalho académico durante o meus estudos	8.07	2.055	2	10
As TIC ajudar-me-ão a economizar o esforço e o trabalho na minha futura vida profissional como Educador	7.87	2.138	2	10
As TIC são um meio útil que me ajudarão a continuar a minha formação como futuro profissional da Educação	8.48	1.778	3	10
É necessário que as TIC se convertam em ferramentas habituais no desenvolvimento profissional do Educador	8.09	2.158	3	10
O Educador tem de ser um profissional competente para utilizar as TIC na sua profissão	7.96	1.829	3	10
Sinto-me preparado para integrar as TIC no meu futuro profissional como Educador	8.16	2.086	2	10

Source: Compiled by author

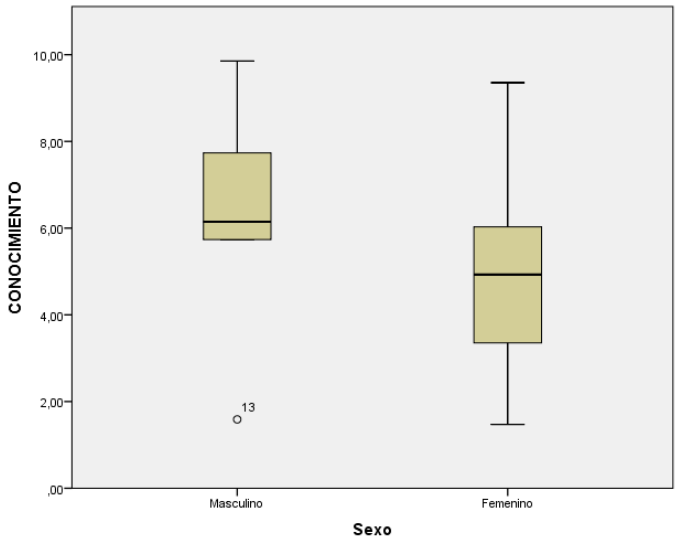
4.2. INFERENTIAL ANALYSIS

We present here the results of the comparison of mean values according to the variables of gender and age, and we discuss the significant differences found in this inferential analysis.

4.2.1. GENDER AS A DIFFERENTIATING VARIABLE

Men give themselves higher marks than women in the knowledge section (KN) (Figure 1), with higher scores regarding their knowledge about ICT concepts and devices than women, whose knowledge does not reach a score of 5.

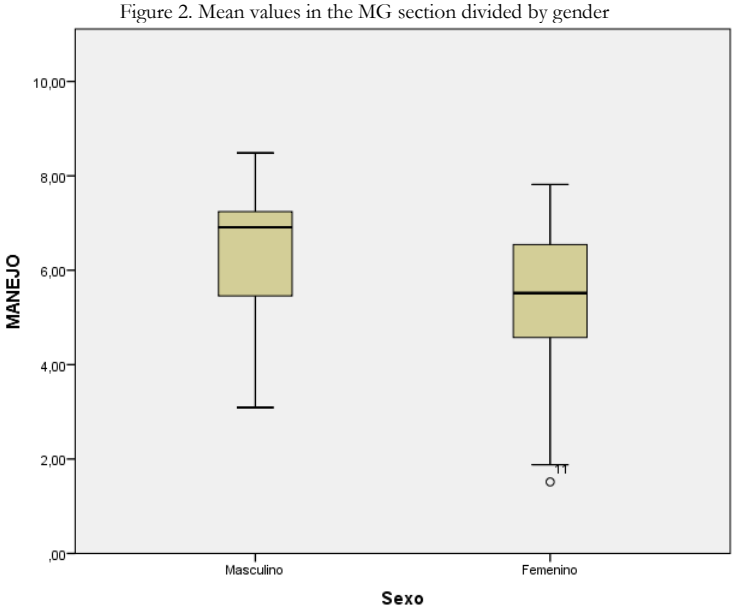
Figure 1. Mean values in the KN section divided by gender



Source: Compiled by author

With regard to management (MG), men show again better self-perception in this section (Figure 2), with regard to the management of devices, tools and services. Future female teachers believe that they manage technology more poorly, and give themselves an average of around 5 points.

