

Social Educators: A Study of Digital Competence from a Gender Differences Perspective

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Abstract

Digital competence should be treated as an essential skill in the professional development of social educators. The purpose of the research project presented in this article is twofold: on the one hand, to conduct diagnostic self-assessment of students studying for an Undergraduate Degree in Social Education at the University of Salamanca (Spain), and on the other, to check whether the gender variable affects the results. Applied was the so-called ex post facto quantitative method and the data were collected via an online questionnaire. Descriptive analyses were applied and means were compared using Student's t-test. The results show that students generally assess their familiarity with the information and communication technologies (ICT) as unsatisfactory and the use of ICT as satisfactory. In contrast, they assess themselves very positively in their attitudes toward ICT. Furthermore, male respondents in the sample scored higher in familiarity and use of ICT in comparison to female respondents, while women assessed themselves more positively than men in relation to attitude toward ICT. Finally, positive correlation was confirmed between familiarity with ICT and its use, as well as between the use and the attitudes toward ICT. There was no correlation between respondents' familiarity with ICT and their attitude toward it.

Key words: *Information and communication technologies; initial training; social variables; social education.*

Introduction

The impact of information and communication technologies (ICT) on the information and knowledge society is so huge that it leads to the necessity of training citizens to live in it. Given the new technological conditions brought about in this

historical period, the information society relies on the production, processing and transfer as key pillars of productivity and power (Benavent, Pulido, & Martínez, 2010; Castells, 1999). In the knowledge society the social structure is governed and determined by know-how and knowledge as the principles determining peoples' welfare and progress instruments (Mateo, 2006). Indeed, it is in the twenty-first century society that the emerging patterns of social and economic development require new skills and competences in order for citizens to carry out their work effectively and to actively contribute to economic growth, as the system in which they operate relies on knowledge as the main asset (Ananiadou & Claro, 2009; Hernández, López, & Sánchez, 2014; Suárez, Almerich, Gallardo, & Aliaga, 2013).

The latest *Information Society in Spain Report* (Telefónica Foundation, 2015) shows that Spanish society was the most connected in Europe during 2014. ICTs are present in all sectors of society, from large multinationals to small and medium enterprises (SMEs), governments, administrations, universities, education centres, and social, professional and private organizations (Calvo & Ospina, 2014; Colombo, 2006; Roblizo & Cózar, 2015; Suarez & Alonso, 2007). Therefore, social educators as professionals in the social education field cannot remain oblivious to ICTs. These professionals are “agents expected to foster and facilitate individuals' adaptation to society, favouring their socialization; and it is precisely now that this type of professional acquires greater relevance, since technologies influence interaction with others, active integration as citizens, performance in society, and community and social development itself” (Sampedro, 2015, p. 11).

There are several reasons justifying the use of ICT by these professionals (López & Esteban, 2008): technological progress has become an everyday reality that brings benefits such as cultural development, social participation, new communication channels, additional types of training, etc. Furthermore, social educators play a relevant role in helping citizens to adapt to the fast-paced and constantly changing social context, so that they may become critically aware and active users of new technologies and are not excluded from the relevant areas of social life. In addition, telematics as a means of facilitating innovative ways of presenting contents and new content acquisition processes should be integral to the approach of the social educator of this millennium. Another reason is that social education professionals need to be social players who have the ability of reflecting on ICT and are both willing and capable of training users in communication, interaction, critical thinking and application of these technologies to their future benefit. Also, socio-educational actions should include a broader community and a systematic approach. The potential contributions of ICT to social projects may become new action proposals and new answers to current needs in social education. Finally, social educators need to capitalize on the potential of ICT in social education training, research and intervention, where ICT can be used as a means of individual development, which supports social participation and emancipation. Thus, it is evident that professionals who want to use ICT in their career development

need to be digitally literate, which applies to every citizen in today's society. With this in mind, and along the lines proposed by López and Esteban (2008), social educators might find the potential in ICT for lifelong training as well as for the opening of new paths and courses of action in social education.

The technological impact on contemporary societies poses a series of challenges for social education, both at the local and the global scale, and it can be said that virtually nothing has been accomplished yet. ICT training is an indispensable requirement for any social educator who wishes to keep up with the times. Since ICT is still not fully adapted to everyday professional practices, learning, research, experimenting and innovation with ICT should be performed in a participatory manner and with a critical attitude towards the information society. Some tasks of social education include a thorough consideration of educational use of ICT, its adaptability to different professional areas, its impact, new teaching methods and the effect of the newly implemented virtual education environments on relationships in education. The potential risks and dangers associated with ICT also need to be taken into account (Fernández, 2007; Pérez, 2010).

In recent years many studies have been conducted on the perception of future teaching professionals regarding the knowledge, use, implementation and integration of ICT into the teaching process (see Álvarez, Cuéllar, López, Adrada, Anguiano, Bueno, Comas, & Gómez, 2011; Cabero, 2014; Cabezas, Casillas, & Pinto, 2014; Casillas & Cabezas, 2014; Gallego, Gámiz, & Gutiérrez, 2010; Gutiérrez, Palacios, & Torrego, 2010; Prendes, Castañeda, & Gutiérrez, 2010; Valdés, Angulo, Nieblas, Zambrano, & Arreola, 2012). A smaller number of studies focused on ICT and social education (see Castañeda, Soto, & Gutiérrez, 2011; Castañeda, Gutiérrez, & Román, 2014; Fernández, 2007; Martínez, 2015; Miranda, Fabbri, & Guerra, 2010; Rivas, De Cisneros, & Gertrúdis, 2015; Sánchez, Sánchez, & Ramos, 2012; Santiago & Santoveña, 2012), but there is virtually no research on the digital competence of future social education professionals.

“Digital competence involves the confident and critical use of information society technology (IST) for work, leisure and communication” (European Union, 2007, p. 7). From the social educator perspective we define digital competence as the collection of knowledge, procedures, skills, values and attitudes towards ICT required to be professionally able to teach technological literacy, collaborate in bridging the digital divide, prevent citizens from being left behind in the information and knowledge society (e-exclusion), work towards e-inclusion, and contribute to the empowerment of individuals and social groups using empowerment and participation technologies (EPT).

In order for future social educators to keep pace with the times it is essential that the digital competence be included in different subjects of the Undergraduate Degree in Social Education in a cross-curricular way.

This research was conducted with two goals in mind: one was to perform diagnostic assessment of the digital competence of students taking the Undergraduate Degree in

Social Education at the Faculty of Education of the University of Salamanca (Spain), and the other to test the potential impact of gender variable on such assessment. This variable was chosen for two main reasons: one was to follow the recommendation of the United Nations expressed in its agreement on science and technology (adopted in March 2011) on including gender analysis in scientific research so as to prevent bias and errors in concepts and theories (Schiebinger, 2008). Another was to check whether gender is still a determinant factor in the acquisition and development of digital competence, as has been suggested when discussing the gender digital divide.

Methods

The methodology applied is among the so-called ex post facto research designs, with an online questionnaire for data collection (Berends, 2006; Kerlinger & Lee, 2002). Such methods are widely used in the field of education and social sciences, since they attempt to describe and analyse the relationships and study the variables concerned. The study is also descriptive, with a purpose of assessing the existing reality and focusing on the description of phenomena and data without variable manipulation (see Arnal, del Rincón, & Latorre, 1992; Bisquerra, 2004; Kerlinger & Lee, 2002). It is also correlational (see McMillan & Schumacher, 2005), since it addresses the relationships between different dependent variables as well as the impact of gender as an independent variable.

Sample

The study population consisted of 280 future social educators in total. There were 273 students in the final sample, 13.7% of whom were male and 86.3% female, all between the ages of 17 and 26. Of these, 76.3% came from the autonomous regions of Castile and León and Extremadura. Random sampling was applied with a $\pm 1\%$ margin of error for a 95% confidence interval. Almost all the future social educators in the sample own laptops (98.7%), smartphones (100%) and digital cameras (87.2%). More

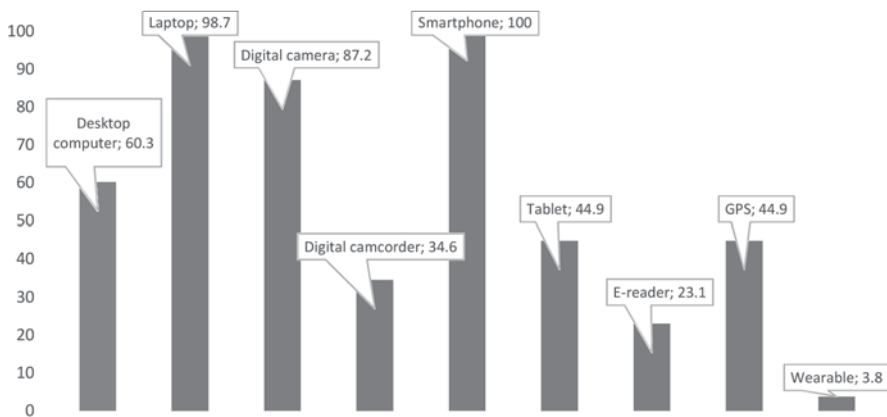


Figure 1. Percentages for devices owned

than half of them have desktop computers (60.3%), GPS devices (44.9%) and tablets (44.9%) and a lower percentage of them own e-readers (23.1%) and digital camcorders (34.6%). Only 3.8% own some type of wearable or electronic device.¹

Instrument

Data were collected using a pre-coded and cross-sectional direct-answer questionnaire, designed ad hoc for the analysis of university students' familiarity, use and attitude towards ICT.

