El género y su incidencia en el nivel de competencia digital autopercibido por estudiantes de Pedagogía

Gender and its impact on Pedagogy students' self-perceived digital competence

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RESUMEN.
Actualmente se espera que las futuras generaciones de maestros y maestras egresen siendo competentes en el uso pedagógico de las TIC, para favorecer el aprendizaje de las y los estudiantes. No obstante, diversos estudios evidencian diferencias significativas en el nivel de conocimientos sobre estas herramientas que poseen los hombres en comparación con las mujeres, aspecto altamente preocupante si se considera que existe una condición de feminización de las carreras de Pedagogía. En relación a ello, en este trabajo se presentan los principales resultados obtenidos de un estudio que se propuso determinar la incidencia que tiene el género en cada una de las dimensiones de la competencia digital, para ello se utilizó un diseño descriptivo, donde a 175 estudiantes de una universidad chilena se les aplicó un instrumento diseñado *ad hoc* para la investigación. Los análisis se llevaron a cabo empleando estadísticos de tendencia central y test de contrastes de medidas, utilizando el software SPSS v.20.Los resultados confirman que los futuros docentes obtienen mejores resultados en nivel de competencia digital que las mujeres, principalmente en las dimensiones aspectos pedagógicos, aspectos técnicos y aspectos sociales, éticos y legales.

PALABRAS CLAVE.
Competencia Digital, formación del profesorado, Educación Superior, género y TIC.

ABSTRACT.
The expectation now exists that future generations of teachers will graduate being competent in the pedagogical use of ICTs, as this would favor students' learning. Nevertheless, a variety of studies reveal significant differences in the level of knowledge about these tools owned by men in comparison with women, this being a highly worrying aspect in view of the evident feminization of pedagogy degrees. In this regard, the present paper shows the main results obtained in a study which had as its aim to determine the impact that gender has on each one of the digital competence dimensions. A descriptive design was used for this purpose, where an instrument designed *ad hoc* for our research was applied to 175 students at a Chilean university.The analyses were performed by means of central tendency statistics and measurement contrast tests, which the software SPSS v.20.The results confirm that future male teachers obtain better results in digital competence

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levels than their female counterparts, mainly in the dimensions pedagogical aspects, technical aspects and social, ethical and legal aspects.

KEY WORDS.
Digital competence, teacher training, Higher Education, gender and ICTs.

1. Introduction.

Initial teacher training institutions currently face the challenge not only of training the new generation of teachers so that they will be able to take advantage of the whole educational potential offered by ICTs but also of imparting a more constructive as well as innovative teaching (Grande, Cañon & Cantón, 2016). After all, as a large number of authors (Llorente, Barroso & Cabero, 2015; Pérez, 2011;Quintero & Hernández, 2011) have already pointed out, these tools offer plenty of opportunities to innovate in teaching methodologies, making them more collaborative, participatory and constructive.

ICT integration into the classroom is no easy task because it requires a careful planning process, together with the understanding of several basic issues that have to do with the omnipresence of such tools in society and the extent to which this influences education (UNESCO,2004).The need additionally exists to consider other factors which have become key aspects for training processes, including the importance of lifelong learning, the emergence of new and diverse formative environments, the compelling need to acquire competences closely linked to new personal and institutional spaces, or the development of new communicative competences, to quote but a few. These factors must encourage us to rethink and re-evaluate traditional educational spaces with the aim of making them better suited to the context where children and youngsters live.

Initial teacher training acquires more and more importance within this scenario, since it is expected that future generations of teachers will graduate being competent in the pedagogical use of ICTs, that they will be able to innovate in their teaching practices through the effective utilization of these tools to favor students' learning (García-Valcárcel & Martín, 2016; Gutiérrez & Serrano, 2016; Mira, 2017), amongst many other skills and attitudes required to actively participate in the various scenarios that are gradually taking shape in contemporary society. More precisely, initial teacher training must deal with the new twenty-first-century ways of learning and teaching (De Saint Pierre, 2008). In this respect, it is our contention that the training path must ultimately seek to ensure that teachers manage to develop digital competence in each and every one of its dimensions (Adell, 2010; Flores, 2014). Personal variables simultaneously need to be taken into consideration, though, since their adequate treatment during the initial training stage may contribute to overcome some of the resistance that practicing teachers very often show.

