Digital competence and mediation of digital risks among Chilean teachers working with students with intellectual disabilities and/or ASD

Competencia digital y mediación de riesgos del profesorado chileno con alumnado con discapacidad intelectual y/o TEA

Dra. Esther Chiner
Universidad de Alicante. España.

Dr. Marcos Gómez-Puerta
Universidad de Alicante. España.

Dra. Susan Sanhueza-Henríquez
Universidad de Chile. Chile.

ABSTRACT

Learning technologies offer educational opportunities but also present risks, particularly for students with cognitive difficulties. This study analyzes the competencies of Chilean teachers, both pre-service and in-service, to mediate risks associated with students' Internet use among those with intellectual disabilities and/or autism spectrum disorder. A descriptive quantitative study was conducted using a survey design. A total of 211 teachers from different educational levels (93 in-service and 118 pre-service) participated. The questionnaires assessed perceived digital competence and mediation strategies regarding online risks. The teachers reported limited training in digital safety, mostly acquired through informal contexts. Although their perceived digital competence is moderate, their ability to mediate online risks for students with intellectual disabilities and/or autism spectrum disorder is low. Strengthening teacher education in digital competencies is necessary—not only in technical skills, but also in risk-prevention strategies. This should be addressed in both initial and in-service teacher training.

RESUMEN

Las tecnologías de aprendizaje presentan oportunidades educativas, pero también riesgos, especialmente para estudiantes con dificultades cognitivas. Este estudio analiza las competencias del profesorado chileno, tanto en formación como en activo, para mediar los riesgos en el uso de internet de estudiantes con discapacidad intelectual y/o trastorno del espectro autista. Se realizó un estudio cuantitativo descriptivo, mediante un diseño de encuestas. Participaron 211 docentes de diferentes etapas educativas (93 en activo y 118 en formación). Los cuestionarios evaluaron la competencia digital percibida y las estrategias de mediación frente a riesgos en internet. El profesorado muestra una formación limitada en seguridad digital, principalmente adquirida en contextos informales. Aunque su competencia digital percibida es moderada, su capacidad para mediar riesgos en estudiantes con discapacidad intelectual y/o trastorno del espectro autista es baja. Es necesario mejorar la formación del profesorado en competencias digitales, no solo en habilidades técnicas, sino también en estrategias de prevención de riesgos. Esto debe abordarse desde la formación inicial y continua de los docentes.

KEYWORDS · PALABRAS CLAVES

Competence; mediation; internet; risks; intellectual disability; autism spectrum disorder.
Competencia; mediación; internet; riesgos; discapacidad intelectual; trastorno del espectro autista.

1. Introduction

Learning technologies expand opportunities for accessing information, communication, and the development of digital competencies (Timotheou et al., 2023). Consequently, digital literacy is essential for the exercise of citizenship, the right to information (Jæger, 2021), and for reducing the digital divide and the discrimination experienced by certain groups, such as people with disabilities (Haz-Gómez et al., 2024; Malik et al., 2024). However, the use of the internet entails risks that particularly affect students who experience difficulties in accessing and interpreting information, such as those with intellectual disabilities (ID) or autism spectrum disorder (ASD) (Glencross et al., 2021; Normand et al., 2022). This situation requires teachers to act as mediators who promote safe and responsible use and who implement differentiated strategies for risk prevention and management (Finkelhor, Jones, et al., 2021). Therefore, teachers' digital competencies and the mediation strategies they employ or intend to employ with students with ID and/or ASD constitute the central focus of this study.

1.1. Risks of internet use

As reflected in the *Kids Online Chile 2022* report, the internet offers opportunities for minors, such as access to information, learning, leisure, and entertainment (UNICEF, 2024). However, its use entails potential exposure to certain risks, which Livingstone and Stoilova (2021) classified into five main categories: (a) *content* (sending or receiving content inappropriate for minors, such as pornography, drugs, or violence), (b) *contact* (initiating or receiving inappropriate interactions, such as sexual grooming by an adult or harassment), (c) *conduct* (engaging in or being subjected to inappropriate behaviors, such as cyberbullying), (d) *contract* (exposure to misleading advertising, commercial persuasion, or unwanted exploitation of personal data), and (e) *cross-cutting risks* (limitations in personal relationships or interactions, impacts on physical health, development of internet addictions, etc.). These risks have been documented among Chilean minors, with the most common being unpleasant online experiences (54%), online contact with strangers (42%), and receiving hurtful treatment online (35%) (UNICEF, 2024). These findings are consistent with those observed in Europe (Smahel et al., 2020).