This instrument consisted of 88 items, with four being identifying variables (qualifications, gender, age and autonomous region of origin). An ordinal 0 to 10 Likert-type scale was used for responses, with 0 being the lowest, 10 the highest and 5 the average value indicating whether the respondents deemed themselves capable of the actions proposed. A closed-ended dichotomous response option was also included. The original questionnaire was improved by conducting a pilot test and was subjected to validation by a committee of experts. The researchers administered the questionnaire directly to ensure correct and independent completion by the students. Internal consistency was measured by calculating validity and reliability. High reliability was confirmed using Cronbach's α both for each dimension (α familiarity = 0.94, α use = 0.88 and α attitude = 0.95) and the whole scale (α = 0.947). An initial exploratory analysis of the items and the relevant psychometric analyses were carried out prior to the study. This included factor analysis, in which the main components were analysed using the varimax rotation method with Kaiser normalization. In this manner the previously mentioned different structural dimensions of the instrument were identified.

Table 1

Structure of the questionnaire

Block		Block description	Items
Block 1	ID	Identification data such as gender, age, qualifications, etc.	1-4
Block 2	OW	ICT devices owned	39-48
Block 3	FN	Self-assessment of the degree of familiarity with ICT-related concepts (FN_01)	5-32
		Self-assessment of the degree of familiarity with ICT devices (FN_02)	33-38
Block 4	US	Self-assessment of competence in the use of ICT devices (US_01)	49-56
		Self-assessment of competence in the use of ICT tools (US_02)	57-65
		Self-assessment of competence in the use of ICT services (US_03)	66-81
Block 5	AT	Assessment of ICT based on the needs and relevance for the future of professional development in education	82-88

¹ A device incorporated into a certain body part for continuous interaction with its user or other devices with an aim of performing specific functions. For example: smartwatch, smartGlasses, smartclothes.

All the analysed competences related to different items were structured into five general blocks: identification (*ID*), ownership (*OW*), familiarity (*FN*), use (*US*) and attitude (*AT*) (Table 1). Except for the first and the second block, which were addressed in the sample section, the remaining blocks formed the basis for the data analysis presented below.

Data Analysis

The data were structured, analysed and processed with the Statistical Package for the Social Sciences software (SPSS v.22). Descriptive analysis was performed and means of the technological capacities of future social educators were calculated. In addition, inferential analysis was performed based on the comparison of means.

Parametric assumptions of normality (Kolmogorov-Smirnov test) and homoscedasticity (Levene test) confirmed a normal distribution of variables, which allowed for the choice of parametric hypothesis comparison tests. Student's t-test was applied with the significance threshold level placed at 0.05 and significant differences in relation to the gender variable were confirmed. The significance of relationships between the different blocks of the questionnaire was evaluated using Pearson's chi-squared test (X^2).

Results

This section sets out the results yielded by Blocks 3, 4 and 5 of the questionnaire. Block 1 on the identification of variables and Block 2 on device ownership are addressed in the sample description section.

The main findings are arranged in two sections: the first one includes the results on respondents' self-assessment of their digital competence and the second one deals with the differences identified in relation to the gender variable.

Digital Competence: Familiarity, Use and Attitude towards ICT Self-Assessment of Familiarity with ICT Concepts and Devices (FN)

The table below shows the means, standard deviations, and the lowest and highest scores students assigned themselves for each of the competences in Block 3 on familiarity with ICT.

In most cases the self-assessment scores fall below five, indicating that social education students fail in the area of conceptual knowledge. It could be assumed that the highest means, i.e. those above five, relate to the only terms respondents are familiar with. Students are only acquainted with 14.2% of all the concepts, namely with Wikipedia, cloud storage, ICT and virtual reality.

The standard deviation of these concepts is very high, indicating very low homogeneity of responses due to differences in levels.

Table 2
Descriptive statistics for familiarity with ICT

Concepts (FN_01)	FN			
	M	SD	Lowest	Highest
Information and communication technologies (ICT)	5.30	2.222	0	10
Learning and knowledge technologies (LKT)	3.00	2.404	0	8
Empowerment and participation technologies (EPT)	1.36	1.932	0	7
Web 2.0	1.86	2.740	0	10
Web 3.0	1.47	2.186	0	7
Wikipedia	9.25	1.321	2	10
Blogosphere	3.64	3.293	0	10
Podcast	2.93	3.142	0	10
Social bookmarking	1.93	2.584	0	10
Web syndication	1.40	2.203	0	9
Mashup	1.34	2.473	0	10
Learning Object (LO)	3.78	2.770	0	10
E-learning	2.12	3.095	0	10
M-learning	0.78	1.377	0	6
B-learning	0.73	1.387	0	7
MOOC	0.68	1.452	0	8
Cloud storage	6.74	2.949	0	10
Virtual Reality (VR)	5.22	3.097	0	10
Augmented reality (AR)	3.51	3.180	0	10
Copyleft	1.59	2.613	0	10
Creative Commons license	1.41	2.702	0	10
Digital divide	2.75	3.209	0	10
E-exclusion	2.49	3.317	0	10
E-inclusion	2.27	3.074	0	10
Digital literacy	3.60	3.307	0	10
Cyberactivism	3.52	3.304	0	10
E-participation	1.74	2.863	0	10
Empowerment	1.56	2.560	0	10

With regard to familiarity with devices, all the students in the sample are familiar with tablets, smartphones and GPS devices, 98.6% know what an e-reader is and 91.8% have heard of an interactive whiteboard (IWB). However, only 30.1% report knowing what a wearable is.

Self-Assessment of Competences in the Use of ICT Devices, Tools and Services (US)

The variable of use was sub-divided into three types: devices, tools and services (Tables 3, 4 and 5). Although above the pass mark, all scores are surprisingly low.

Students' self-assessment of their use of devices (Table 3) involves scores above 5, except for wearables, where the average score is around 2. Respondents prove to be most highly proficient in the use of smartphones, tablets and digital cameras.

Table 3
Descriptive statistics for the use of ICT devices

Devices (US_01)	US			
	M	SD	Lowest	Highest
Computer	5.29	2.208	0	10
Digital camera	6.86	1.939	0	10
Digital camcorder	5.37	2.348	0	9
Smartphone	7.59	1.884	1	10
Tablet	6.97	2.055	0	10
E-reader	5.85	2.827	0	10
GPS	5.71	3.034	0	10
Wearable	1.86	2.755	0	10

As for the use of tools (Table 4), students assess their skills in the use of social networks and communication tools considerably highly. They also score above average in the use of search and documentation tools (search engines, electronic publications, teaching and learning resources, learning objects, etc.), as well as office IT. However, their scores fall below average when it comes to the use of training tools (e-learning platforms, Moodle, etc.).

Table 4
Descriptive statistics for the use of ICT tools

Tools (US_02)	US			
	M	SD	Lowest	Highest
Office software	5.14	2.605	0	10
Editing	4.84	2.718	0	10
Search and documentation	5.25	2.448	0	10
Collaborative work	4.63	2.741	0	9
Time management	4.21	2.809	0	9
Communication	8.32	1.580	2	10
Training	3.95	2.862	0	9
Cloud storage	4.01	3.323	0	10
Social networks	8.42	1.787	3	10

Students' views on their use of services (Table 5) are more scattered, showing very heterogeneous distribution. Most respondents consider themselves very skilled in the use of Whatsapp and most use Facebook more frequently than Twitter. The Internet is used to share pictures and videos, but not to publish and share presentations or audio files, let alone contents. Respondents do not write blogs or have their own websites, they do not use cloud storage and neither consult nor post wikis.

It should be emphasized that standard deviations for the use of services are frequently near or above 3, which shows that the scores students give themselves for each of the variables differ greatly. Whatsapp use is the only case where scores are

balanced and responses are not scattered. The sample studied leads to the conclusion that the use of ICT services is at quite a low level.

