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ARTICLE / ARTÍCULO

The digital competence of teachers in the Canary Islands to attend to functional diversity

La competencia digital del profesorado canario para atender a la diversidad funcional

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Abstract: Background: teachers have been identified as the cornerstone in the development of digital competences as a guarantee for reducing the digital divide among pupils. Objective: to analyse the level of digital competence of teachers in the Canary Islands with regard to the application of ICT to cater for diversity. Method: a descriptive cross-sectional study was designed with a sample of 382 teachers (100 males and 282 females). The questionnaire used was called Diagnosis and teacher training for the incorporation of ICT in students with functional diversity. Results: Global ICT knowledge scored substantially below the average of the questionnaire in all the Canary Islands. According to the initial training of the teachers, significant differences were found in all dimensions in favour of Special Education teachers ($p < .05$). Those with 1-3 years of experience have more ICT training ($p < .05$). Conclusion: there is a low level of training among all teachers in the Canary Islands with regard to the application of ICT with pupils with functional diversity. However, teachers with a specialisation in Special Education and those with less professional experience show greater ICT training. Future lines of research should shed more light on how digital training courses for teachers can have an impact on the holistic development of schoolchildren.

Keywords: Elementary School Teachers, child development, Educational Technology, Student Diversity, Cultural Differences.

Resumen: Antecedentes: el profesorado ha sido identificado como la piedra angular en el desarrollo de las competencias digitales como garantía para la reducción de la brecha digital en el alumnado. Objetivo: analizar el nivel de competencia digital de los docentes de las Islas Canarias respecto a la aplicación de las TIC para atender a la diversidad. Método: se diseñó un estudio descriptivo transversal compuesto con una muestra de 382 docentes. El cuestionario utilizado se denomina Diagnóstico y formación del profesorado para la incorporación de las TIC en alumnado con diversidad funcional. Resultados: el conocimiento Global TIC alcanza una puntuación sustancialmente inferior a la media del cuestionario en todas las Islas Canarias. Según la formación inicial de los maestros, se han hallado diferencias significativas en todas las dimensiones a favor de los de Educación Especial ($p < .05$). Aquellos que tienen entre 1-3 años de experiencia obtienen una mayor capacitación TIC ($p < .05$). Conclusión: existe una baja capacitación por parte de todo el profesorado de las Islas Canarias con respecto a la aplicación de las TIC con alumnado que presenta diversidad funcional. Sin embargo, los docentes que cursaron una mención de Educación Especial y aquellos con menor experiencia profesional muestran mayor capacitación TIC. Futuras líneas de investigación deberán arrojar más luz sobre cómo cursos de formación digital para profesores pueden repercutir en el desarrollo integral de los escolares.

Palabras clave: Profesores de primaria, desarrollo infantil, tecnología educativa, diversidad de estudiantes, diferencias culturales.

1. Introduction

The term digital divide refers to the inequality between people in terms of access to or knowledge of the new Information and Communication Technologies (ICT) (Kim How et al., 2022; Pérez-Escoda et al., 2020). ICT can be defined as a powerful inclusive tool that allows transforming the educational context by optimising educational attention to student diversity (Lim & Toh, 2022). This study shows that today, technological immersion on a global scale is, without doubt, one of the great evidences that the network society is already a reality, so that if two lustrums ago the concern on a global scale was the gaps in access to digital technologies, in the second decade of the 21st century the concern is focused on the digital divide for the efficient use of this technology.

At the educational level, these aspects are evident in pupils, who consider that they have the necessary resources to access ICT but insufficient technological skills, difficulties in implementing them effectively in response to the indications of the educational centre and difficulty in keeping up to date with the constant changes in ICT (Rodicio-García et al., 2020). Given this scenario, the existence of a digital knowledge gap among students seems indisputable, which became palpable after the socio-sanitary situation experienced as a result of COVID-19, where the sudden and unexpected change of scenario in which the teaching-learning process was transformed from face-to-face to telematics brought consequences for students, teachers and families, which resulted in high levels of frustration, disconnection from the education system, overload of homework, school failure and, therefore, greater social inequality (Montenegro et al. , 2020). Therefore, the UNESCO report (2020) notes that the digital divide is considered to be one of the barriers preventing the development of knowledge, indicating that its reduction by the different educational agents is a priority (García-Fernández et al., 2020).