Figure 2. Mean values in the MG section divided by gender



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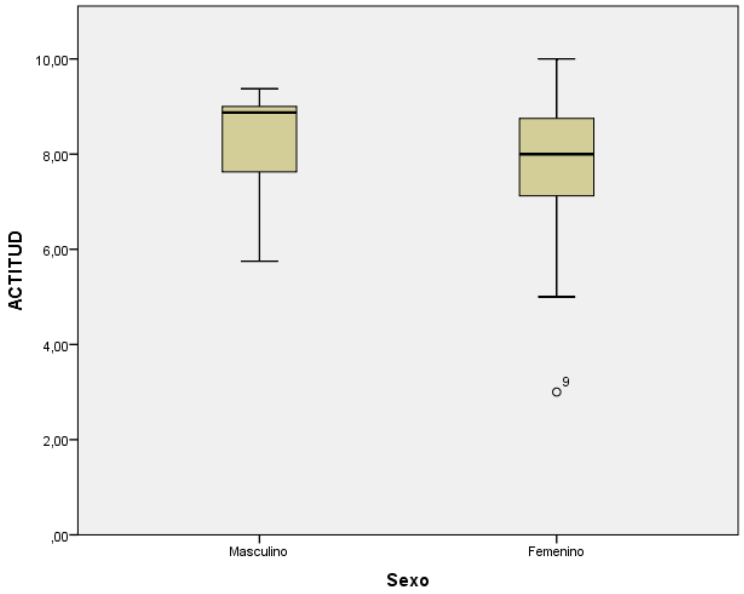
And men also show a better attitude towards ICT (AT) (Figure 3), but with smaller differences between both groups in this case.

Figure 3. Mean values in the AT section divided by gender.



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Therefore, we can verify the existence of differences based on gender. After applying the Mann-Whitney U test, we can only observe statistical significance in the responses related to the sections of KN (p=.016) and MG (p=.047) (Table 7).

Table 7. Mann-Whitney U test with regard to the gender variable.

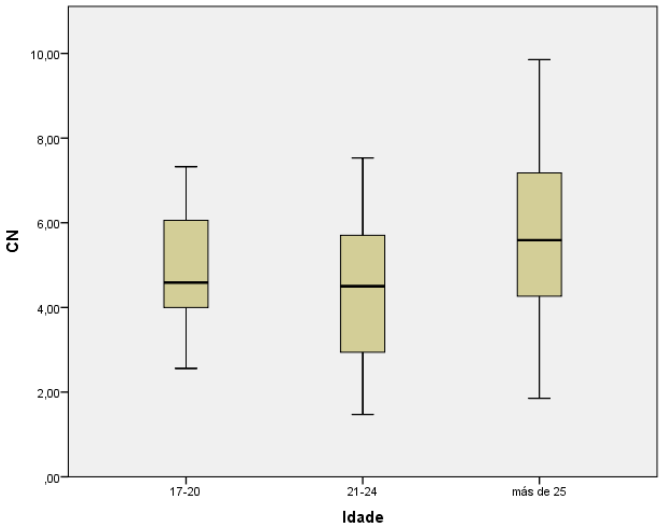
Dimensions	**Gender**						
	U	**Z**	**p.**	**Men**		**Women**	
				$\bar{x}$	SD	$\bar{x}$	SD
KN	129.500	-2.418	.016	6.44	2.29	4.78	1.76
MG	153.000	-1.986	.047	6.45	1.70	5.40	1.40
AT	205.000	-1.031	.303	8.27	1.13	5.54	1.42

Source: Compiled by author

4.4.2. AGE AS A DIFFERENTIATING VARIABLE

In the first section (KN_01) related to their knowledge about ICT concepts, the scores are higher in students over 25 years old, which are the oldest in our sample (Figure 4).

Figure 4. Mean values in the KN section divided by age



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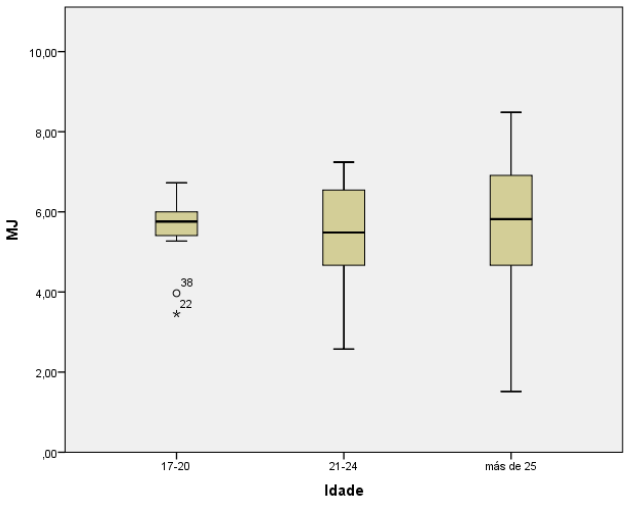
With regard to the management of devices (MG_01), tools (MG_02) and services (MG_03), we observe that older students are once again the ones that show slightly higher scores than the rest of the subgroups in our analysis (Figure 5).