Amongst personal variables stands out the importance of favoring an opening and flexible approach to value these resources as means which can provide significant learning opportunities. A positive attitude must equally be promoted regarding the incorporation of these tools into their pedagogical practices (Gargallo *et al*., 2010), as well as to guarantee that the initial training process is offered to men and women on an equal footing.

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1.1. Gender and ICTs in initial teacher training.

Speaking about gender means referring to those social constructions which assign a number of specific ideas, responsibilities, patterns, behaviors, rules, rights, or duties to the sexual condition with which a person is born –male or female− within a particular context (Herrera, Buitrago & Ávila, 2016). More precisely, this has to do with what is socially understood as feminine or masculine and to the relationship existing between these two spheres.

Gender is commonly associated with the inequality of the sexes and with the discrimination between them, mainly in relation to power condition, decision-making, and resources, amongst other variables. Nevertheless, being a symbolic construction, its meaning is determined by historical, political, economic and cultural factors, which means that we find ourselves before a dynamic concept where changes affecting its meaning and interpretation are likely to happen.

Specifically regarding gender and ICTs in the context of education, various studies (Almerich *et al*., 2005;Almerich *et al*.,2011;Barrantes, Casas & Luengo, 2014; Suárez-Rodríguez *et al*., 2013;Sáinz, 2013) stress that female teachers perceive themselves as being less competent in ICT use than their male counterparts. This perception might have its justification in social imaginaries built around the woman where the technological field and the competences associated with the use of these tools have been basically seen as a men's domain (Cabero, Marín & Vázquez, 2011; Gil-Juárez, Feliú & Vitores, 2012). In this sense, Castaño (2008) refers to the current existence of a gender digital divide "derived from the male dominance over the strategic areas of education and research, as well as the employment related to sciences, engineering and ICTs" (page 10). In addition to this, Sáinz, Castaño and Artal (2008) highlight the fact that inequalities still remain with regard to the uses and the knowledge about different types of technologies; the skills needed to access information, the knowledge and training associated with ICTs; and the skills required to live and work in environments mediated by these resources.

In relation to the above, it is considered that this gender difference in ICT utilization and knowledge within the educational field becomes highly worrying since, if female students feel less capable of using these tools than their male counterparts, the problem arises in initial education as well as in basic or primary education, insofar as a clear predominance of women exists at these educational levels (Sáinz, 2013), which results in a feminization of the teaching profession (Madrid, 2006).

1.1. ICT standards for initial teacher training.

Teachers' digital competence has acquired such relevance that a variety of organizations have provided guidelines about the desirable performance levels in ICT tool use that teachers should reach, which has given rise to the definition of standards.

According to some authors (Prendes & Gutiérrez, 2013; Silva, 2012), the standards about ICT competence serve as a reference to assess teachers' competence,while simultaneously providing guidance for proposals related to initial teacher training. In turn, Mengual and Roig (2012) suggest that standards represent the willingness to create a taxonomy thanks to which it is possible to understand the way in which "ICTs have entered society and [to

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identify] the elements that deserve to be studied and learned" (page 27). These models may consequently be seen as quality-oriented ones, since they make it possible to unify criteria around desirable performances when it comes to ICT application to teaching practice.

A number of specific proposals for standards about ICT competences for teachers can be found in the literature, but a special mention must be made of the ICT Standards for Initial Teacher Training (ITT) in the Chilean context (ENLACES, 2008), of great interest for the present study since they are fully adapted both to the educational level and to the reality examined. This proposal deals with ICT use from a multidimensional perspective; it contains 16 competences and 76 indicators grouped together into five dimensions: Pedagogical Aspects; Social, Ethical, and Legal Aspects; Technical Aspects; School Management; and Professional Development (see Table 1). At the same time, it is structured around two basic teacher training areas: pedagogical training; and discipline-related training (see Figure 1).