Table 5
Descriptive statistics for the use of ICT services

Services (US_03)	US			
	M	SD	Lowest	Highest
Twitter	6.27	3.690	0	10
Facebook	7.58	3.144	0	10
WhatsApp	9.64	0.823	7	10
Internet to upload and share pictures	6.89	3.385	0	10
Internet to upload and share videos	5.01	3.799	0	10
Internet to upload and share presentations	3.40	3.692	0	10
Internet to upload and share audio	3.36	3.653	0	10
Chat, communication, videoconference	6.12	3.321	0	10
I have my own blog	1.18	2.756	0	10
I have my own website	0.55	1.893	0	10
I search wikis	3.25	3.519	0	10
I publish on wikis	0.60	1.927	0	10
Internet to upload and store contents	0.52	1.701	0	9
Cloud storage	3.56	3.678	0	10

Self-Assessment of the Need and Relevance of ICT for a Professional Career in the Field of Education (AT)

Average scores for all the statements are near or above 8 (Table 6), implying quite a positive attitude. Students acknowledge the need and usefulness of ICT for their future career and confirm that it will help them economize time in their professional life. Although they do not use technological tools in their training, they hold ICTs for useful in lifelong learning (scoring the highest mean) and the development of their professional skills. For this reason respondents express their willingness to become competent ICT users.

Table 6
Descriptive statistics for attitude towards ICT

	AT			
	M	SD	Lowest	Highest
ICT is necessary/useful for my future career	8.19	1.861	1	10
ICT will help to economize academic effort/work	8.00	1.972	2	10
ICT will help to economize professional effort/work	8.10	1.781	2	10
ICT is a useful means for further training	8.37	1.752	2	10
ICT is required for professional development	7.64	2.077	0	10
Social Educator, professional with expertise in ICT	8.01	1.968	2	10

Relationships between Familiarity, Use and Attitude

Pearson's chi-squared test was used to assess the significance of the relationships between the different blocks in the questionnaire. The correlation was significant at the 0.01 bilateral level ($p < 0.01$). It was found that an increase in the familiarity with a concept correlated with higher scores in technology use ($X^2 = 0.701$, $p < 0.01$). Use and attitude are also in correlation, although at a lower significance level, since greater skill in the use of technology involved a more positive attitude towards it ($X^2 = 0.226$, $p < 0.01$). No relationship was found between familiarity and attitude ($X^2 = 0.181$, $p > 0.01$).

Significant correlations were identified between the three sub-sections. Those who were the most skilful in the use of technological devices also scored highest in the use of tools ($X^2 = 0.737$, $p < 0.01$) and services ($X^2 = 0.356$, $p < 0.01$). In the same line, significant correlations were determined for the use of tools and the use of services ($X^2 = 0.397$, $p < 0.01$).

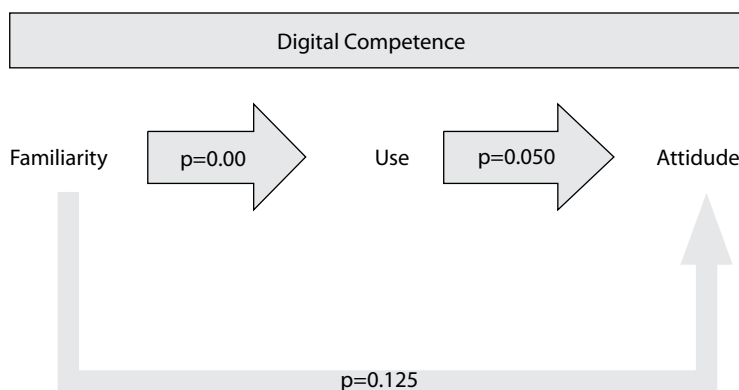


Figure 2. Relationships between familiarity, use and attitudes towards ICT

Digital Competence: Gender Differences

Our aim was to determine whether gender influences digital competence in terms of familiarity, use and attitude towards ICT. In most of the aspects analysed in this study, the contrasts used to test this influence proved highly significant.

Figures 3 and 4 show the means obtained for the different blocks. It was confirmed that there are indeed differences according to gender. Male students are more knowledgeable and skilled in the use of ICT, while female students score higher in attitude.

After checking the parametric assumptions of homogeneity and normality, the analysis of variance (Student's t-test) for independent samples was chosen to verify whether there are significant differences according to gender.

Significant differences were observed in several sections, most in favour of male students (Table 7), who rate their familiarity with ICT concepts ($p = 0.000$) and their competence in ICT use ($p = 0.007$) higher than female students. By contrast, female

students appear to have a more positive attitude towards technologies ($p= 0.001$). This could lead to the conclusion that a better attitude or greater willingness does not guarantee better acquaintance with different technologies or higher proficiency in their use.

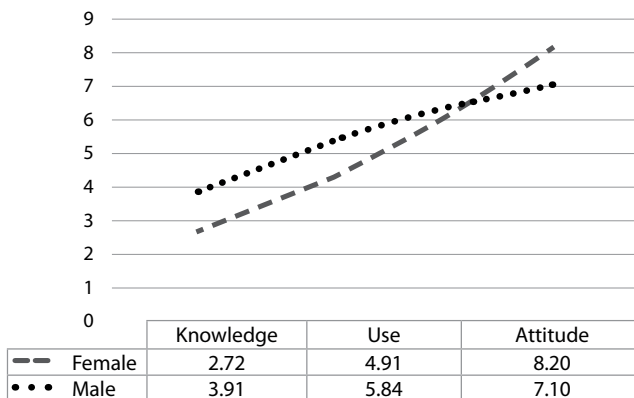


Figure 3. Gender differences between the three general questionnaire blocks

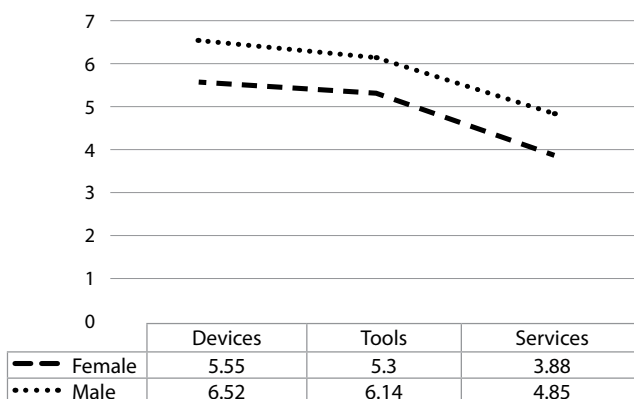


Figure 4. Gender differences in the use of ICT sections

On the other hand, there are factors where such differences cannot be observed, specifically those concerning the use of devices and services ($p>0.05$).

Table 7

Contrast of hypotheses. T-test for independent samples

Blocks	Gender	M	SD	F	p
FN_01	Female	2.72	1.46	20.214*	0.000*
	Male	3.92	2.91		
US	Female	4.91	1.19	7.697*	0.007*
	Male	5.84	1.91		
AT	Female	8.20	1.49	12.323*	0.001*
	Male	7.10	2.75		

With regard to the block corresponding to use (Table 8), there are significant differences in the use of tools ($p= 0.000$), but not in the use of devices ($p= 0.268$) and services ($p= 0.535$). It can be said that male students assessed their use of tools higher than female students do, but no gender differences were observed when comparing the use of ICT devices and the use of services.

Table 8
 Contrast of hypotheses. T-test for independent samples

US	Gender	M	SD	F	p
US_01	Female	5.56	1.575	1.245	0.268
	Male	6.53	1.825		
US_02	Female	5.30	1.575	14.644*	0.000*
	Male	6.14	2.837		
US_03	Female	3.88	1.393	0.389	0.535
	Male	4.85	1.582		

As far as attitude is concerned (Table 9), the data show that female students display greater willingness and a more positive attitude towards new technologies than male students do. Likewise, female students associate a higher value with the need and usefulness of ICT as compared to male students.

Table 9
 Contrast of hypotheses. T-test for independent samples

AT	Gender	M	SD	X of standard error	F	p
ICT is necessary/useful for my future career	Female	8.41	1.477	0.186	19.726	0.000
	Male	6.80	3.190	1.009		
ICT will help to economize academic effort/work	Female	8.17	1.746	0.220	6.159	0.015
	Male	6.90	2.923	0.924		
ICT will help to economize professional effort/work	Female	8.19	1.625	0.205	3.832	0.054
	Male	7.50	2.593	0.820		
ICT is required for professional development	Female	8.46	1.554	0.196	8.795	0.004
	Male	7.80	2.741	0.867		
ICT will help to economize professional effort/work ICT is a useful means for further training	Female	7.78	1.836	0.231	7.943	0.006
	Male	6.80	3.225	1.020		
ICT is required for professional development	Female	8.21	1.705	0.215	8.330	0.005
	Male	6.80	3.011	0.952		

Finally, binary logistic regression was applied to define the influence of gender on the level of familiarity, use and attitude towards technology. Goodness-of-fit was

determined using the Hosmer-Lemeshow test and a 95% confidence interval (CI) was established for Exp (B). The results obtained are shown in Table 10 below.