One of the educational agents considered a cornerstone in the development of digital competences as a guarantee for the reduction of digital divides by use and not by access is the teaching staff (Cabello et al., 2020; Eden et al., 2019), who feel confident in their digital skills and are motivated. However, they understand that the education system does not respond to current needs and see the need for specific curricular inclusion of the subject from their initial training (Pérez-Escoda et al., 2020), as training citizens to be "digitally competent" in a volatile, uncertain, complex and ambiguous environment requires higher education institutions to generate policies aimed at strengthening initial training in digital competence (Recio-Muñoz et al., 2020).

In this line of argument, a study that analysed the evolution of technological content in teaching degrees in Spanish universities compared to the approaches of a decade ago concluded that practical content has taken on greater importance, as the design of teaching processes and materials, as well as their curricular integration, has become more in-depth (Ballesta & Céspedes, 2015). However, another study on the mention of Music Education shows that the number of credits directly related to ICT was reduced in almost all curricula: from 3 to 11 credits, depending on the autonomous community, of the 240 credits that make up the degree (Latorre, 2018). In this sense, Ballesta & Céspedes (2015) reflect a great variability of optional subjects in the different degrees, as well as a considerable difference in the offer of these subjects according to the mentions studied in each of the degrees analysed in the training of future

education professionals in Spain; concluding various studies that more training in ICT is needed in all the mentions of the Bachelor's degrees for the adaptation of future teachers to the needs of Primary Education students (Galiano-Barrocal et al., 2015; Girón-Escudero et al., 2019; Matínez et al., 2020; Muñoz, & Cubo, 2019), since if they are not given sufficient space in teacher training curricula, it is likely that, in many cases, they will end up being considered as a mere complement, perhaps dispensable, far from being valued as a driver of change, innovation and improvement of educational possibilities (Barrero-Fernández, 2019).

As can be seen, a relevant role in the digital training of teachers is played by the university. However, educational administrations are responsible for continuous training, which must set the conditions and requirements for all teachers and in all educational centres to receive training and guidance to help them teach digital competence to students from a reflective thinking that guides interaction, flexibility of thought and the selective, critical and responsible use of ICT from the earliest age stages (Gómez-Puerta & Chiner, 2019).

Several national studies have analysed the ICT knowledge of teachers according to their initial training and educational experience (López, & Bernal, 2018; Lopes & Gomes, 2018; Martín & González, 2018; Ortiz-Colón et al., 2014; Pozo-Sánchez et al., 2020), showing that initial training on the didactic use of ICT is usually carried out informally and this training is rarely acquired satisfactorily at university (Llamas-Salguero, & Gómez, 2018). Likewise, although there is a large catalogue of training courses related to ICT in education promoted by the different administrations, only between 16% and 25% of Primary School pupils have teachers who participate in ongoing training activities on the use of ICT (Fernández-Cruz & Fernández-Díaz, 2016), with these teachers taking two to three courses a year (Fuentes et al., 2019).

Based on these precedents and given that the most negative effects of the digital divide fall most heavily on the most vulnerable students; among which students with functional diversity stand out (Arrieta-Casasasola, 2019) and that a systematic review concluded that the scarce existence of scientific literature is one of the main problems that may hinder teacher training for this type of student (Fernández-Batanero et al., 2020), the aim is to analyse the level of digital competence of teachers in the Canary Islands regarding the application of ICT for people with different types of disabilities according to their initial training and years of teaching experience. Specifically, in order to achieve this objective in all its dimensions, it has been specified in the following specific objectives that will help to this end:

a) To analyse the means and standard deviations found in the items of the diagnostic and teacher training questionnaire for the incorporation of ICT in pupils with functional diversity according to the island where the teachers work.

b) To study the teachers' level of training and technological knowledge to provide an educational response to pupils with functional diversity according to the speciality studied at university (Physical Education v. Foreign Language v. Music Education and generalist teaching v. Speciality directly related to disability v. Other speciality).

c) To study the level of training and technological knowledge of the teaching staff to provide an educational response to students with functional diversity according to their initial training and years of experience.