Table 1. ICT Standard Dimensions for ITT in the Chilean context

Dimension	Definition
Pedagogical Aspects	Future teachers acquire and show ways of applying ICTs in the school curriculum as a means to support and expand learning and teaching.
Social, Ethical, and Legal Aspects	Future teachers identify, appropriate, and disseminate the ethical, legal, and social aspects related to the use of computer resources and contents available on the Internet amongst their students, acting in a conscious and responsible manner with regard to the rights, cares, and respects which must be borne in mind when using ICTs.
Technical Aspects	Future teachers show a mastery of the competences associated with an overall ICT knowledge and the utilization of productivity tools (word processor, spreadsheet, presenter) and the Internet, developing capabilities and skills for permanent learning about the use of new hardware and software.
School Management	Future teachers use ICTs to support their work in the administrative area, both at the level of their teaching management and when helping to run the establishment.
Personal Development	Future teachers resort to ICTs as a means for specialization and Professional Development, keeping informed and accessing various sources to improve their practices and facilitating the exchange of experiences that contribute to achieve better teaching and learning processes through a reflection process with different educational actors.

Source: ENLACES (2008). *Estándares en Tecnología de la Información y la Comunicación para la Formación Inicial Docente*. Santiago de Chile: UNESCO, page 146

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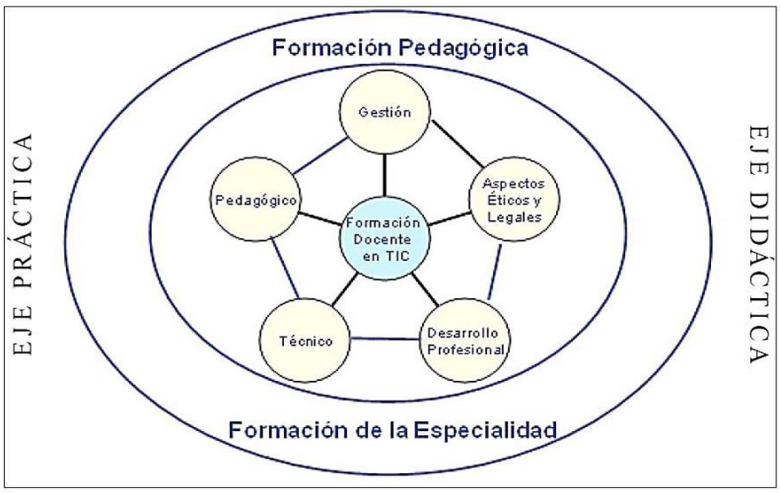

Figure 1. Teacher training digital competence dimensions graph
Source: ENLACES (2008). *Estándares en Tecnología de la Información y la Comunicación para la Formación Inicial Docente*. Santiago: UNESCO, page 145

2. Methodology.

The study was carried out under a descriptive methodological design, characterized by using neither experimental manipulation nor random subject assignment (Cohen & Manion, 2002). The central purpose consisted in determining the impact of the gender variable on the digital competence level self-perceived by Pedagogy students for each one of the dimensions established in the ICT Standards for ITT in the Chilean context (ENLACES, 2008).

The sample has a non-probabilistic nature. A decision was made to choose homogeneous subgroup sampling because the participants in the study share a common situation, as is carrying out the professional practice activity, located in their final training stage. The sample ended up being formed by 175 students from the Pedagogy degrees imparted by the Faculty of Education and Humanities, at the University of Bío-Bío (Chile), where 79.4% corresponded to women and 20.6% to men. As for age, the mean was 24 years (*SD* = 2.51) (see Figure 2).

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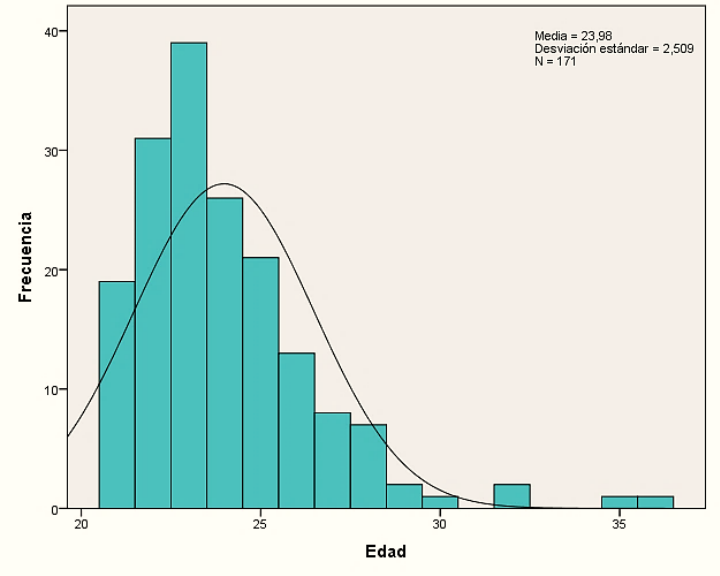