Table 10
Binary logistic regression

	B	E.S.	Wald	gl.	p	EXP (B)	CI 95% for EXP (B)	
							Lowest	Highest
<i>FN</i>	0.235	0.288	0.664	1	0.415	1.265	0.719	2.225
<i>US</i>	0.676	0.472	2.050	1	0.152	1.966	0.779	4.958
<i>AT</i>	-0.609	0.244	6.247	1	0.012*	0.544	0.338	0.877

Regarding the model's variables, the relationship between the attitude variable and all other variables was negative, but no statistically significant differences were found. Thus, students with high scores pertaining to attitude toward technologies scored lower in familiarity and the use of technologies. The relationship between the variable of attitude and other variables yielded the lowest score in the measure of relationship strength (Exp (B) = 0.544), indicating that a positive attitude does not increase one's familiarity and proficiency in the use of ICT.

Discussion and Conclusions

This study shows the level of digital competence perceived by participating students from the Undergraduate Degree programme in Social Education at the University of Salamanca, specifically addressing the variables of familiarity, use and attitude towards ICT in relation to gender.

Social education students do not fit into the "digital native" profile defined by Prensky (2001), but rather belong to the generation born in the digital age, whose members are used to technology occupying a space in their daily lives. Some users are more familiar with technology and show greater skill, but they mainly use it at home and in their free time and not for work-related tasks. Results of some studies (Castañeda et al., 2014; Gómez, 2015; Merino, 2010; Muros, Aragón, & Bustos, 2013; Pfizer Foundation, 2009) lead to the conclusion that such users do not reach the level of digital literacy required for productive use of ICT, which would boost its potential in the information and knowledge society. Several studies provide evidence against the "digital native" myth (Bennett, Maton, & Kervin, 2008; Brown & Czerniewicz, 2010; Helsper & Eynon, 2010; Kennedy, Judd, Dalgarno, & Waycott, 2010; Li & Rainieri, 2010) and according to their results we can view the few "digital natives" from our study as the exception proving the rule. Also, research results of this study are in line with the conclusions of Gisbert and Esteve (2011), according to whom students do not demonstrate the desirable level of digital competence at the beginning of their studies.

Most students from the sample own computers, smartphones, digital cameras, GPS devices and tablets. Not as many own e-readers and digital camcorders, and only a smaller number have some kind of wearable or electronic devices.

Considering the main variables analysed, social education students fail in the aspect of familiarity with ICT-related concepts. In terms of ICT use, almost all the scores are surprisingly low, even though they pass as sufficient. With regard to the use of devices, students show the highest level of skills in the use of smartphones, tablets and digital cameras. With regard to tool use, respondents demonstrate strong skills in using social networks (mainly Facebook) and communication tools, but fail to use training tools. Focusing on services, most respondents see themselves as highly competent Whatsapp users and use the Internet to share pictures and videos, but not to publish or share presentations, audio files, let alone contents. They neither run a blog nor have their own website, they also do not use cloud storage, and neither search nor publish wikis. Finally, respondents' attitude towards ICT is quite positive: they acknowledge it as necessary and useful for their future career and see it as helpful in economizing professional efforts. In spite of not using technological tools in their training, students see ICT as a useful means when pursuing further training and express their intention to become competent ICT users. The results obtained correspond to those of other studies (see Hernández et al., 2014; Santiago & Santoveña, 2012).

With regard to gender, the results are in line with previous studies (see Barrantes, Casas, & Luengo, 2009 & 2014; Hernández, Acosta, Rodríguez, González, & Borges, 2003; Waite, 2004; Yuen & Ma, 2002) and show significant differences in several sections, with most scores being higher for male than for female respondents. Male students are found to be more familiar and to make better use of ICT, which is in contrast to results of some studies where female respondents scored higher (see e.g., Cózar & Roblizo, 2014). However, it should be noted that women display a more positive attitude or greater willingness to use ICT, which does not necessarily confirm their greater familiarity or proficiency in technology use.

On the other hand, in line with other studies (see Cuadrado, Fernández, & Ramos, 2009; Law, Pelgrum, & Plomp, 2008; Roblizo & Cózar, 2015), there are factors where these differences are not confirmed. While gender differences are evident in the use of tools, with men scoring higher than women, these differences are not confirmed for the use of devices and services.

The findings reveal the need to improve the ICT competence of undergraduate social education students. They can be viewed as belonging to a generation whose members have learned how to use ICT on their own and mostly use it at home during free time for the purpose of communication or personal interaction. However, they have neither learned nor been taught how to use technology from an 'academic and professional' perspective, a task that should be undertaken by universities through the development of curricula meeting new technological demands of the twenty-first century society in a cross-cutting manner.

While it is essential for this competence to be included in the early training stage of future social educators, studies show that this is not the case. In their research on the status of educational technology in undergraduate degree programmes in the

field of education offered (EHEA), Losada, Valverde, and Correa (2012) found that the presence of this competence was not increased in the curricula of undergraduate social education study programme. While the former (pre-Bologna) Diploma in Social Education guaranteed every student specific training in educational technologies, this is not the case with the current Undergraduate Degree and a decline in the implementation of digital competence is obvious.

The main limitation of this study is that the results cannot be generalized due to the limited nature of the sample. However, the results are representative and can prove useful for the education community, since the contribution of diagnostic assessment of the digital competences of future social education professionals may encourage reflection on their ICT training.

Future research is suggested on the influence of social and family variables on the acquisition of digital competence and on their correlation with ICT-related variables. In addition, it would be interesting to see the results of similar studies conducted for other groups or countries.

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Socijalni pedagozi: istraživanje digitalne kompetencije iz perspektive spolnih razlika

Sažetak

Digitalna kompetencija trebala bi kao osnovna vještina imati ključno mjesto u profesionalnom razvoju socijalnih pedagoga. Istraživački projekt predstavljen u ovom radu ima dva cilja: provesti dijagnostičku samoprocjenu studenata Preddiplomskog studija socijalne pedagogije na Sveučilištu u Salamanki (Španjolska) i provjeriti utječe li varijabla spola na rezultate. Primijenjena je ex post facto kvantitativna metoda, a podaci su prikupljeni na temelju online-upitnika. Analiza je deskriptivna, inferencijska i korelacijska, a aritmetičke sredine uspoređene su studentovim t-testom. Rezultati pokazuju da studenti većinom nedovoljno poznaju informacijske i komunikacijske tehnologije (IKT), a u pogledu korištenja IKT-a vrijednosti su u rangu zadovoljavajuće ocjene. Studenti pokazuju veoma pozitivan stav prema informacijskim i komunikacijskim tehnologijama. Rezultati također pokazuju da među budućim socijalnim pedagozima muškarci imaju bolje rezultate od žena u pogledu poznavanja i primjene, a žene pokazuju bolje rezultate u stavu prema IKT-u. Dokazan je pozitivan odnos između poznavanja i primjene IKT-a, kao i između primjene i stava prema IKT-u, a korelacija između poznavanja i stava nije utvrđena.

Ključne riječi: informacijske i komunikacijske tehnologije; društvene varijable; socijalna pedagogija; inicijalno obrazovanje.

Uvod

Utjecaj informacijskih i komunikacijskih tehnologija (IKT) na informacijsko društvo i društvo znanja toliko je velik da građane treba obučavati u tome kako živjeti u takvoj vrsti društva. S obzirom na nove tehnološke uvjete ovog povijesnog razdoblja, informacijsko se društvo oslanja na proizvodnju, procesuiranje i transfer kao ključne za produktivnost i moć (Benavent, Pulido, i Martínez, 2010; Castells, 1999). U društvu znanja *know-how* i znanje predstavljaju principe za određivanje instrumenata socijalnog stanja i napretka društva i oni upravljaju društvenom strukturom i određuju je (Mateo, 2006). Upravo u društvu 21. stoljeća novi obrasci društvenog i ekonomskog razvoja zahtijevaju nove vještine i sposobnosti kako bi građani mogli djelotvorno obavljati svoj posao i aktivno doprinosti ekonomskom rastu jer se sustav u kojem

djeluju oslanja na znanje kao glavni adut (Ananiadou i Claro, 2009; Hernández, López i Sánchez, 2014; Suárez, Almerich, Gallardo, i Aliaga, 2013).

Prema posljednjem izvješću o informacijskom društvu u Španjolskoj, *Information Society in Spain Report* (Telefónica Foundation, 2015), španjolsko je društvo u 2014. g. bilo povezanije od svih drugih u Europi. IKT je prisutan u svim segmentima društva, od velikih multinacionalnih kompanija do malih i srednjih poduzeća (SME), vlada, uprava, sveučilišta, obrazovnih centara, svih društvenih, profesionalnih i privatnih organizacija (Calvo i Ospina, 2014; Colombo, 2006; Roblizo i Cózar, 2015; Suarez i Alonso, 2007). S obzirom na to socijalni pedagozi kao profesionalci u socijalnom i obrazovnom području ne mogu zanemariti IKT. Ti stručnjaci postaju „agenti od kojih se očekuje da se brinu o prilagodbi pojedinaca u društvo te da im u tome pomažu; a upravo sada ta vrsta stručnjaka dobiva na važnosti jer tehnologije utječu na interakciju s drugima, aktivnu integraciju građana, rezultate u društvu te sam razvoj zajednice i društva” (Sampedro, 2015, str. 11).