2. Method

2.1. Participants and design

This research is framed within the quantitative paradigm with a non-experimental, empirical, descriptive and cross-sectional ex post facto design (Hernández-Sampieri et al., 2018). The sampling was non-probabilistic causal, non-randomly selected by convenience. The study population consisted of a total of 382 primary school teachers (100 males and 282 females) from the province of Las Palmas (Gran Canaria, Fuerteventura and Lanzarote) and the province of Santa Cruz de Tenerife (Tenerife, La Palma, La Gomera and El Hierro), aged 23-62 years (M ± SD: 35.42 ± 11.81 years). The initial university training received by the teachers was also taken into account. It should be noted that after jointly estimating the relevant statistics (units of variables = 6 and effect size = 0.15 (f 2)) for the calculation of the sample size, it was obtained that the minimum sample should be a total of 309 subjects to ensure that the results of the study are robust (Quispe et al., 2020), something that is fulfilled since there is a total sample of 382 teachers.

2.2. Procedure and instruments

This study was carried out during the academic year 2020/2021. In December 2020, all the heads of the schools in the two provinces of the Autonomous Community of the Canary Islands (Las Palmas and Santa Cruz de Tenerife) were informed of the purpose and protocol of the research in a letter. The working team consisted of a principal investigator and two collaborating explorers (teachers specialising in Primary Education with the speciality of Therapeutic Pedagogy). At all times, the international ethical standards issued by the 2013 revision of the Declaration of Helsinki were followed in this research.

The questionnaire used is part of the State Plan for the Promotion of Scientific and Technical Research of Excellence and is called "DIFOTICyD" (Diagnosis and teacher training for the incorporation of ICT in students with functional diversity) (Fernández-Batanero, et al., 2017b). The questionnaire consists of 53 items which, grouped into 6 dimensions (see Table 1), allow the teacher's level of training to be determined according to the diversity of their students: general, visual, auditory, motor, cognitive and accessibility.

The scale is Likert-type with answers ranging from zero to ten points. This questionnaire has been validated by a group of experts with a Cronbach's Alpha reliability level above .95 in all the dimensions it is intended to measure (Fernández-Batanero, et al., 2017). Likewise, the psychometric analyses carried out in the present study corroborate the per se values of the study with an adequate degree of reliability on its content, scales and factors, since intervals between 0.8 and 1 are considered a very high value that gives the instrument a good level of reliability (Cumming & Calin, 2016). Specifically, exploratory factor analysis was used under the maximum likelihood method with Oblimin rotation as it allows establishing hierarchical relationships between the factors. The KMO (Kaiser-Meyer-Olkin) test was .956 and Bartlett's test was

significant ($\chi 2 = 2384.124$, $p < .05$). All items that obtained correlations lower than 0.3 or that saturated in other factors were eliminated, resulting in a final instrument of 50 items (items 2, 13 and 21 were eliminated) classified in the six dimensions of the instrument. The final version explained 79.306% of the real variance of the instrument. On the other hand, confirmatory factor analysis (CFA) showed that the study data per se fitted correctly to the theoretical model proposed in its initial version.

Table 1. Specifications of the variables used in the research.

Criterion or dependent variables	Explanatory or independent variables
1. General	1. The island where teachers work
2. Visual	2. The speciality studied at university
3. Auditory	3. Years of experience
4. Motor	
5. Cognitive	
6. Accessibility	
7. Global ICT Knowledge	

2.3. Data analysis

A descriptive analysis was performed and the normality and homoscedasticity of the variable distributions were analysed using the Kolmogorov Smirnov ($p = .115$) and Levene ($p = .377$) statistics, respectively. Given that the variables meet the assumption of normality, it was decided to apply parametric tests (Hernández-Sampieri, et al., 2018). A differential analysis was carried out on the dimensions and global index of the scale according to the training received at university related to students with difficulties (Special Education v. Hearing and Language) using the Student's t-test. Effect size was calculated using Cohen's d (.20 = small; .50 = medium; and .80 = large effect). In addition, a simple analysis of variance (one-way ANOVA) was used to analyse the values of each subscale and the overall scale of the questionnaire in terms of whether there are statistically significant differences between the means of three or more groups. Bonferroni correction was applied to reduce the risk of a Type 1 error in multiple testing; $p < .05$ (Cumming & Calin, 2016). Means (M) and standard deviation (SD) are reported for all quantitative variables. Statistical analysis of the data was performed using SPSS v. 25.