Evidence shows that internet-related risks for students with ID or ASD depend on factors such as their life experiences and their ability to detect online deception. Furthermore, caregivers' perception of danger often leads to controls and restrictions that limit their digital learning and development, creating a vicious cycle (Chadwick, 2019). In response, Seale (2024) suggests addressing these risks through the training of support personnel, fostering positive management. Similarly, Clements et al. (2025) advocate replacing overprotection with information, training, and resilience. Thus, mediation by families and teachers is key and is understood as the direct or indirect intervention of a third party in technology interactions (Berger, 2020).

1.2. Mediation of internet risks

Mediation is a way of managing risks. Specifically, Livingstone et al. (2011) described four types of internet mediation: (a) *active mediation*, which includes shared online activities and conversations about internet use; (b) *restrictive mediation*, which involves limiting or prohibiting access to the network; (c) *supervisory mediation*, such as checking browsing history or emails; and (d) *technical mediation*, referring to the use of filters or programs to block certain content and protect against spam, malware, or viruses. Restrictive mediation has predominated because it considerably reduces risks by preventing exposure. However, this strategy has the disadvantage of limiting students' educational opportunities and the development of digital skills (Stoilova et al., 2021). Moreover, it does not align with current modes of internet access, which are increasingly focused on mobile devices such as smartphones (Cabello et al., 2021). Consequently, a combined approach that integrates active mediation with technical prevention tools, such as content filters, is increasingly being promoted (UNICEF, 2024).

The concept of teacher competencies encompasses a set of skills, knowledge, and attitudes that enable educators to perform their work effectively (Jiménez Hernández et al., 2021). In recent years, particular emphasis has been placed on strengthening their digital competencies. UNESCO (2019) highlighted the need for teachers to master aspects of cybersecurity, media and information literacy, and to be able to promote the safe use of networks and devices, as well as to identify and respond to problematic online behaviors. Similarly, the European Commission's *Digital Competence Framework for Educators* (DigCompEdu) defines the competencies required for the effective integration of technologies into teaching, emphasizing student "protection" and "digital well-being," which involve identifying, assessing, and mitigating digital risks (Chiner et al., 2025; Punie & Redecker, 2017). However, various conceptual frameworks on teacher digital competence indicate that security remains a poorly developed dimension (Verdú-Pina et al., 2023). This deficiency is also evident in both initial and continuing teacher education in Chile, highlighting the need to strengthen the pedagogical use of technologies (Silva Quiroz et al., 2022; Velásquez Castro & Paredes-Águila, 2024). Furthermore, several studies emphasize the influence of personal factors such as beliefs, attitudes, biases, and self-efficacy on the application of these competencies (Lindner et al., 2023).

In Chile, policies have been implemented to promote the inclusion of students with disabilities in mainstream schools; however, barriers persist, such as the limited training of teachers to support students with special educational needs (SEN) (Benavides-Moreno et al., 2021). A similar situation occurs in the technological domain: despite efforts to integrate digital technologies into education, these processes face various challenges (Paredes-Águila & Rivera-Vargas, 2023), creating a complex scenario for students with ID and/or ASD. The few available studies highlight the need to strengthen teachers' digital competencies to mediate the online risks faced by these students (Gómez-Puerta & Chiner, 2020; Si et al., 2025). Teachers perceive the internet as an unsafe environment and acknowledge insufficient preparation to prevent or manage such risks (Chiner et al., 2021), particularly those that are more complex—such as cyberbullying, hate messages, or radicalization—for which they feel inadequately qualified (Caton & Landman, 2021; Hassrick et al., 2021).

In summary, the mediation of digital risks for students with ID and/or ASD represents a complex challenge for Chilean teachers, requiring a combination of technical, pedagogical,

and ethical competencies to protect students in digital environments. Analyzing these competencies seeks to address the lack of research, identify strengths and weaknesses in teacher education, and guide policies that promote the safe and responsible use of the internet.

1.3. Objectives

This study aims to identify the digital competencies and training needs of Chilean teachers —both pre-service and in-service— regarding the safe use of the internet by students with ID and/or ASD, as well as the mediation practices employed to prevent and manage online risks. The following objectives were established:

1. To determine teachers' training needs related to internet safety.

2. To explore and compare teachers' levels of digital and mediation competence in preventing and managing internet risks for students with ID and/or ASD.

3. To examine the relationship between teachers' digital and mediation competencies in the prevention and management of online risks.

4. To identify and compare the mediation strategies employed by teachers to prevent and manage internet risks among students without SEN, with ID, and/or with ASD.

2. Methodology

2.1. Research approach

A quantitative approach based on a descriptive-comparative study was adopted. To gather information from teachers regarding events and perceptions at a specific point in time and context, the study was conducted using a cross-sectional survey design (Creswell & Guetterman, 2019).