Nekoliko je razloga zašto se ti stručnjaci trebaju koristiti IKT-om (López i Esteban, 2008): prvo, tehnološki napredak postao je svakodnevnica koja donosi koristi poput kulturnog razvoja, društvene participacije, novih komunikacijskih kanala, dodatnih vrsta izobrazbe itd. Nadalje, socijalni pedagozi imaju značajnu ulogu u prilagodbi građana ubrzanom i promjenjivom društvenom kontekstu te im pomažu kako bi postali kritički i aktivni korisnici novih tehnoloških sredstava te kako ne bi bili isključeni iz važnih područja društvenog života. Također treba reći da socijalni pedagog u ovom tisućljeću u svoj pristup treba uključiti telematiku kao lakši način inovativnog prezentiranja sadržaja i novih procesa. Stručnjaci socijalne pedagogije moraju biti društveni igrači koji promišljaju o IKT-u te su voljni i sposobni poučavati korisnike za komunikaciju, interakciju s drugima, kritičko mišljenje i primjenu tih tehnologija sa svrhom vlastitog napretka u budućnosti. Nadalje, socijalno-pedagoške akcije trebale bi imati širu, sustavnu perspektivu koja uzima u obzir zajednicu u cjelini. Potencijalni doprinosi IKT-a društvenim projektima mogu postati novi prijedlozi aktivnosti i novi odgovori na trenutne socioekonomske potrebe u područjima socijalne pedagogije. Naposljetku, socijalni pedagozi moraju iskoristiti potencijal IKT-a te ga uključiti u izobrazbu, istraživanja i intervencije u socijalnoj pedagogiji kako bi IKT služio osobnom razvoju, a istodobno podržavao društvenu participaciju i emancipaciju. Stoga je jasno da se stručnjaci koji se u svojoj karijeri žele koristiti IKT-om trebaju biti digitalno pismeni poput svakog građanina u današnjem društvu. S obzirom na to i u skladu s istraživanjem López i Esteban (2008), socijalni pedagozi mogli bi u IKT-u prepoznati potencijal za cjeloživotno učenje, kao i za otvaranje novih putova i smjernica za sociopedagoške aktivnosti.

Tehnološki utjecaj na suvremena društva predstavlja niz izazova za socijalnu pedagogiju, kako na lokalnoj, tako i na globalnoj razini pa u tom smislu praktički stojimo pred velikim nezapočetim poslom. Upoznavanje s informacijskim i komunikacijskim tehnologijama neophodno je za svakog socijalnog pedagoga

koji želi držati korak s vremenom. Budući da informacijske i komunikacijske tehnologije još uvijek nisu u potpunosti prilagođene svakodnevnim profesionalnim praksama, neophodno je učiti, istraživati, eksperimentirati i aktivnim sudjelovanjem unositi novosti s tim tehnologijama, istodobno zadržavajući kritički stav prema informacijskom društvu. Socijalna pedagogija treba u potpunosti sagledati obrazovnu primjenjivost IKT-a, njegovu prilagodljivost različitim profesionalnim područjima, učinak, nove metode poučavanja i utjecaj koji novo virtualno nastavno okruženje ima na odnose u obrazovanju. Također treba uzeti u obzir potencijalne rizike i opasnosti povezane s informacijskim i komunikacijskim tehnologijama (Fernández, 2007; Pérez, 2010).

Posljednjih su godina provedena mnoga istraživanja o percepciji budućih nastavnika o poznavanju, korištenju, primjeni i uključivanju informacijskih i komunikacijskih tehnologija u nastavni proces (v. Álvarez, Cuéllar, López, Adrada, Anguiano, Bueno, Comas, i Gómez, 2011; Cabero, 2014; Cabezas, Casillas, i Pinto, 2014; Casillas i Cabezas, 2014; Gallego, Gámiz, i Gutiérrez, 2010; Gutiérrez, Palacios, i Torrego, 2010; Prendes, Castañeda, i Gutiérrez, 2010; Valdés, Angulo, Nieblas, Zambrano, i Arreola, 2012). Manji broj istraživanja bavi se IKT-om i socijalnom pedagogijom (v. Castañeda, Soto, i Gutiérrez, 2011; Castañeda, Gutiérrez, i Román, 2014; Fernández, 2007; Martínez, 2015; Miranda, Fabbri, i Guerra, 2010; Rivas, De Cisneros, i Gertrúdis, 2015; Sánchez, Sánchez, i Ramos, 2012; Santiago i Santoveña, 2012), a istraživanja o digitalnoj kompetenciji budućih socijalnih pedagoga gotovo uopće nema.

„Digitalna kompetencija podrazumijeva samopouzdanje i kritičko korištenje tehnologije informacijskog društva (IST) u radu, slobodnom vremenu i komunikaciji.“ (Europska unija, 2007, str. 7). Iz socijalno-pedagoške perspektive digitalnu kompetenciju određujemo kao skup znanja, procedura, vještina, vrijednosti i stava prema informacijskim i komunikacijskim tehnologijama potrebnih kako bi pojedinac bio profesionalno osposobljen za poučavanje tehnološke pismenosti, suradnju u nadilaženju digitalnog jaza, pomaganje građanima u opstanku u informacijskom društvu znanja (prevencija e-isključenosti), djelovanje u smjeru e-uključenosti te doprinos osnaživanju pojedinaca i društvenih skupina uz pomoć tehnologije osnaživanja i participiranja (EPT).

Kako bi budućí socijalni pedagozi održavali korak s razvojem, neophodno je kroskurikulno određenje digitalne kompetencije u različitim sadržajima preddiplomskog studija socijalne pedagogije.

Dva su cilja ovog istraživanja: provesti dijagnostičku procjenu digitalne kompetencije studenata Preddiplomskog studija socijalne pedagogije na Fakultetu obrazovnih znanosti Sveučilišta u Salamanki (Španjolska) te provjeriti utječu li spolne razlike na tu procjenu. Varijabla spola odabrana je zbog dva razloga: s jedne strane bilo je potrebno pratiti preporuku Ujedinjenih naroda iz sporazuma o znanosti i tehnologiji o tome kako spolnu analizu treba uključiti u znanstvena istraživanja budućí da studije o spolu pomažu u sprječavanju pristranosti i pogrešaka u konceptima i teorijama (Schiebinger,

2008). Nadalje, željelo se provjeriti je li spol još uvijek odlučujući čimbenik u usvajanju i razvoju digitalne kompetencije, što je istaknuto u raspravama o spolnom digitalnom jazu.

Metoda

Primijenjen je *ex post facto* postupak te su podaci prikupljeni putem *online* upitnika (Berends, 2006; Kerlinger i Lee, 2002). Takva je metodologija široko prihvaćena u području obrazovanja i društvenih znanosti s obzirom na to da opisuje, analizira odnose i proučava relevantne varijable. Istraživanje je deskriptivnog karaktera s ciljem određivanja stvarne situacije i fokusom na opisu fenomena i podataka bez manipuliranja varijabli (v. Arnal, del Rincón, i Latorre, 1992; Bisquerra, 2004; Kerlinger i Lee, 2002). Naposljetku, radi se o korelacijskom istraživanju (McMillan i Schumacher, 2005) s obzirom na to da se bavi odnosima između različitih zavisnih varijabli i utjecajem spola kao nezavisne varijable.

Uzorak

Ispitana je skupina od 280 budućih socijalnih pedagoga, a u konačan su uzorak uključena 273 studenta, od kojih je bilo 13,7% muškaraca i 86,3% žena u dobi od 17 do 26 godina. Iz navedene skupine 76,3% ispitanika dolazi iz autonomnih regija Kastilje i Leóna te Extremadure. Reprezentativnost je osigurana nasumičnim uzorkom s marginom pogreške od $\pm 1\%$ za interval pouzdanosti od 95%.

Gotovo svi buduću socijalni pedagozi iz uzorka posjeduju prijenosno računalo (98,7%), pametne telefone (100%) i digitalne kamere (87,2%). Više od polovine ispitanika ima stolno računalo (60,3%), uređaj za navigaciju (44,9%) i tablet (44,9%), a manji broj ih posjeduje e-čitač (23,1%) i digitalni kamkorder (34,6%). Samo 3,8% posjeduje neku vrstu nosivog ili elektroničkog uređaja.¹

Slika 1

Instrument

Podaci su prikupljeni izravnim odgovorima prema unaprijed kodiranom krossekcijskom upitniku izrađenom za tu prigodu sa svrhom analize poznavanja, korištenja i stava studenata prema IKT-u.