3. Results

Table 2 shows that, in general, overall ICT knowledge on all the islands is substantially lower than the average score in the questionnaire: Gran Canaria (20.66), Fuerteventura (20.40), Lanzarote (16.80), Tenerife (21.95), La Palma (18.39), La Gomera (24.07) and El Hierro (23.57).

Table 2. Mean values and standard deviations found in the items of the questionnaire according to the island where the teachers work.

Island		General	Visual	Hearing	Motor	Cognitive	Accessibility	Global ICT Knowledge
Gran Canaria	M	4.833	2.849	3.441	3.376	3.329	2.832	20.661
	DE	1.980	1.941	2.320	2.294	2.175	1.972	11.445
Fuerteventura	M	4.549	3.197	3.142	3.453	3.300	2.763	20.405
	DE	2.096	1.854	1.644	2.008	1.836	1.542	9.871
Lanzarote	M	4.123	2.363	2.833	2.766	2.426	2.292	16.804
	DE	1.766	1.754	1.739	2.026	1.941	1.884	10.029
Tenerife	M	5.203	3.045	3.634	3.489	3.548	3.036	21.956
	DE	1.929	1.660	2.134	1.987	1.898	1.697	10.247
La Palma	M	4.274	2.686	2.979	3.053	2.860	2.538	18.391
	DE	1.202	1.857	1.928	1.931	1.532	1.639	9.8248
La Gomera	M	5.225	4.354	3.972	3.821	3.750	2.964	24.087
	DE	1.148	2.560	2.214	2.851	2.467	2.294	14.065
El Hierro	M	4.990	3.400	3.531	5.028	3.825	2.800	23.576
	DE	2.848	2.445	2.264	2.172	2.465	2.064	13.190

Note: M ± SD = mean ± standard deviation.

Table 3 analyses the differences in the level of training and technological knowledge of teachers who studied a speciality intrinsically related to functional diversity (Special Education v. Hearing and Language) in their initial training. The t-student test showed significant differences in the Visual ($p < .001$), Auditory ($p < .001$) and Cognitive ($p < .05$) dimensions in favour of those who studied Special Education.

Table 3. Level of training and technological knowledge of the teachers according to the speciality studied at the university.

Variables	Special Education M ± SD (n = 64)	Hearing and Language M ± SD (n = 24)	F	p	d
General (1-10)	6.67 ± 1.24	6.61 ± 1.78	1.102	.696	.12
Visual (1-10)	5.17 ± 1.96	3.17 ± 1.64	1.335	.001**	.22
Hearing (1-10)	5.58 ± 1.45	7.49 ± 1.51	1.520	.001**	.24
Motor (1-10)	5.97 ± 2.11	5.61 ± 2.20	1.503	.565	.12
Cognitive (1-10)	6.13 ± 1.49	5.16 ± 1.72	1.194	.033*	.21
Accessibility (1-10)	4.45 ± 1.72	3.44 ± 1.72	1.247	.056	.18
Global ICT Knowledge (6-60)	34.11 ± 8.45	31.51 ± 9.47	1.343	.300	.13

Note: (*) $p < .05$. (**) $p < .001$. M ± SD = mean ± standard deviation.

Table 4 analyses the differences in the level of training and technological knowledge of teachers whose initial training included a speciality other than the general one and which is intrinsically related to functional diversity (Physical Education v. Foreign Language v. Music Education). The one-way ANOVA test showed significant differences in all dimensions ($p < .05$). The post-hoc test showed significant differences in favour of Physical Education teachers with respect to Music Education teachers and in the Cognitive, Accessibility and Global ICT Knowledge dimensions with respect to Foreign Language teachers ($p < .05$).