Figure 2. Age distribution in the sample (*n* = 171)
Source: Elaborated by the authors

The variables considered were organized into personal, evaluative and context-related ones. The first incorporate sociodemographic data, teaching and connectivity; the second consider each one of the dimensions established in the ICT Standards for FID (ENLACES, 2008). The context-related variables were divided into two dimensions:curricular and physical. This paper presents the results linked to the 'gender' variable and the evaluative variables.

The measurement was carried out using a scale designed *ad hoc* for this research and known as "Self-evaluation scale about digital competence for Pedagogy students," which contains questions referring to sociodemographic aspects and 75 reagents, the answer categories of which are presented in a 1-to-5 Likert format with the following interpretations for each number on the scale: 1:Never/Not at all; 2:Seldom/Little; 3:Sometimes/Neither much nor little; 4: Frequently/Quite; and 5: A lot/Always. The scale underwent a strict validation process (Flores-Lueg & Roig-Vila, 2016) during which the possibility arose to consider each one of the dimensions for these standards as a subscale.

The analysis was carried out by means of descriptive statistical techniques and through the application of mean difference tests such as: Student's T and its non-parametric alternative, Mann-Whitney's U Test, using the software SPSS v. 20. A decision was made to perform both tests simultaneously because the exploratory study about some variables belonging to the same dimension revealed normal asymmetry and kurtosis values, whereas others showed the absence of those normal values.

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3. Results

Below can be found the main results obtained about Pedagogy students' self-perceived digital competence levels and the behavior of the gender variable in each one of the following dimensions: Pedagogical Aspects; Social, Ethical, and Legal Aspects; Technical Aspects; School Management; and Professional Development.

3.1. Gender and pedagogical aspects

It is firstly important to point out that the exploratory factor analysis determined the definition of six factors for the instrument validation process (Flores-Lueg & Roig-Vila, 2016). Based on this, the analyses were performed considering each one of those factors as an independent variable, plus the total score.

The descriptive results make it clear that the means and medians quite closely resemble each other in each variable. These centrality statistics reveal that the situation of students is fairly similar and close to the midpoint of the scale (1-5). Within this equality scenario, it is in Factors 1 and 4 that the lowest values can be found, whereas Factors 2 and 3 show the highest ones. Variability remains similar between all variables, with the greater degree of homogeneity being found in the total score and in Factor 3, and the highest dispersion corresponding to Factor 4 (see Table 2).

Table 2. Descriptive analysis. Variable related to Pedagogical Aspects

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Total Score
Mean	3.06	3.58	3.47	3.08	3.25	3.68	3.28
IQ 95%: lower limit	2.95	3.48	3.35	2.93	3.13	3.56	3.18
IQ 95%: upper limit	3.18	3.68	3.58	3.23	3.37	3.79	3.37
Mean typical error	0.06	0.05	0.06	0.08	0.06	0.06	0.05
Median	3.15	3.67	3.67	3.00	3.50	3.50	3.29
Minimum	1.08	2.00	1.00	1.00	1.00	1.50	1.79
Maximum	4.69	5.00	5.00	5.00	5.00	5.00	4.75
Standard Deviation	0.78	0.68	0.79	1.01	0.82	0.79	0.64
Variance	0.61	0.46	0.62	1.02	0.67	0.62	0.41
Semi-interquartile range	0.58	0.42	0.50	0.75	0.75	0.50	0.45
Variation Coefficient	25.49	18.99	22.77	32.79	25.23	21.47	19.51

Source: Elaborated by the authors

Applying contrast tests allows us to observe that the following three variables present differences which can be regarded as significant (p<.05):

- The mean for men in Factor 1 (M = 3.24,SD = 0.59) turned out to be higher than that corresponding to women (M = 2.97, SD =0.80), a difference that is significant for p<.01 in both statistical tests [t(173) = 3.18, p =. 002; Z = 2.95, p= .003], but with a small effect size (R^2 = .055).