2.2. Participants

A total of 211 Chilean teachers —both pre-service and in-service— participated in the study, with the vast majority being women (90%). Specifically, 118 (55.9%) pre-service teachers from two Chilean universities in the Metropolitan and Bío-Bío Regions participated. They were enrolled in Early Childhood Education (62.7%) and Special Education (37.3%) programs. Their mean age was 20.90 years (SD = 3.42), with 36.4% reporting prior contact with individuals with ID and 50.8% with ASD. Among in-service teachers (n = 93, 44.1%), most worked in public schools (64.5%) across five Chilean regions, mainly the Metropolitan Region (43.0%), Ñuble (23.7%), and La Araucanía (17.2%). Participants taught at all educational levels (early childhood, primary, and lower secondary education), with the majority in primary education (72%). The mean age of in-service teachers was 35.6 years (SD = 9.81), and their teaching experience ranged from 1 to 40 years (M = 10.26, SD = 8.19). The majority reported having taught students with ID (82.8%) and ASD (87.1%) at some point in their careers.

Both in-service teachers (68.8%) and pre-service teachers (61.0%) had received some type of training in addressing the diversity of students with SEN. Specific training regarding students with ID (40.9% vs. 17.8%) and ASD (50.5% vs. 18.6%) was higher among in-service teachers than among pre-service teachers.

2.3. Instruments

A questionnaire was designed, and its content was validated by six expert judges in education from a Chilean university. The Content Validity Index (CVI) was calculated using Lawshe's (1975) formula, obtaining a value of 0.87. After incorporating the experts' suggested adjustments, the final instrument consisted of three sections:

1. *Sociodemographic information*: Gender, age, occupational status, training in addressing diversity, training related to ID and ASD, and years of teaching experience, measured using multiple-choice items.

2. *Competence and training in internet use and safety:* This section included items on perceived digital competence (10-point scale), training in online safety and information sources (dichotomous response options), and perceived competence in preventing or managing the five types of internet risks proposed by Livingstone and Stoilova (2021), for students with ID and ASD (5-point Likert scale). The reliability of the scale, measured through internal consistency, was Chronbach's Alpha = .94 for both scales (students with ID and ASD).

3. *Teacher mediation strategies for the prevention and management of online risks:* Ten items assessed the frequency of use of various risk-mediation practices with students without SEN, with ID, and/or with ASD using a 5-point Likert scale. Internal consistency for the three scales was high (Alpha = 1, Alpha = .89, and Alpha = .95, respectively).

2.4. Procedure

Data were collected at three universities and two educational centers in the Metropolitan, Bío-Bío, and Araucanía Regions of Chile. Participation was requested from teachers enrolled in a Master's program in Education and/or currently working as educators, as well as from pre-service teachers. After initial contact, participants provided informed consent and received a copy of the questionnaire, either in paper or online format. The estimated completion time was approximately 10 minutes.

2.5. Ethical considerations

The study was approved by the Ethics Committee of the Universidad de Alicante (Ref. UA-2023-05-11) and adhered to the ethical guidelines for educational research outlined by the *American Educational Research Association* (2011). These guidelines included obtaining informed consent from all participants, providing detailed information about the study, and ensuring that all data were treated anonymously and confidentially.

3. Analysis and results

3.1. Data analysis

An exploratory analysis of the data was conducted using descriptive statistics. For inter- and within-subject comparisons, both parametric inferential statistics (t-test and ANOVA) and non-parametric statistics (chi-square test) were employed, depending on the characteristics of the variables. In addition, Pearson's correlation coefficient was calculated to determine associations between variables. The significance level was set at $p < .05$. Data coding and subsequent analyses were performed using IBM SPSS v.28.

3.2. Results

3.2.1. Teacher training on internet use and online safety

The vast majority of both in-service and pre-service teachers reported not having received specific courses on internet safety for students with ID and/or ASD. Only four (4.3%) in-service teachers and no pre-service teachers had received any course for students with ID. Similarly, only eight (8.6%) in-service teachers and one (0.8%) pre-service teacher had received a course for students with ASD.

Overall, 30.3% of participants stated that they had not received any information or training on online safety (Table 1). Among those who had received training or information (69.7%), the main sources cited were family and friends (51%), mass media (49.7%), and specialized websites (34.7%). Specifically, 84.9% of in-service teachers and 42.4% of pre-service teachers reported having received some type of training or information through various sources. The chi-square test revealed statistically significant differences regarding family and friends as information sources [$\chi^2(1) = 4.355$, $p = .037$], with 60.3% of pre-service teachers indicating reliance on this source compared to 43.0% of in-service teachers. Other sources of training and information for in-service teachers included the school itself (34.2%), colleagues (29.2%), and teacher training centers (22.8%).