Table 4. Level of training and technological knowledge of the teachers according to the speciality studied at the university.

	Physical Education M ± SD (n = 56)	Foreign Language M ± SD (n = 98)	Music Education M ± SD (n = 28)	F	p	*Post hoc*[1]		
						1-2	1-3	2-3
General (1-10)	4.95 ± 1.91	4.17 ± 1.72	4.04 ± 2.06	3.789	.025*	>	NS	NS
Visual (1-10)	2.89 ± 1.38	2.30 ± 1.52	2.17 ± 1.37	3.546	.031*	>	NS	NS
Hearing (1-10)	2.38 ± 1.66	2.59 ± 1.81	3.17 ± 1.88	3.858	.023*	>	NS	NS
Motor (1-10)	3.45 ± 1.89	2.37 ± 1.48	2.66 ± 1.69	7.686	.001**	>	NS	NS
Cognitive (1-10)	3.62 ± 1.67	2.64 ± 1.62	2.45 ± 1.38	7.914	.001**	>	>	NS
Accessibili-ty (1-10)	2.96 ± 1.47	2.21 ± 1.46	1.72 ± 1.01	8.567	.001**	>	>	NS
Global ICT Knowledge (6-60)	21.27 ± 8.73	16.60 ± 8.54	16.23 ± 7.93	6.632	.001**	>	>	NS

Note: (*) $p < .05$. M ± SD = mean ± standard deviation. NS: denotes no statistical significance. 1pairwise comparisons using Bonferroni correction.

Table 5 analyses the differences in the level of training and technological knowledge of teachers according to their initial training (generalist teacher v. Speciality directly related to disability v. Other speciality). The one-way ANOVA test showed significant differences in all dimensions ($p < .001$). The post hoc test showed significant differences in all dimensions in favour of the speciality related to disability ($p < .05$). Likewise, generalist teachers show greater training with the exception of the Auditory and Cognitive dimensions with respect to those who studied another speciality ($p > .05$).

Table 5. Teachers' level of training and technological knowledge according to initial training.

	Generalist M ± SD (n = 112)	Specialty disability M ± SD (n = 88)	Other specialty M ± SD (n = 182)	F	p	*Post hoc*[1]		
						1-2	1-3	2-3
General (1-10)	4.91 ± 2.07	6.43 ± 1.99	4.39 ± 2.07	5.795	.001**	<	>	>
Visual (1-10)	3.20 ± 1.97	4.35 ± 2.16	2.42 ± 1.49	2.168	.001**	<	>	>
Hearing (1-10)	3.51 ± 2.03	5.72 ± 2.21	2.92 ± 2.36	3.041	.001**	<	NS	>
Motor (1-10)	3.50 ± 2.17	5.48 ± 2.36	2.74 ± 2.16	6.653	.001**	<	>	>
Cognitive (1-10)	3.29 ± 1.98	5.26 ± 2.21	2.91 ± 1.80	4.233	.001**	<	NS	>
Accessibili-ty (1-10)	3.03 ± 2.00	3.89 ± 1.85	2.37 ± 1.61	3.640	.001**	<	>	>
Global ICT Knowledge (6-60)	21.45 ± 11.21	31.11 ± 11.85	17.82 ± 10.07	6.842	.001**	<	>	>

Note: (*) p < .05. (**) p < .001. M ± SD = mean ± standard deviation. NS: denotes no statistical significance.
1pairwise comparisons using Bonferroni correction.

Table 6 shows the scores obtained in the different dimensions of the study according to years of experience (1-3 years v. 4-10 years v. 11-20 years v. more than 21 years). The one-way ANOVA test showed significant differences in the Visual, Auditory, Motor, Accessibility and Global ICT Knowledge dimensions (p < .05, for all). The post-hoc test showed significant differences between having worked 1-3 years and over 21 years in all dimensions except Global and Cognitive (p < .05; for all). It also showed significant differences between having worked 4-10 years and 11-20 years in the Motor dimension (p < .05) and more than 21 years in the Auditory dimension (p < .05).

Table 6. Level of training and technological knowledge of teachers according to their years of experience.