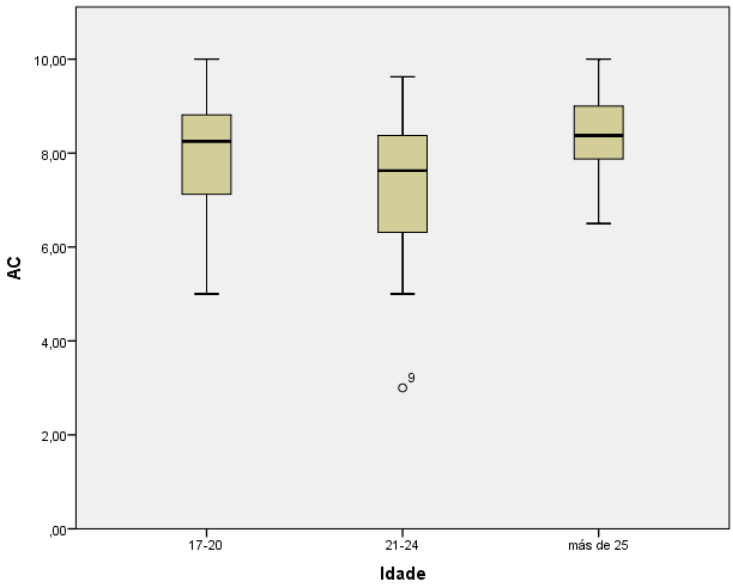
Figure 5. Mean values in the MG section divided by age



Source: Compiled by author

With regard to their attitude (AT), the oldest students (+25 years) are the most positive subgroup, followed by the youngest ones (17-20 years). The group between 21 and 24 years old show the worst attitude towards ICT (Figure 6).

Figure 6. Mean values in the AT section divided by age



Source: Compiled by author

The Kruskal-Wallis test shows that the only significant results ($p<.05$) are the differences in the AT dimension. Differences in the KN and MG sections are not significant (Figure 8).

Table 8. Kruskal-Wallis test divided by age

Dimensions	**Age**								
	Chi-squared	**gl**	**p.**	**17-20 years**		**21-24 years**		**Over 25 years**	
				$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
KN	4.26	2	.118	4.98	1.52	4.38	1.81	5.59	2.00
MG	.735	2	.692	5.50	.97	5.42	1.35	5.67	1.75
AT	8.920	2	.012	7.82	7.24	8.42	1.57	8.42	.80

Source: Compiled by author

5. CONCLUSIONS AND DISCUSSION OF RESULTS

This study identifies the self-assessed levels of digital competence of future education professionals, and it focuses on the dimensions of ICT knowledge and management, as well as attitude towards ICT, and on the variables of gender and age.

The subjects who have taken part in the sample can be described as «multiple device users», because most of them have a computer, a smartphone, a digital photo camera, a tablet and a GPS device.

If we focus on the dimensions analyzed in the study, the future education professionals fail themselves on the topic of knowledge of terms related to ICT, whereas their knowledge of technological devices is high. Their assessment of their management of devices is significantly high and they admit that they have better competence with the use of computers and tablets and a lower capacity to use e-book readers. They only score below 5 in the use of wearables. Their self-assessment about the use of tools is high, and they consider that they are capable to use mainly social networks, communication tools (like WhatsApp) and text editing tools. Their worst assessments have to do with the management of tools to edit image and sound. If we consider the use of services, their self-assessment is very varied. They generally use the internet to publish and share photos and videos, and they do not have a blog, or a website, or use cloud storage services. Their attitude towards ICT is very positive, and they believe that technology is necessary and useful for their future career. With regard to this last dimension, they give the lowest score to the statement: «ICT are a cold and distant medium». Similar results can be found in other studies on this topic (Ausín & Delgado, 2015; Centeno & Cubo, 2013; Hernández, López & Sánchez, 2014).

With regard to the influence of the variables of gender and age on the three dimensions, significant differences have been observed.

The influence of gender on the acquisition of digital competences has been analyzed by different studies. Some of them reveal the existence of significant differences (Francis & Katz, 1996; Cabero, Llorente & Puentes, 2008); while other authors did not observe them (Centeno & Cubo, 2013; Roblizo & Cózar, 2015; Torres & Arras, 2011). The popular belief has it that the self-perception of men is that they have a better level of digital competence. However, recent studies have concluded the opposite when they showed differences in favor of women (Arras, Torres & García-Valcárcel, 2011; Cózar & Roblizo, 2014; Marín & Cabero, 2010). With this research we have observed that men rate themselves over women with regard to knowledge, management and attitude, and that the differences in the first two dimensions were significant.

Similarly, the variable of age has been studied before, in some cases with results that show differences in favor of younger subjects (García, Ramírez & Rodríguez, 2014; Martos, Pérez & Bernal, 2016), and which even suggest more problems regarding the use of ICT with age (De Oleo & Rodríguez, 2010). In other cases, these differences are not observed (Romero & Minelli, 2011). In our study, significant differences were found only with regard to their attitude, and with higher scores among the oldest subgroup in our sample (over 25 years), followed by the youngest subgroup (17-20 years). Differences were also found with regard to knowledge and management (in favor of the older group), but they were not significant.

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