Table 1

Sources of information and training on internet use and online safety

Source	Total (*n* = 147)	Pre-service teachers (*n* = 68)	In-service teachers (*n* = 79)
	n (%)	*n* (%)	*n* (%)
From the school itself	38 (25.9)	11 (16.2)	27 (34.2)
From colleagues at the school	42 (28.6)	11 (16.2)	31 (29.2)
From teacher training centers	23 (15.6)	5 (7.4)	18 (22.8)
From public administration	20 (13.6)	8 (11.8)	12 (15.2)
From non-profit organizations	19 (12.9)	7 (10.3)	12 (15.2)

Source	Total (n = 147)	Pre-service teachers (n = 68)	In-service teachers (n = 79)
	n (%)	n (%)	n (%)
From specialized websites	51 (34.7)	24 (35.3)	27 (34.2)
From mass media	73 (49.7)	37 (54.5)	36 (45.6)
From family and friends	75 (51.0)	41 (60.3)	34 (43.0)

3.2.2. Perceived digital competence and mediation of online risks

The average perceived digital competence of teachers was 7.73 (SD = 1.69), with scores ranging from 2 to 10. This perception was slightly lower among in-service teachers (M = 7.56, SD = 1.56) compared to pre-service teachers (M = 7.86, SD = 1.78), although the analysis revealed no statistically significant differences between the two groups [t (209) = 1.303, p = .194).

Regarding mediation capacity, teachers perceived their competence in preventing and managing internet risks for students with ID and ASD as moderate to low, with mean scores below the midpoint of the scale (3). No statistically significant differences were observed between in-service and pre-service teachers (p > .05) (see Table 2).

Regarding students with ID, only 32.7% of teachers felt fairly or very competent in mediating contact-related risks (e.g., harassment, blackmail), 29.8% felt capable of managing content-related risks (e.g., pornographic or violent material), 28% and 26% perceived themselves able to mediate conduct-related risks (e.g., cyberbullying, hostile behavior) and contract-related risks (e.g., theft, fraud), respectively, and 25.1% reported feeling prepared to handle cross-cutting risks, such as emotional or health issues arising from internet use. Although perceived competence was slightly higher among in-service teachers compared to pre-service teachers, these differences were not statistically significant (p > .05).

Similar patterns were observed for students with ASD. Teachers reported higher competence levels in preventing and managing content-related risks (30.3%), contact-related risks (30.9%), and conduct-related risks (27%), and, to a lesser extent, contract-related risks (24.6%) and cross-cutting risks (23.7%). Again, no statistically significant differences were observed between in-service and pre-service teachers for any of the five types of risks analyzed (p > .05).

The analysis of differences in teachers' responses regarding their competence to manage and prevent online risks for students with ID versus ASD revealed no statistically significant differences (p > .05). These findings were consistent both among in-service teachers and pre-service teachers.

Table 2

Teachers' Competence in Mediating internet Risks for Students with ID and/or ASD

Type of Risk	Total		Pre-service teachers		In-service teachers	
	M(*SD*)	(%)	*M*(*SD*)	%	*M*(*SD*)	%
ID						
Content	2.77(1.23)	29.8	2.68(1.21)	27.1	2.88(1.24)	33.4
Contact	2.80(1.30)	32.7	2.73(1.27)	29.7	2.89(1.33)	36.6
Conduct	2.69(1.23)	28.0	2.61(1.30)	28.8	2.80(1.13)	26.9
Contract	2.60(1.28)	26.1	2.61(1.28)	27.9	2.59(1.29)	23.7
Cross-cutting	2.57(1.24)	25.1	2.58(1.25)	26.2	2.55(1.23)	23.6
ASD						
Content	2.76(1.22)	30.3	2.66(1.24)	28.8	2.89(1.19)	32.3
Contact	2.77(1.28)	30.9	2.66(1.26)	27.9	2.91(1.29)	34.4
Conduct	2.71(1.19)	27.0	2.58(1.25)	26.2	2.87(1.11)	27.9
Contract	2.59(1.24)	24.6	2.59(1.26)	27.2	2.58(1.21)	21.5
Cross-cutting	2.55(1.23)	23.7	2.54(1.25)	24.5	2.57(1.21)	22.6

Note 1. ID = students with intellectual disabilities; ASD = students with autism spectrum disorder
Note 2. % = percentage based on the combined responses of "fairly competent" and "very competent."

3.2.3. Relationship between digital competence and competence in mediating online risks

To examine the relationship between perceived digital competence and perceived teacher mediation competence, Pearson's correlation coefficient was calculated. For the total sample, statistically significant positive correlations were observed between the two variables for all five types of risks studied (Table 3). These low positive correlations indicate that higher levels of perceived digital competence are associated with a greater perception of competence in mediating online risk management.