	1-3 years M ± SD (n = 100)	4-10 years M ± SD (n = 80)	11-20 years M ± SD (n = 80)	Over 21 years M ± SD (n = 112)	F	p	*Post hoc*[1]					
							1-2	1-3	1-4	2-3	2-4	3-4
General (1-10)	4.95 ± 2.08	4.77 ± 1.83	4.77 ± 1.87	4.56 ± 2.04	1.349	.257	NS	NS	NS	NS	NS	NS

	1-3 years M ± SD (n = 100)	4-10 years M ± SD (n = 80)	11-20 years M ± SD (n = 80)	Over 21 years M ± SD (n = 112)	F	p	*Post hoc*[1]					
							1-2	1-3	1-4	2-3	2-4	3-4
Visual (1-10)	3.30 ± 1.99	2.92 ± 1.86	2.85 ± 2.04	2.54 ± 1.65	5.733	.001 *	NS	NS	>	NS	NS	NS
Hearing (1-10)	3.62 ± 2.25	3.69 ± 2.22	3.31 ± 2.06	2.92 ± 1.98	5.095	.002 *	NS	NS	>	NS	>	NS
Motor (1-10)	3.80 ± 2.34	3.66 ± 1.99	3.18 ± 2.14	2.92 ± 2.10	6.821	.001 **	NS	NS	>	>	NS	NS
Cognitive (1-10)	3.51 ± 2.15	3.32 ± 1.83	3.03 ± 2.07	3.13 ± 1.93	1.880	.123	NS	NS	NS	NS	NS	NS
Accessibility (1-10)	3.03 ± 1.92	3.05 ± 1.81	2.53 ± 1.81	2.55 ± 1.77	4.126	.007 *	NS	NS	>	NS	NS	NS
Global ICT Knowledge (6-60)	22.26 ± 11.51	21.44 ± 10.31	19.69 ± 10.79	18.66 ± 10.61	4.343	.005 *	NS	NS	>	NS	NS	NS

Note: (*) p < .05. (**) p < .001. M ± SD = mean ± standard deviation. NS: denotes no statistical significance.
1pairwise comparisons using Bonferroni correction.

4. Discussion

The aim of this study was to analyse the level of digital competence of teachers in the Canary Islands with regard to the application of ICT for people with different types of disabilities according to their initial training and years of teaching experience. The main findings of the study show a low current training of teachers across the Canary Islands. However, teachers with a specialisation in Special Education show more training than generalist teachers or teachers with another specialisation.

These results may be due to the fact that, despite the fact that university curricula include subjects aimed at developing digital competence in university students, they do not specifically address ICT for each dimension studied here and, therefore, the level of ICT training applied to each dimension is low. This aspect consequently makes it difficult to implement them in educational practice in order to offer quality education that is adapted to the characteristics of students with functional diversity (Fernández-Batanero, 2018). In this sense, in the study provided by Fernández-Batanero (2017), the low level of training of university students in this area is observed,

except that in this study the dimension with the lowest score in Primary Education students turned out to be the Visual dimension.

Therefore, it is of utmost importance to implement teacher training plans on ICT applied to pupils with functional diversity during their initial training, as well as to improve continuous training through courses that contribute to this purpose (Gómez Puerta & Chiner, 2019). In this regard, it should be noted that the initial training of Canarian teachers is not the exclusive responsibility of university institutions, as Law 6/2014, of 25 July, Canarian Law on Non-University Education establishes that the Regional Ministry of Education, Universities, Culture and Sport must contribute to the quality of the initial training of teachers in the Canary Islands, Culture and Sport must contribute to the quality of the training offered to undergraduate and postgraduate students through agreements with the two Canarian universities in the Practicum phase of future teachers, for which it must guarantee the participation of both public and private and subsidised educational centres, as well as the teaching staff who teach in them. Thus, schools take on a leading role in the initial training of future teachers by creating this network of collaboration between the Regional Ministry of Education and the universities. Furthermore, this law indicates that this training should enable future teachers to face the challenges of the education system they will be joining in the coming years, which is why it is essential to equip them with knowledge, competences and professional skills, including a command of ICT.