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- The mean for men in Factor 5(M=3.41,SD=0.73) also proved higher than that corresponding to women (M= 3.18,SD = 0.83), but it is only significant for p<.05 and the effect size is very slight (R^2 = .027).
- The final score also reveals that males obtain a higher mean (M = 3.53, SD = 0.50) than females (M = 3.21,SD = 0.66), where statistically significant differences do appear for p<.01 between both groups [t(173) = 2.70, p = .008; Z = 2.57, p = .009], albeit with an effect size which remains small (R^2 = .040) (see Table 3).

Table 3**1**. Mean difference test according to gender**.** Pedagogical Aspects

Variable / Group		N	Mean (IQ 95%)	D. E.	Student's T			MW's Test:		IC 95% diff	Effect Size: R^2
					T	df	P	Z	P		
Factor 1	Men	36	3.42 (3.22 – 3.62)	0.59	3.18	173	.002 **	2.95	.003 **	0.17 – 0.73	.055
	Women	139	2.97 (2.84 – 3.10)	0.80							
Factor 2	Men	36	3.73 (3.51 – 3.95)	0.65	1.55	173	.124 NS	1.55	.120 NS	---	.014
	Women	139	3.54 (3.42 – 3.65)	0.68							
Factor 3	Men	36	3.59 (3.38 – 3.81)	0.64	1.07	173	.186 NS	0.94	.349 NS	---	.007
	Women	139	3.44 (3.30 – 3.57)	0.82							
Factor 4	Men	36	3.31 (2.98 – 3.63)	0.97	1.51	173	.134 NS	1.57	.116 NS	---	0.13
	Women	139	3.02 (2.85 – 3.19)	1.02							
Factor 5	Men	36	3.51 (3.27 – 3.76)	0.73	2.18	173	.031 *	2.03	.042 *	0.03 – 0.63	.027
	Women	139	3.18 (3.04 – 3.32)	0.83							
Factor 6	Men	36	3.78 (3.52 – 4.04)	0.77	0.86	173	.391 NS	0.69	.490 NS	---	.04
	Women	139	3.65 (3.52 – 3.78)	0.79							
Total Score	Men	36	3.53 (3.36 – 3.70)	0.50	2.70	173	.008 **	2.57	.009 **	0.09 – 0.55	.040
	Women	139	3.21 (3.19 – 3.32)	0.66							

NS = non-significant (P>,050) * Significant at 5% (P<.050) ** Highly significant at 1% (P<.010)

Source: Elaborated by the authors

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3.2. Gender and social, ethical, and legal aspects.

The three factors defined in the validation process, plus the total score, were considered for this dimension. The mean values obtained present somewhat higher scores in Factor 3 and somewhat lower ones in Factor 1, whereas the degree of homogeneity is very similar in all of them (see Table 4).

Table 4. Descriptive Analysis. Variables related to Social, Ethical and Legal Aspects.

	Factor 1	Factor 2	Factor 3	Total Score
Mean	2.96	3.04	3.51	3.12
IQ 95%: lower limit	2.82	2.90	3.39	3.00
IQ 95%: upper limit	3.10	3.18	3.64	3.24
Mean typical error	0.07	0.07	0.06	0.06
Median	3.00	3.00	3.67	3.19
Minimum	1.00	1.00	1.00	1.00
Maximum	4.80	5.00	5.00	4.62
Standard deviation	0.94	0.91	0.82	0.78
Variance	0.89	0.82	0.67	0.60
Semi-interquartile Range	0.70	0.60	0.50	0.54
Variation Coefficient	31.76	29.93	23.36	25.00

Fuente. Elaborated by the authors

Contrast tests between sexes and each one of the variables (see Table 4) allow us to point out that no differences appeared which can be considered significant (p>.05) in the Factor 3 variable. Differences do exist in the other variables, though:

- The mean for men in Factor 1 (M = 3.28,SD = 0.87) exceeds the one corresponding to women (M = 2.88, SD = 0.94), reaching statistical significance for p<.05 in both statistical tests [t(170)= 2.34, p = .021; Z = 2.23, p = .026]. The effect size is rather small (R^2=.031).
- Men obtain a higher mean in Factor 2 (M = 2.39,SD = 0.81) than women (M = 2.94,SD = 0.91), a highly significant difference for p<.01 in both statistical tests [t(170)= 2.69, p = .008; Z = 2.73, p = .006], even though the effect size is slight (R^2 = 0.41).
- The mean for males in the total score (M = 3.41,SD = 0.70) once again turns out to be higher than that corresponding to females (M = 3.04, SD = 0.78), a statistically significant difference for p<.05 in both tests [t(170) = 2.56, p = .011; Z = 2.48, p = .013], and once more with a small effect size (R^2 = .037).