When analyzing the associations by subsample, this statistically significant relationship was not observed among in-service teachers (*p* > .05), where, conversely, there was a slight tendency toward a negative relationship, where lower perceived digital competence was associated with higher perceived mediation competence. In contrast, for the pre-service teacher sample, a clear positive association between the variables was identified, with moderate correlations and significance levels of *p* < .001.

Table 3

Relationship between perceived digital competence and mediation competence

Type of Risk	Total (*N* = 211)	Pre-service teachers (*n* = 118)	In-service teachers (*n* = 93)
			Digital competence
Content	.18*	.37**	-.05
Contact	.20*	.42**	-.08
Conduct	.18*	.42**	-.19
Contract	.22*	.43**	.079
Cross-cutting	.25**	.42**	.014

Note. * *p* < .01, ** *p* < .001

3.2.4. Teacher strategies for mediating online risks

Regarding strategies for mediating and managing internet-related risks among students without SEN and those with ID or ASD, teachers reported that they frequently use (in-service teachers) or would use (pre-service teachers) each of the proposed practices (Table 4). In particular, the most frequently reported strategies included offering help when a student has difficulty performing a task or finding information online (94.5%), assisting students with problems encountered on the internet (86.6%), establishing classroom rules for internet use (86.1%), and teaching students safe ways to use the internet (85.1%). Less frequently employed strategies were discussing with students what they do online (72.3%) and staying nearby while they use the internet (60.9%).

Comparisons between pre-service and in-service teachers revealed statistically significant differences for most mediation strategies aimed at students without SEN, as well as those with ID and ASD. Pre-service teachers indicated they would use these strategies more frequently than in-service teachers. For students without SEN, differences were observed in all mediation actions except for staying nearby while students use the internet, establishing classroom rules, and offering help if students encounter difficulties completing a task or finding information online (*p* < .05). The same trend was observed for students with ID, where only the strategy of establishing classroom rules did not show significant differences, and for students with ASD, staying nearby while students use the internet also showed no significant differences between in-service and pre-service teachers.

Finally, a repeated-measures ANOVA revealed no statistically significant differences in the use of mediation strategies depending on whether they were aimed at students without SEN, with ID, or with ASD (*p* > .05), except for the strategy of staying nearby while students use the internet. In this case, teachers reported using or intending to use this practice less frequently with students without SEN (*M* = 3.72, *SD* = 1.14) compared to students with ID (*M* = 3.87, *SD* = 1.17) or ASD (*M* = 3.85, *SD* = 1.18) [Wilks' Lambda = .95, *F*(2, 199) = 5.55, *p* = .003, partial η² = .05].

Table 4

Teacher strategies for mediating online risks

Mediation Strategy	Students without SEN		Students with ID		Students with ASD	
	M(SD)	%	*M(SD)*	%	*M(SD)*	%
Talk about what they do online.	3.93(0.99)***	72.3	3.84(1.15)***	68.6	3.80(1.17)***	68.8
Stay nearby while students use the internet.	3.71(1.14)	60.9	3.86(1.19)*	66.2	3.84(1.20)	65.9
Establish classroom rules for internet use.	4.38(0.89)	86.1	4.25(1.07)	82.9	4.26(1.08)	83.4
Offer help if a student has difficulty performing a task or finding information online.	4.45(0.95)	94.5	4.38(1.07)**	84.3	4.31(1.14)*	82.5
Teach safe ways to use the internet.	4.40(1.03)***	85.1	4.33(1.12)***	82.9	4.25(1.19)***	79.7
Teach appropriate online behavior.	4.34(1.04)*	84.2	4.34(1.04)***	84.2	4.19(1.16)***	80.1
Discuss which websites are appropriate and which are not.	4.17(1.13)***	78.8	4.14(1.21)***	78.1	4.09(1.27)***	75.4
Talk about other online risks (e.g., misleading advertising, data theft).	4.39(0.94)**	84.7	4.29(1.09)***	82.4	4.26(1.12)***	81.0
Teach what a student could do if they were worried about something that happened online.	4.33(1.02)***	80.7	4.25(1.12)***	77.1	4.24(1.13)***	76.3
Help students if they encounter a problem on the internet.	4.43(0.98)**	86.6	4.37(1.07)***	85.8	4.35(1.10)***	83.4

Note 1. Students without SEN = students without special educational needs; ID = students with intellectual disabilities; ASD = students with autism spectrum disorder.
Note 2. % = percentage based on the combined responses of "fairly competent" and "very competent."
Note 3. Significance levels at *$p < .05$, **$p < .01$, ***$p < .001$ for the comparison of means between in-service and pre-service teachers using the independent-samples t-test.