Instrument se sastojao od 88 čestica, od kojih su četiri činile varijable za identifikaciju (obrazovanje, spol, dob i autonomna regija ili podrijetlo). Za odgovore je primijenjena skala Likertova tipa s vrijednostima od 0 do 10, pri čemu je 0 predstavljala najnižu, 10 najvišu, a 5 prosječnu vrijednost koja upućuje na to smatra li se ispitanik sposobnim za ponuđene aktivnosti. U upitniku je također ponuđen i dihotomni odgovor zatvorenog tipa. Izvorni upitnik poboljšan je nakon pilot-testa te je podvrgnut provjeri stručnog

¹ Uređaj priključen na dio tijela radi kontinuirane interakcije s korisnikom ili drugim uređajima s ciljem obavljanja zadane funkcije. Npr.: smartwatch, smartGlasses, smartclothes.

odbora. Istraživači su upitnik distribuirali izravno kako bi osigurali da ga studenti ispravno i samostalno ispune. Unutarnja konzistentnost izmjerena je računanjem valjanosti i pouzdanosti. Visoka pouzdanost potvrđena je Cronbachovim α -testom za svaku dimenziju (α poznavanje = 0,94, α korištenje = 0,88 i α stav = 0,95) i za ukupnu skalu (α = 0,947). Prije ovog istraživanja provedena je inicijalna analiza čestica i relevantne psihometrijske analize (faktorska analiza istraživanjem temeljnih komponenata uz metodu varimax rotacije s Kaiserovom normalizacijom), što nam je omogućilo identificiranje spomenutih različitih strukturalnih dimenzija instrumenta.

Sve kompetencije vezane uz različite čestice strukturirane su u pet osnovnih blokova: identifikacija (*ID*), posjedovanje (*OW*), poznavanje (*FN*), korištenje (*US*) i stav (*AT*) (tablica 1). Za provedbu analize ovdje predstavljenih podataka koristili su se podaci iz svih blokova izuzev prva dva, koji su predstavljeni u objašnjenju uzorka.

Tablica 1
Struktura upitnika

Blok	Opis blokova	Čestice
Blok 1 ID	Identifikacijski podaci poput spola, dobi, obrazovanja itd.	1-4
Blok 2 OW	Posjedovani uređaji IKT-a	39-48
Blok 3 FN	Samoprocjena stupnja/razine poznavanja koncepata povezanih s IKT-om (FN_01)	5-32
	Samoprocjena stupnja/razine poznavanja uređaja IKT-a (FN_02)	33-38
Blok 4 US	Samoprocjena kompetencije korištenja uređaja IKT-a (US_01)	49-56
	Samoprocjena kompetencije korištenja alata IKT-a (US_02)	57-65
	Samoprocjena kompetencije korištenja usluga IKT-a (US_03)	66-81
Blok 5 AT	Procjena potreba i značaja IKT-a za budućnost profesionalnog razvoja u obrazovanju	82-88

Analiza podataka

Za strukturiranje, analizu i obradu podataka koristio se statistički program za društvene znanosti SPSS (v.22). Podaci su obrađeni deskriptivnom analizom, pri čemu su izračunate aritmetičke sredine tehnoloških sposobnosti budućih socijalnih pedagoga. Provedena je i inferencijalna analiza utemeljena na usporedbi.

Nakon provjere parametarskih pretpostavki normalnosti (Kolmogorov-Smirnov test) i homoskedastičnosti (Leveneov test) odabrali smo testove usporedbe parametarske hipoteze s obzirom na to da su ispitivane varijable pokazale normalnu distribuciju. Studentovim t-testom razina značajnosti određena je kao 0.05, a značajne su razlike potvrđene u pogledu varijable roda. Isto tako, značaj odnosa između različitih dijelova upitnika ocijenjen je Pearsonovim hi-kvadrat testom (X^2).

Rezultati

U ovom dijelu prikazani su rezultati iz dijelova 3, 4 i 5 upitnika. Prvi dio, s identifikacijskim varijablama, i drugi, o posjedovanju, objašnjeni su u opisu uzorka.

Osnovni rezultati raspoređeni su u dva dijela: prvi se odnose na samoprocjenu budućih socijalnih pedagoga u pogledu vlastite digitalne kompetencije, a drugi na razlike prema varijabli spola.

Digitalna kompetencija: poznavanje, korištenje i stav prema IKT-u Samoprocjena poznavanja koncepata i uređaja IKT-a (FN)

Tablica ispod teksta pokazuje aritmetičke sredine, standardne devijacije te najniže i najviše vrijednosti prema samoprocjeni studenata za svaku pojedinu kompetenciju uključenu u ovaj blok o poznavanju koncepata vezanih uz IKT.

Tablica 2

Deskriptivna statistika poznavanja IKT-a

Koncepti (FN_01)	FN				
	M	SD	Najniže	Najviše	
Informacijske i komunikacijske tehnologije (IKT)	5,30	2,222	0	10	
Tehnologije učenja i znanja (LKT)	3,00	2,404	0	8	
Tehnologije osnaživanja i sudjelovanja (EPT)	1,36	1,932	0	7	
Web 2.0	1,86	2,740	0	10	
Web 3.0	1,47	2,186	0	7	
Wikipedia	9,25	1,321	2	10	
Blogosfera	3,64	3,293	0	10	
Podcast	2,93	3,142	0	10	
Društveno označavanje	1,93	2,584	0	10	
Mrežna sindikacija	1,40	2,203	0	9	
Mashup	1,34	2,473	0	10	
Objekt učenja (LO)	3,78	2,770	0	10	
E-učenje	2,12	3,095	0	10	
M-učenje	0,78	1,377	0	6	
B-učenje	0,73	1,387	0	7	
MOOC	0,68	1,452	0	8	
Pohranjivanje u oblaku	6,74	2,949	0	10	
Virtualna stvarnost (VR)	5,22	3,097	0	10	
Povećana stvarnost (AR)	3,51	3,180	0	10	
Copyleft	1,59	2,613	0	10	
Licenca Creative Commons	1,41	2,702	0	10	
Digitalni procjep	2,75	3,209	0	10	
E-isključivanje	2,49	3,317	0	10	
E-uključivanje	2,27	3,074	0	10	
Digitalna pismenost	3,60	3,307	0	10	
Cyber-aktivizam	3,52	3,304	0	10	
E-sudjelovanje	1,74	2,863	0	10	
Osnaživanje	1,56	2,560	0	10	

U većini slučajeva vrijednosti samoprocjene su niže od 5, što znači da studenti socijalne pedagogije nisu dovoljno upoznati s IKT-om. Može se pretpostaviti da najviše aritmetičke sredine, one iznad 5, predstavljaju jedine pojmove s kojima su ispitanici upoznati. Studenti su upoznati samo s 14,2% svih ponuđenih koncepata, a oni se odnose na Wikipediju, pohranjivanje u oblaku, IKT i virtualnu stvarnost.

Standardna devijacija tih koncepata veoma je visoka, što upućuje na vrlo nisku homogenost odgovora zbog različitih razina.

U pogledu poznavanja uređaja svi studenti iz uzorka upoznati su s tabletima, pametnim telefonima i uređajima za navigaciju. Nadalje, 98,6% ispitanika zna što je e-čitač, 91,8% ih zna što je interaktivna pametna ploča (IWB), a samo 30,1% ispitanika zna što je nosivi uređaj.

Samoprocjena sposobnosti korištenja uređaja, alata i usluga IKT-a (US)

Varijabla korištenja podijeljena je na tri tipa: uređaji, alati i usluge (tablice 3, 4 i 5). Rezultati prelaze prolaznu ocjenu, no vrijednosti su iznenađujuće niske.

U samoprocjeni korištenja uređaja (tablica 3) studenti se ocjenjuju vrijednostima iznad 5, osim za nosive uređaje, za koje je prosječan rezultat 2. Najbolje razvijene kompetencije zabilježene su za korištenje pametnih telefona, tableta i digitalnih kamera.

Tablica 3
Deskriptivna statistika za korištenje uređaja IKT-a

Uređaji (US_01)	US			
	M	SD	Najniže	Najviše
Računala	5,29	2,208	0	10
Digitalna kamera	6,86	1,939	0	10
Digitalni kamkorder	5,37	2,348	0	9
Pametni telefon	7,59	1,884	1	10
Tablet	6,97	2,055	0	10
E-čitač	5,85	2,827	0	10
Navigacija	5,71	3,034	0	10
Nosivi	1,86	2,755	0	10

U pogledu korištenja alata (tablica 4) studenti smatraju da prilično dobro vladaju društvenim mrežama i komunikacijskim alatima. Također su zabilježeni iznadprosječni rezultati u korištenju alata za traženje, dokumentiranje (tražilice, elektroničke publikacije, izvori za nastavne materijale i učenje, objekti učenja itd.) i uredskog IT-a. Ipak, rezultati su ispodprosječni za korištenje alata za učenje (platforme za e-učenje, Moodle, itd.).