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Table 5. Mean difference test by gender. Social, Ethical, and Legal Aspects

Variable / Group		N	Mean (IQ 95%)	S. D.	Student's T			MW's Test:		IQ 95% diff.	Effect size: R^2
					T	df	P	Z	P		
Factor 1	Men	36	3.28(2.99 – 3.58)	0.87	2.34	170	.021 *	2.23	.026 *	0.06 – 0.75	.031
	Women	136	2.88(2.72 – 3.04)	0.94							
Factor 2	Men	36	3.39(3.12 – 3.67)	0.81	2.69	170	.008 **	2.73	.006 **	0.12 – 0.78	.041
	Women	136	2.94(2.79 – 3.10)	0.91							
Factor 3	Men	36	3.64(3.40 – 3.88)	0.71	1.05	170	.297 NS	0.93	.350 NS	---	.006
	Women	136	3.48(3.33 – 3.62)	0.85							
Total Score	Men	36	3.41(3.17 – 3.65)	0.70	2.56	170	.011 *	2.48	.013 *	0.08 – 0.65	.037
	Women	136	3.04(2.91 – 3.17)	0.78							

NS = non-significant (p>,050) * Significant at 5% (p<.050) ** Highly significant at 1% (p<.010)

Source: Elaborated by the authors

3.3. Gender and Technical Aspects.

Descriptive statistics were applied in the four factors extracted in the validation process, plus the total score. Table 6 shows that the means obtained reveal higher scores in Factor 1 (M = 3.96,SD = 0.68) and lower ones in Factor 4 (M = 3.18, SD = 1.11). It is precisely these two factors that also present a certain difference in their variability, more dispersion becoming visible in Factor 4 and quite higher homogeneity in Factor 1, as well as in the total score.

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Table 6. Descriptive analysis. Technical Aspects

	Factor 1	Factor 2	Factor 3	Factor 4	Total Score
Mean	3.96	3.50	3.62	3.18	3.65
IQ 95%: lower limit	3.85	3.38	3.50	3.01	3.55
IQ 95%: upper limit	4.06	3.62	3.75	3.34	3.75
Mean typical error	0.05	0.06	0.06	0.08	0.05
Median	4.00	3.50	3.75	3.00	3.69
Minimum	1.50	1.00	1.00	1.00	1.67
Maximum	5.00	5.00	5.00	5.00	5.00
Standard Deviation	0.68	0.78	0.81	1.11	0.66
Variance	0.47	0.61	0.66	1.22	0.43
Semi-interquartile range	0.50	0.50	0.63	0.75	0.45
Variation Coefficient	17.17	22.29	22.38	34.91	18.08

Source: Elaborated by the authors

Contrast tests (see Table 7) reveal the absence of differences which can be considered significant (p>.05) both in Factor 1 and in Factor 3. However, the differences existing in the latter could be assessed as almost significant (p<.10) and might be indicative of a possible effect. Significant differences did appear in the other factors:

- The mean for men in Factor 2 (M = 3.89,SD = 0.74) is higher than that corresponding to women (M= 3.39, SD = 0.76), reaching statistical significance for p<.01 in both statistical tests [t(170) = 3.48, p = .001; Z = 3.20, p = .001], even though the effect size must be regarded as slight (R^2 = .066).
- The mean for men in Factor 4 (M = 3.57,SD = 0.96) once again exceeds the one corresponding to women (M = 3.07, SD = 1.12), a significant difference for p<.05 in both statistical tests [t(171) = 2.43, p = .016; Z = 2.31, p = .021], but with a small effect size (R^2 = .033).
- It also becomes clear that the mean for males in the total score (M = 3.88, SD = 0.68) is higher than that corresponding to females (M = 3.59, SD = 0.64), a difference which acquires significance for p<.05 in both statistical tests [t(172) = 2.40, p = .017; Z = 2.36, p = .018], but once more with a small effect size (R^2=.033).