In the light of the above, ICT training that makes teachers digitally competent in the information and communication society is fundamental for all those contributions that make the use of ICT favour the comprehensive development of students in general and students with specific educational support needs (ACNEAE) in particular (Cabero et al, 2016; Martínez-Pérez et al, 2018), as they overcome the limits of motor, cognitive and sensory barriers, favour synchronous and asynchronous communication, allow students immediate feedback, are fantastic simulators of reality which favours opportunities for learning and accessibility to the curriculum by allowing greater participation in it (García-Fernández et al. , 2020). However, these benefits can become barriers to learning if teachers are not trained to manage ICT according to the moment and the needs of each learner (Recio-Muñoz et al., 2020; Paidican & Arredondo, 2022).

For the sake of this teacher training, which is fundamental for the integral development of pupils, special mention should be made of the Teacher Training Centres (CEP) which, distributed geographically throughout each island of the Canary Islands, play an essential role in the ongoing training of teachers, becoming a pedagogical and advisory reference point for educational centres by responding to the real demands and needs of teachers in terms of training in any educational field they may require.

On the other hand, this study shows that teachers with less experience had more training in ICT. The scientific literature consulted shows that teachers with less professional experience are those with the best level of ICT training (Martín et al., 2019; Sánchez et al., 2020) due, in part, to the fact that the new generations are more digitally trained and prepared (López-Belmonte et al., 2019). Likewise, factors such as the intrinsic motivation that people have towards ICT and the level of satisfaction with ICT are determinants (Recio-Muñoz et al., 2020; Onlu et al., 2022), as indicated in a meta-analysis by Fernández-Batanero (2018), perceived usefulness and perceived ease of use are two constructs that are determinants and significant in assessing attitudes towards

ICT use. In other words, when teachers perceive that ICT are useful for student learning, this will generate a greater commitment to their use. On the contrary, if they perceive them as difficult to use, teachers will have a more unfavourable attitude. At the same time, given the ever-increasing volume of technological resources in the digital age in which we are immersed, this aspect may generate dissatisfaction. This aspect may generate dissatisfaction towards them, as continuous training is necessary and it is necessary to recycle and improve teacher training to enable these professionals to use and integrate ICT in the classroom in a way that meets the selection and adaptability of ICT adjusted to the individual needs of pupils in order to favour diversity and the principles of inclusion, quality, accessibility and educational equity on which the LOMLOE is based.

It is prescriptive to note that this study has some methodological limitations, which means that the results obtained should be interpreted with caution as the study was carried out at one point in time and therefore cause-effect relationships cannot be established. Also, a representative sample of the population was not obtained, so these results are not generalizable given the external validity. Despite the limitations described above, these results can be used as indications to be taken into account in the creation and development of training itineraries, for example by the Ministry of Education or the Department of Education, aimed at developing teachers' ICT knowledge to enable greater all-round development of all pupils in these early stages.

5. Conclusion

In accordance with the aim of the study, a low level of training has been observed among all teachers in the Canary Islands with regard to the application of ICT with students with disabilities. At the same time, a digital divide has been observed between teachers who have studied a specialization in Special Education and those who have studied other specializations, and those with less professional experience compared to those with more experience. These results may be of particular interest in order to positively reverse the course followed by teachers in relation to their continuous training; an aspect that would allow them to renew their methodologies, the use of technological tools and digital learning spaces that stimulate the teaching and learning process and achieve greater comprehensive development in all students. It is suggested that future studies with larger sample sizes and longitudinal studies should include other socio-economic variables, analyses other educational stages and analyses the possible effects that greater ICT training can have on the quality of life or the overall development of these students.

In this sense, personalised learning pathways or SMOOCs (Social, Massive, Open, Online and Courses) can be of great help for teacher involvement. These courses focus on concepts such as equity, social inclusion, accessibility, quality, diversity, autonomy and openness. These characteristics make them a suitable environment for acquiring and putting into practice knowledge, attitudes and skills that help participants to make good decisions, in this case, to meet the specific needs of all students from a technological point of view. Future lines of research should shed more light on how these digital training courses for teachers can have an impact on the holistic development of schoolchildren.

6. References

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