4. Discussion and conclusions

The aim of this study was to identify the digital competencies and training needs of Chilean teachers —both pre-service and in-service— regarding the safe use of the internet

by students with ID and/or ASD, as well as the strategies teachers employ to mediate online risks. The results reveal a gap between the demands of inclusive digital citizenship and the actual preparedness of teachers to manage these risks for students with ID and/or ASD in the Chilean context.

Regarding the training received, Chilean teachers reported limited initial and ongoing education on internet safety for students with ID and/or ASD, a finding consistent with previous research in other contexts (Chiner et al., 2021; Gómez-Puerta & Chiner, 2020). Furthermore, the training they do receive mainly comes from informal sources such as family, friends, or mass media, particularly for pre-service teachers, which does not ensure the quality of the information provided. Although limited, in-service teachers have access to non-formal educational alternatives, such as courses offered at their school or at teacher training centers. While this second option is more appropriate, it remains insufficient, as previously noted by Verdú-Pina et al. (2023). These findings underscore the need to implement teacher training programs specifically designed to meet their needs (Samundeeswari et al., 2024) and to foster teaching skills that enable the positive management of online risks (Seale, 2021). Such programs should address teacher biases and enhance their self-efficacy perceptions (Dignath et al., 2022; Lindner et al., 2023).

Regarding digital competence, teachers reported feeling generally competent, with in-service teachers indicating slightly lower self-perceived ability. These findings contrast with the training they have received and may not fully reflect actual competence, potentially being biased by self-perception or social desirability, as previously noted by Revuelta-Domínguez et al. (2022). Moreover, this does not align with descriptions of technology integration in the Chilean educational system (Silva Quiroz & Miranda Arredondo, 2020; Velásquez Castro & Paredes-Águila, 2024). Teachers' self-perceived competence in mediating online risks for students with ID and/or ASD is lower (medium-low), consistent with the difficulties schools experience in addressing student diversity (Benavides-Moreno et al., 2021) and in line with other studies (Chadwick, 2019; Chiner et al., 2021). Enhancing teachers' digital competence could improve their ability to mediate online risks, although further evidence is needed, as contradictory patterns were observed between pre-service and in-service teachers.

The results reveal a paradox: although teachers perceive themselves as generally competent in the pedagogical use of technology, they do not share the same perception regarding their ability to mediate online risks, particularly for students with ID and/or ASD. High self-efficacy in digital competence coexists with medium-low levels of mediation competence, suggesting that training has prioritized instrumental and didactic mastery of learning technologies over risk prevention and management in inclusive contexts. A differential pattern emerges across professional stages. Among pre-service teachers, correlations between digital and mediation competence are positive and moderate, indicating that those who feel more technologically capable also perceive themselves as better equipped to support students. In contrast, for in-service teachers, these associations disappear or become slightly negative, reflecting the gap between initial expectations and the real complexity of digital inclusion, leading to more cautious self-assessments. This dissociation underscores the need to integrate digital well-being and safety into educational frameworks and policies. In Chile, digital and inclusive policies have focused on technology provision and access to the common curriculum, with limited guidance on digitally supporting students with ID and/or ASD. Internationally, frameworks such as DigCompEdu (Punie & Redecker, 2017) and UNESCO's digital citizenship proposals (2019) acknowledge the importance of online well-being but in a general manner, without adaptation for students with

higher support needs. This absence of specificity may explain why teacher training does not fully translate these frameworks into effective differential mediation competencies (Chiner et al., 2025).

To improve practice and address the study's limitations, several actions are recommended. First, replicating the study over time and in other contexts would allow for the analysis of trends and strengthen the evidence base. Second, assessing actual digital competence would enable comparison with teachers' self-perceptions and help identify biases; additionally, expanding the sample would improve representativeness. Third, future research could focus on specific types of ID or levels of ASD to achieve greater precision. Finally, it is recommended to implement initial and ongoing teacher training programs that foster inclusive attitudes, incorporating positive experiences and evidence-based programs that include prevention and management of risks, including online risks (Finkelhor, Walsh, et al., 2021; Revuelta-Domínguez et al., 2022).

This study provides unprecedented evidence from Chile on the relationship between teachers' digital competence, online risk mediation, and inclusive education for students with ID and/or ASD. By comparing pre-service and in-service teachers and analyzing different risks and strategies for students with and without SEN, the study offers a detailed profile of training needs that has not previously been documented. The results support systematically integrating digital safety and well-being into initial and ongoing teacher education, beyond mere technical use of technology, incorporating modules on risk mediation in inclusive contexts, case analysis, ethical reflection, family collaboration, and work with specialized support. At the policy level, it is recommended to reinforce digital safety within regulations governing teacher competence and attention to diversity, including objectives and indicators on risk mediation within curricular frameworks and inclusive education guidelines. Such measures would guide schools in the coherent prevention and management of digital risks for students with ID and/or ASD.