Tablica 4
Deskriptivna statistika za korištenje alata IKT-a

Alati (US_02)	US			
	M	SD	Najniže	Najviše
Uredski softver	5,14	2,605	0	10
Uređivanje	4,84	2,718	0	10
Pretraživanje i dokumentiranje	5,25	2,448	0	10
Suradnja	4,63	2,741	0	9
Upravljanje vremenom	4,21	2,809	0	9
Komunikacija	8,32	1,580	2	10
Obrazovanje	3,95	2,862	0	9
Pohranjivanje u oblaku	4,01	3,323	0	10
Društvene mreže	8,42	1,787	3	10

Procjene studenata o vlastitom korištenju usluga (tablica 5) pokazuju raspršenije rezultate i heterogenu distribuciju. Mnogi se smatraju vrlo vještima u korištenju WhatsAppa, a Facebook se koriste češće nego Twitterom. Ispitanicima internet služi za dijeljenje slika i videosadržaja, ali se njime ne koriste za objavljivanje i dijeljenje prezentacija ili audiopriloga, a pogotovo ne za dijeljenje sadržaja. Nemaju blog ni vlastitu web-stranicu, ne koriste se pohranjivanjem u oblaku i ne konzultiraju wiki-sadržaje niti objavljuju wiki-priloge.

Tablica 5
Deskriptivna statistika za korištenje usluga IKT-a

Usluge (US_03)	US			
	M	SD	Najniže	Najviše
Twitter	6,27	3,690	0	10
Facebook	7,58	3,144	0	10
WhatsApp	9,64	0,823	7	10
Internet za prijenos i dijeljenje slika	6,89	3,385	0	10
Internet za prijenos i dijeljenje videopriloga	5,01	3,799	0	10
Internet za prijenos i dijeljenje prezentacija	3,40	3,692	0	10
Internet za prijenos i dijeljenje audiopriloga	3,36	3,653	0	10
Chat, komunikacija, videokonferencija	6,12	3,321	0	10
Imam vlastiti blog	1,18	2,756	0	10
Imam vlastitu web-stranicu	0,55	1,893	0	10
Pretražujem wikije	3,25	3,519	0	10
Objavljujem wikije	0,60	1,927	0	10
Internet za prijenos i pohranu sadržaja	0,52	1,701	0	9
Pohranjivanje u oblaku	3,56	3,678	0	10

Treba naglasiti da su standardne devijacije za korištenje usluga učestalo blizu ili iznad vrijednosti 3, što ukazuje na to da rezultati koje studenti bilježe za pojedine varijable značajno variraju. Jedini slučaj u kojem su rezultati slični i odgovori nisu

raspršeni odnosi se na korištenje Whatsappa. Stoga se može zaključiti da je korištenje usluga IKT-a na niskoj razini.

Samoprocjena potreba i značaja IKT-a za profesionalnu karijeru u području obrazovanja (AT)

Prosječne ocjene za sve izjave iznose oko 8 (tablica 6), što ukazuje na prilično pozitivan stav. Studenti smatraju da je IKT potreban i koristan u njihovoj budućoj karijeri te da će im pomoći uštedjeti vrijeme u profesionalnim zadacima. Iako se tehnološkim alatima ne koriste sa svrhom učenja, smatraju da je IKT koristan u cjeloživotnom učenju (najviša aritmetička sredina) te da pomaže u razvoju profesionalnih vještina. Stoga su ispitanici izrazili spremnost na to da postanu kompetentni korisnici IKT-a.

Tablica 6

Deskriptivna statistika stava prema IKT-u

	AT			
	M	SD	Najniže	Najviše
IKT je neophodan/koristan u mojoj budućoj karijeri	8,19	1,861	1	10
IKT će mi pomoći ekonomičnije organizirati akademske zadatke/posao	8,00	1,972	2	10
IKT će mi pomoći ekonomičnije organizirati profesionalne zadatke/posao	8,10	1,781	2	10
IKT je korisno sredstvo daljnjeg obrazovanja	8,37	1,752	2	10
IKT je potreban za profesionalni razvoj	7,64	2,077	0	10
Učitelj, stručnjak iskusan u IKT-u	8,01	1,968	2	10

Odnos između poznavanja, korištenja i stava

Pearsonov hi-kvadrat test primijenjen je radi utvrđivanja postojanja statistički značajnog odnosa između različitih blokova upitnika. Korelacija je značajna na bilateralnoj razini u vrijednosti od 0,01 ($p < 0,01$). Utvrđeno je da viši stupanj poznavanja koncepata pozitivno korelira s bolje razvijenim vještinama u korištenju tehnologije ($X^2 = 0,701$, $p < 0,01$). Korištenje i stav su također u korelaciji, no ovdje je razina značajnosti niža te je viši stupanj vještina u korištenju tehnologije uključivao pozitivniji stav prema tehnologijama ($X^2 = 0,226$, $p < 0,01$). Između poznavanja IKT-a i stave prema njemu nije utvrđena korelacija ($X^2 = 0,181$, $p > 0,01$).

Značajne korelacije zabilježene su za tri podsegmenta: korištenje uređaja, alata i usluga. Ispitanici s najvišim stupnjem vještina u korištenju tehnoloških uređaja također su najiskusniji u korištenju alata ($X^2 = 0,737$, $p < 0,01$) i usluga ($X^2 = 0,356$, $p < 0,01$). Visoka razina značajne korelacije zabilježena je i u odnosu između alata i usluga ($X^2 = 0,397$, $p < 0,01$).

Slika 2

Digitalna kompetencija: spolne razlike

Cilj je bio provjeriti utječe li spol na digitalnu kompetenciju u pogledu poznavanja, korištenja i stava prema IKT-u. U većini analiziranih aspekata pokazale su se značajne razlike između uspoređenih varijabli korištenih za ispitivanje tog utjecaja.

Slike 2 i 3 prikazuju aritmetičke sredine različitih blokova. Primjećuju se razlike u odnosu na spol u smislu da muškarci pokazuju bolje poznavanje i vještine u korištenju IKT-a, a žene imaju bolje rezultate u pogledu stava prema IKT-u.

Slika 3 i 4

Nakon provjere parametarskih pretpostavki homogenosti i normalnosti odabrana je analiza varijance (studentov t-test) za nezavisne uzorke kako bi se potvrdilo ima li značajnih razlika uvjetovanih spolom.

Značajne razlike zabilježene su u nekoliko segmenata te muški ispitanici većinom postižu bolje rezultate nego žene (tablica 7). Muškarci su bolji od žena u poznavanju koncepata ($p=0,000$) i korištenju IKT-a ($p=0,007$). Za razliku od njih, žene iskazuju pozitivniji stav prema tehnologijama ($p=0,001$). Ti rezultati navode na zaključak da pozitivniji stav ili veća spremnost ne upućuju na bolje poznavanje IKT-a ili ovladavanje različitim tehnologijama.

S druge strane postoje čimbenici u kojima takve razlike nisu utvrđene, a to se posebno odnosi na korištenje uređaja i usluga ($p>0,05$).

Tablica 7

U pogledu bloka o korištenju (tablica 8) postoje značajne razlike u korištenju alata ($p=0,000$), ali ne i u korištenju uređaja ($p=0,268$) i usluga ($p=0,535$). Tako se može zaključiti da muškarci svoje sposobnosti korištenja alata ocjenjuju bolje nego žene, ali spolnih razlika nema u pogledu korištenja uređaja i usluga IKT-a.

Tablica 8

Podaci o stavu (tablica 9) pokazuju veću spremnost i pozitivniji stav prema novim tehnologijama kod ispitanica nego kod ispitanika. Potrebu i korisnost IKT-a studentice također ocjenjuju višim vrijednostima nego studenti.

Naposljetku, binarna logistička regresija primijenjena je kako bi se utvrdio utjecaj spola na stupanj poznavanja, korištenja i stava prema tehnologiji, zajedno s Hosmer-Lemeshowovim test radi utvrđivanja prikladnosti. Određen je interval pouzdanosti (CI) od 95% za Exp (B). Dobiveni rezultati prikazani su u tablici 10.

U odnosu na varijable modela nije utvrđena statistički značajna razlika za varijablu stava ($p=0,012^*$) te je utvrđen negativan odnos ($B=-0,609$). Time se može zaključiti da su se studenti koji pokazuju pozitivniji stav prema tehnologijama slabije ocijenili u pogledu poznavanja i korištenja te je zabilježena najniža vrijednost snage odnosa ($\text{Exp (B)}=0,544$). To znači da pozitivan stav ne povećava mogućnost postizanja boljeg poznavanja i vještina u korištenju.