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Table 72. Mean difference test by gender. Technical Aspects

Variable / Group		N	Mean (IQ 95%)	S. D.	Student's T			MW's Test		IQ 95% diff.	Effectsize: R^2
					T	df	P	Z	P		
Factor 1	Men	36	4.00 (3.76 – 4.23)	0.69	0.38	172	.705 NS	0.29	.775 NS	---	.000
	Women	138	3.95 (3.83 – 4.06)	0.68							
Factor 2	Men	36	3.89 (3.64 – 4.14)	0.74	3.48	170	.001**	3.20	.001**	0.21 – 0.77	.066
	Women	136	3.39 (3.27 – 3.52)	0.76							
Factor 3	Men	36	3.85 (3.54 – 4.15)	0.91	1.87	171	.063 NS	1.83	.067 NS	---	.020
	Women	137	3.56 (3.43 – 3.70)	0.78							
Factor 4	Men	36	3.57 (3.25 – 3.89)	0.96	2.43	171	.016 *	2.31	.021 *	0.09 – 0.90	.033
	Women	137	3.07 (2.88 – 3.26)	1.12							
Total Score	Men	36	3.88 (3.65 – 4.11)	0.68	2.40	172	.017 *	2.36	.018 *	0.05 – 0.53	.033
	Women	138	3.59 (3.48 – 3.69)	0.64							

NS = non-significant (p>,050) * Significant at 5% (p<.050) ** Highly significant at 1% (p<.010)

Source: Elaborated by the authors

3.4. Gender and School Management Dimension.

The validation process determined the presence of a single factor which contained six indicators, which is why only the total score variable was considered in this dimension. The descriptive analyses show that the mean lies in the central part of the scale and variability is not too high, but it covers the whole possible value continuum (see Table 8).

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Table 8. Descriptive analysis. School Management

	Total Score
Mean	3.60
IQ 95%: lower limit	3.49
IQ 95%: upper limit	3.71
Mean typical error	0.06
Median	3.67
Minimum	1.50
Maximum	5.00
Standard deviation	0.76
Variance	0.57
Semi-interquartile range	0.58
Variation Coefficient	21.11

Source: Elaborated by the authors

The results of contrast tests between genders make it clear that no differences worthy of being regarded as significant (p>.05) exist in either of them (see Table 9).

Table 9. Mean difference test by gender. School Management

Variable / Group		N	Mean (IQ 95%)	S.D.	Student's T			MW's Test		IQ 95% diff.	Effect size: R^2
					T	gl	P	Z	P		
Total Score	Men	36	3.64 (3.41 – 3.86)	0.67	0.35	171	.725 NS	0.21	.832 NS	---	.001
	Women	137	3.59 (3.46 – 3.72)	0.78							

NS = non-significant (p>,050) * Significant at 5% (p<.050) ** Highly significant at 1% (p<.010)

Source: Elaborated by the authors

3.5. Gender and Professional Development

Table 10 provides a summary of the descriptive statistics corresponding to three variables considered in this dimension, two factors plus the total score. The average values obtained reveal somewhat higher scores in Factor 2 and lower ones in Factor 1. The degree of homogeneity is also very similar in all of them.

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Table 10. Descriptive analysis. Professional Development

	Factor 1	Factor 2	Total Score
Mean	2.87	3.46	3.12
IQ 95%: lower limit	2.72	3.32	2.99
IQ 95%: upper limit	3.02	3.59	3.25
Mean typical error	0.08	0.07	0.07
Median	3.00	3.33	3.14
Minimum	1.00	1.00	1.00
Maximum	5.00	5.00	4.86
Standard deviation	1.02	0.89	0.87
Variance	1.03	0.79	0.76
Semi-interquartile range	0.69	0.50	0.71
Variation Coefficient	35.54	25.72	27.88

Source: Elaborated by the authors

The contrast tests between sexes corresponding to these variables are finally utilized, a clear coincidence becoming visible in them (see Table 11). The following needs to be highlighted in this respect:

- The mean for men in Factor 1(M = 3.18, SD = 0.88) exceeds the one corresponding to women(M = 2.79,SD = 1.04), a difference which acquires statistical significance for p<.05 in both tests [t(171) = 2.08, p = .039; Z = 2.15, p = .031], the effect size being small (R^2 = .025).
- There is undoubtedly no significant difference for p>.05 in Factor 2.