The findings of this study suggest that teacher digital competence can only be fully understood when it explicitly includes the ability to anticipate, prevent, and manage the digital risks faced by students with ID and/or ASD. Achieving this requires moving beyond a conception limited to technical skills and incorporating risk mediation as a core component of initial and ongoing teacher education, the organization of educational institutions, and inclusion policies. Adopting this systemic perspective is essential to advancing effective digital inclusion that ensures the well-being and full participation of these students in online environments.

References

American Educational Research Association. (2011). AERA Code of ethics: American Educational Research Association approved by the AERA Council February 2011. *Educational Researcher*, *40*(3), 145–156. https://doi.org/10.3102/0013189X11410403

Benavides-Moreno, N., Ortiz-González, G., & Reyes-Araya, D. (2021). La inclusión escolar en Chile: Observada desde la docencia. *Cadernos de Pesquisa*, *51*. https://doi.org/10.1590/198053146806

Berger, P. (2020). Teachers' mediation practice: Opportunities and risks for youth media behavior//Prácticas de mediación docente: Oportunidades y riesgos en el comportamiento mediático de jóvenes. *Comunicar*, *28*(64), 49–59.

Cabello, P., Claro, M., Rojas, R., & Trucco, D. (2021). Children's and adolescents' digital access in Chile: The role of digital access modalities in digital uses and skills. *Journal of Children and Media*, *15*(2), 183–201. https://doi.org/10.1080/17482798.2020.1744176

Caton, S., & Landman, R. (2021). Internet safety, online radicalisation and young people with learning disabilities. *British Journal of Learning Disabilities*, *50*(1), 88–97. https://doi.org/10.1111/bld.12372

Chadwick, D. D. (2019). Online risk for people with intellectual disabilities. *Tizard Learning Disability Review*, *24*(4), 180–187. https://doi.org/10.1108/TLDR-03-2019-0008

Chiner, E., Gómez-Puerta, M., & Mengual-Andrés, S. (2021). Opportunities and hazards of the internet for students with intellectual disabilities: The views of pre-service and in-service teachers. *International Journal of Disability, Development and Education*, *68*(4), 538–553. https://doi.org/10.1080/1034912X.2019.1696950

Chiner, E., Gómez-Puerta, M., Mengual-Andrés, S., & Merma-Molina, G. (2025). Teacher and school mediation for online risk prevention and management: Fostering sustainable education in the digital age. *Sustainability*, *17*(8), 3711. https://doi.org/10.3390/SU17083711

Clements, F. A., Orchard, L. J., & Chadwick, D. D. (2025). A scoping review investigating the perspectives of people with mild to moderate intellectual disabilities on experiences of cyberbullying victimisation and its subtypes. *Journal of Intellectual Disabilities*, *29*(3), 743–759. https://doi.org/10.1177/17446295241252214

Creswell, J. W., & Guetterman, T. C. (2019). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (6th ed.). Pearson.

Dignath, C., Rimm-Kaufman, S., van Ewijk, R., & Kunter, M. (2022). Teachers' beliefs about inclusive education and insights on what contributes to those beliefs: A meta-analytical study. *Educational Psychology Review*, *34*(4), 2609–2660. https://doi.org/10.1007/s10648-022-09695-0

Finkelhor, D., Jones, L., & Mitchell, K. (2021). Teaching privacy: A flawed strategy for children's online safety. *Child Abuse & Neglect*, *117*. https://doi.org/10.1016/J.CHIABU.2021.105064

Finkelhor, D., Walsh, K., Jones, L., Mitchell, K., & Collier, A. (2021). Youth internet safety education: aligning programs with the evidence base. *Trauma, Violence, & Abuse*, *22*(5), 1233–1247. https://doi.org/10.1177/1524838020916257

Glencross, S., Mason, J., Katsikitis, M., & Greenwood, K. M. (2021). Internet use by people with intellectual disability: Exploring digital inequality—A systematic review. *Cyberpsychology, Behavior, and Social Networking*, *24*(8), 503–520. https://doi.org/10.1089/cyber.2020.0499

Gómez-Puerta, M., & Chiner, E. (2020). Teachers' perceptions on online behaviour of students with intellectual disability, risk mediation and training. *European Journal of Special Needs Education*, *35*(4), 437–450. https://doi.org/10.1080/08856257.2019.1703602