Tablica 9

Kontrast hipoteza. T-test za nezavisne uzorke

AT	Rod	M	SD	X standardne pogreške	F	p
IKT je neophodan/koristan u mojoj budućoj karijeri	Ž	8,41	1,477	0,186	19,726	0,000
	M	6,80	3,190	1,009		
IKT će mi pomoći ekonomičnije organizirati akademske zadatke/posao	Ž	8,17	1,746	0,220	6,159	0,015
	M	6,90	2,923	0,924		
IKT će mi pomoći ekonomičnije organizirati profesionalne zadatke/posao	Ž	8,19	1,625	0,205	3,832	0,054
	M	7,50	2,593	0,820		
IKT je korisno sredstvo daljnje izobrazbe	Ž	8,46	1,554	0,196	8,795	0,004
	M	7,80	2,741	0,867		
IKT će mi pomoći ekonomičnije organizirati profesionalne zadatke/posao	Ž	7,78	1,836	0,231	7,943	0,006
	M	6,80	3,225	1,020		
IKT je preduvjet profesionalnog razvoja	Ž	8,21	1,705	0,215	8,330	0,005
	M	6,80	3,011	0,952		

Tablica 10

Binarna logistička regresija

	B	E.S.	Wald	gl.	p	EXP (B)	IC 95% za EXP (B)	
							Najniže	Najviše
FN	0,235	0,288	0,664	1	0,415	1,265	0,719	2,225
US	0,676	0,472	2,050	1	0,152	1,966	0,779	4,958
AT	-0,609	0,244	6,247	1	0,012*	0,544	0,338	0,877

Rasprava i zaključci

U istraživanju je pokazana razina digitalne kompetencije iz perspektive ispitanih studenata Preddiplomskog studija socijalne pedagogije na Sveučilištu u Salamanki s posebnim naglaskom na varijable poznavanja, korištenja, stava prema IKT-u i spola.

Studenti socijalne pedagogije ne uklapaju se u profil „digitalnog urođenika” kako ga je definirao Prensky (2001), već se više može reći da pripadaju generaciji rođenoj u digitalnom dobu, čiji su pripadnici naviknuti na to da su okruženi tehnologijom u svakodnevnom životu. Neki od njih bolje su upoznati s tehnologijom i uspješnije njome barataju te se njome većinom koriste kod kuće ili u slobodno vrijeme (Gómez, 2015; Merino, 2010; Muros, Aragón, i Bustos, 2013; Pfizer Foundation, 2009). Međutim,

neke studije (Castañeda i sur., 2014) pokazuju da ti korisnici ne dosegnu razinu digitalne pismenosti potrebnu za produktivno korištenje IKT-a, koja bi povećala njegov potencijal u informacijskom društvu znanja. Neka istraživanja osporavaju mit o „digitalnom urođeniku” (Bennett, Maton, i Kervin, 2008; Brown i Czerniewicz, 2010; Helsper i Eynon, 2010; Kennedy, Judd, Dalgarno, i Waycott, 2010; Li i Rainieri, 2010) pa u skladu s njima malen broj „digitalnih urođenika” iz ovog istraživanja možemo promatrati kao iznimku koja potvrđuje pravilo. Nadalje, rezultati ovog istraživanja u skladu su sa zaključcima istraživanja Gisberta i Esteve (2011), prema kojima student ne posjeduje poželjnu razinu digitalne kompetencije na početku studija.

Većina studenata iz uzorka posjeduje računala, pametne telefone, digitalne kamere, uređaje za navigaciju i tablete. Nevelik broj njih posjeduje e-čitače i digitalne kamkordere, a vrlo malen broj ispitanika ima neku vrstu nosivog ili elektroničkog uređaja.

U pogledu osnovnih analiziranih varijabli studenti socijalne pedagogije ne zadovoljavaju razinu poznavanja koncepata vezanih uz IKT. Iako su u korištenju postigli zadovoljavajuće rezultate, gotovo sve vrijednosti iznenađujuće su niske. U korištenju alata ispitanici pokazuju jako dobro ovladavanje društvenim mrežama (ponajprije Facebookom) i komunikacijskim alatima, no zaostaju u korištenju alata za obrazovanje. U pogledu usluga većina se smatra vrlo kompetentnim korisnicima WhatsAppa te se služe internetom za dijeljenje slika i videa, no ne i za objavljivanje ili dijeljenje prezentacija, zvučnih snimki, kao ni za dijeljenje sadržaja. Ne vode blog i nemaju vlastitu web-stranicu, ne pohranjuju podatke u oblaku i ne pretražuju wikije niti ih objavljuju. Na kraju, njihov stav prema IKT-u prilično je pozitivan: prihvaćaju tehnologije kao neophodne i korisne u budućoj karijeri te smatraju da im pomažu u ekonomiziranju uloženog truda u profesionalne svrhe. Unatoč tome što se tehnološkim alatima ne koriste u obrazovne svrhe, ispitanici IKT vide korisnim za nastavak obrazovanja i izražavaju namjeru postati kompetentnim korisnicima IKT-a. Ti rezultati u skladu su s prethodnim studijama (Santiago i Santoveña, 2012; Hernández i sur., 2014).

U pogledu spolnih razlika rezultati su pokazali slaganje s prethodnim studijama (v. Barrantes, Casas, i Luengo, 2009 i 2014; Hernández, Acosta, Rodríguez, González, i Borges, 2003; Waite, 2004; Yuen i Ma, 2002) te su zabilježene značajne razlike u nekoliko segmenata, gdje su muškarci većinom postigli bolje rezultate nego žene. Ispitanici u usporedbi s ispitanicama pokazuju bolje poznavanje i korištenje IKT-a, što je suprotno od zaključaka nekih studija poput istraživanja Cózara i Robliza (2014), gdje su žene postigle bolje rezultate. Međutim, treba imati na umu da žene pokazuju pozitivniji stav i veću spremnost za korištenje IKT-a, što nije nužno potvrda njihova boljeg poznavanja ili sposobnosti u korištenju tehnologija.

U nekim aspektima te razlike nisu zabilježene, a tako je i u drugim studijama (Cuadrado, Fernández, i Ramos, 2009; Law, Pelgrum, i Plomp, 2008; Roblizo i Cózar, 2015). Naime, dok su spolne razlike vidljive u pogledu korištenja alata, pri čemu muškarci pokazuju bolje rezultate, one nisu vidljive u pogledu korištenja uređaja i usluga.

Rezultati pokazuju potrebu za poboljšanjem kompetencije u IKT-u kod studenata Preddiplomskog studija socijalne pedagogije. Smatramo ih pripadnicima generacije koja je samostalno naučila koristiti se IKT-om, a tehnologijama se većinom koriste kod kuće u slobodno vrijeme, uglavnom s ciljem komuniciranja ili osobne interakcije. Međutim, ispitanici nisu naučili, niti im je itko pokazao, kako se tehnologijama koristiti iz tzv. „akademske” ili „profesionalne perspektive”. To je zadatak koji trebaju preuzeti sveučilišta razvojem kurikula koji obuhvatno uključuju tehnološku kompetenciju i zadovoljavaju tehnološke zahtjeve društva 21. stoljeća.

Neophodno je uključivanje te kompetencije u ranu fazu obrazovanja budućih socijalnih pedagoga, a istraživanja pokazuju da tome nije tako. U svome istraživanju o statusu obrazovne tehnologije na preddiplomskim obrazovnim studijima španjolskih sveučilišta nakon uvođenja Europskog prostora visokog obrazovanja (EHEA) Losada, Valverde, i Correa (2012) otkrili su da u kurikulumima preddiplomskih studija socijalne pedagogije nije prisutna povećana zastupljenost te kompetencije. Uvođenje Europskog prostora visokog obrazovanja dovelo je do uzmaka IKT-a u pogledu razvoja digitalne kompetencije budućih socijalnih pedagoga. U skladu s tim došlo je i do smanjenja u usporedbi s kurikulumima prethodnog studija socijalne pedagogije te trenutno nema jamstva da će svaki student dobiti specifično obrazovanje u obrazovnim tehnologijama kako je to prije bio slučaj.

Osnovna ograničenja ovog istraživanja su nemogućnost poopćavanja zbog ograničenosti uzorka. Ipak, smatramo da je uzorak reprezentativan te bi mogao biti koristan obrazovnoj zajednici jer doprinos dijagnostičke procjene digitalnih kompetencija budućih stručnjaka socijalne pedagogije može potaknuti razmišljanje o njihovom obrazovanju u području IKT-a.

Predlažemo buduća istraživanja o utjecaju društvenih i obiteljskih varijabli u vezi s korištenjem digitalne kompetencije te utvrđivanje kako te varijable utječu na ovladavanje njome. Također bi bilo zanimljivo vidjeti rezultate za druge skupine i zemlje.