Table 11. Mean difference test by sex. Professional Development

Variable / Group		N	Mean (IQ 95%)	S. D.	Student's T			MW's Test:		IQ 95% diff.	Effect size: R^2
					T	df	P	Z	P		
Factor 1	Men	36	3.18(2.88 – 3.48)	0.88	2.08	171	.039 *	2.15	.031 *	0.02 – 0.76	.025
	Women	137	2.79(2.61 – 2.96)	1.04							
Factor 2	Men	36	3.57(3.32 – 3.83)	0.75	0.87	171	.384 NS	0.65	.513 NS	---	.004
	Women	137	3.43(3.27 – 3.58)	0.92							
Total Score	Men	36	3.35(3.10 – 3.59)	0.72	1.76	171	.080 NS	1.66	.098 NS	---	.018
	Women	137	3.06(2.91 – 3.21)	0.90							

NS = non-significant (p>,050) * Significant at 5% (p<.050) ** Highly significant at 1% (p<.010)

Source: Elaborated by the authors

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4. Discussion

The fact that teachers have a broad knowledge of the educational possibilities offered by technological tools no longer suffices in twenty-first century education, since the demand is oriented towards the achievement of those competences through which teachers can learn to teach using ICTs and, as pointed out by some authors (Hepp, 2012; García-Valcárcel y Martín, 2016; Gutiérrez, Palacios & Torrego,2010; Vaillant, 2014), the most suitable moment to do so is during their initial training. Nevertheless, in our opinion, it becomes essential to ensure that teacher training plans do not exclusively focus on offering future teachers a wide range of knowledge about the use of ICTs applied to education; those plans must additionally place an emphasis on the development of personal variables –e.g. attitude, willingness to learn, creative capacity, and problem solving –which are going to play a key role in their incorporation into teaching practices.

Specifically concerning the self-assessment that Pedagogy degree students have about their digital competences in each one of its dimensions, the results according to gender show that male students assign themselves better scores than their female counterparts in 3 dimensions: Pedagogical Aspects [$t(173)=2.70, p= .008$]; Social, Ethical, and Legal Aspects [$t(170)= 2.56$, $p = .011$]; and Technical Aspects [$t(172)= 2.40$, $p= .017$], as well as in the total score on the scale [$t(169)= 2.33$, $p= .021$]. Such results suggest that this variable has an impact when it comes to self-perceived digital competence self-evaluation levels, a relevant outcome thereof being that men feel more capable of using ICTs than women, a conclusion which is actually ain keeping with other studies (Almerich, et al., 2005; Almerich et al. 2011; Suárez-Rodríguez et al., 2012). These differences may be explained by the fact that the area of technologies has historically been seen as a men's domain (Cabero, Marín & Vázquez, 2011).

A clear predominance of women becomes evident in the Nursery School (100%) and Basic Education (77%) levels, though, which also confirms the aforementioned feminization of Pedagogy careers (Madrid, 2006). It must be stressed in this respect that certain stereotypes and prejudices have been gradually built in Chile around the work performed by female nursery school educators or the female teachers who develop their professional activity in the first cycle of basic education within the framework of formal education, because "a tendency exists to link feminine gender to aspects associated with care, well-being, protection, affection, security and trust" (Ezzati & Fernández, 2013:109). In this regard, the work carried out by such professionals comes to be associated with the raising and care of young children; in other words, an imaginary actually linked to the role of a mother-educator mainly responsible for knowledge transmission –and left aside from knowledge production by means of research, because that space would be predominantly reserved for males (Madrid, 2006).

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In the light of the above, it is our conviction that far greater attention must be given to this variable in initial teacher training through the design, implementation, and evaluation of strategies and/or programs that contribute to reinforce female students' self-confidence for ICT utilization both in the professional and in the personal sphere. More precisely, a need exists to implement mechanisms that can help reduce the 'second digital divide' (Castaño, 2008), which is why it becomes necessary to continue investigating and experimenting with support alternatives in this context, especially focused on students who find themselves at the initial teacher training stage for the Infant Education and Primary Educational levels.

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