Hassrick, E. M., Holmes, L. G., Sosnowy, C., Walton, J., & Carley, K. (2021). Benefits and risks: A systematic review of information and communication technology use by autistic people. *Autism in Adulthood*, *3*(1), 72–84. https://doi.org/10.1089/aut.2020.0048

Haz-Gómez, F. E., López-Martínez, G., & Manzanera-Román, S. (2024). La exclusión digital como una forma de exclusión social: una revisión crítica del concepto de brecha digital. *Studia Humanitatis Journal*, *4*(1), 57–89. https://doi.org/10.33732/shj.v4i1.112

Jæger, B. (2021). Digital citizenship – A review of the academic literature. *Der Moderne Staat – Zeitschrift Für Public Policy, Recht Und Management*, *14*(1–2021), 24–42. https://doi.org/10.3224/dms.v14i1.09

Jiménez Hernández, D., Muñoz Sánchez, P., & Sánchez Giménez, F. S. (2021). La competencia digital docente, una revisión sistemática de los modelos más utilizados. *Revista Interuniversitaria de Investigación En Tecnología Educativa*, 105–120. https://doi.org/10.6018/riite.472351

Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, *28*(4), 563–575. https://doi.org/10.1111/j.1744-6570.1975.tb01393.x

Lindner, K.-T., Schwab, S., Emara, M., & Avramidis, E. (2023). Do teachers favor the inclusion of all students? A systematic review of primary schoolteachers' attitudes towards inclusive education. *European Journal of Special Needs Education*, *38*(6), 766–787. https://doi.org/10.1080/08856257.2023.2172894

Livingstone, S., Haddon, L., Görzig, A., & Ólafsson, K. (2011). *Risks and safety on the internet: The perspective of European children. Full findings*. EU Kids Online, The London School of Economics and Political Science. https://eprints.lse.ac.uk/33731/

Livingstone, S., & Stoilova, M. (2021). *The 4Cs: Classifying online risk to children*. Leibniz-Institut für Medienforschung | Hans-Bredow-Institut (HBI); CO:RE - Children Online: Research and Evidence. https://doi.org/10.21241/ssoar.71817

Malik, S., Elbatal, I., & Khan, S. U. (2024). People with disabilities, the age of information and communication technology and the prevailing digital divide—A descriptive analysis. *Journal of Disability Research*, *3*(2). https://doi.org/10.57197/JDR-2024-0011

Normand, C. L., Fisher, M. H., Simonato, I., Fecteau, S.-M., & Poulin, M.-H. (2022). A systematic review of problematic internet use in children, adolescents, and adults with autism spectrum disorder. *Review Journal of Autism and Developmental Disorders*, *9*(4), 507–520. https://doi.org/10.1007/s40489-021-00270-x

Paredes-Águila, J. A., & Rivera-Vargas, P. (2023). La política de inclusión de tecnologías digitales en el sistema escolar chileno. Una revisión sistemática. *Pensamiento Educativo: Revista de Investigación Educacional Latinoamericana*, *60*(3). https://doi.org/10.7764/PEL.60.3.2023.4

Punie, Y., & Redecker, C. (2017). *European framework for the digital competence of educators: DigCompEdu*. Publications Office of the European Union. https://dx.doi.org/10.2760/178382

Revuelta-Domínguez, F.-I., Guerra-Antequera, J., González-Pérez, A., Pedrera-Rodríguez, M.-I., & González-Fernández, A. (2022). Digital teaching competence: A systematic review. *Sustainability*, *14*(11), 6428. https://doi.org/10.3390/su14116428

Samundeeswari, D., Angayarkanni, R., Raju, G., Rana, N., & Sharma, A. (2024). Teacher professional development: Effective strategies and evaluation methods. *Educational Administration: Theory and Practice*, *30*(6), 1726–1733. https://doi.org/10.53555/kuey.v30i6.5578

Seale, J. (2021). *Supporting people with learning disabilities to use technology: A toolkit for supporters*. The Open University.

Seale, J. (2024). Digitally inclusive support practices for people with learning disabilities: The role of ethics and beliefs. In V. Heitplatz & L. Wilkens (Eds.), *Rehabilitation technology in transformation: A human-technology-environment perspective* (pp. 339–351). Eldorado.

Si, J. J., Lin, X., Cui, H., Zhou, X., & Wang, K. Y. (2025). Digital safety for children with intellectual disabilities when using mobile devices from parents' and teachers' perspectives. In ACM (Ed.), *Proceedings of the 2025 ACM SIGSAC Conference on Computer and Communications Security (CCS '25)* (pp. 1–15). ACM. https://doi.org/10.1145/3719027.3765101

Silva Quiroz, J., Cerda, C., Fernández-Sánchez, M. R., & Leon, M. (2022). Competencia digital docente del profesorado en formación inicial de universidades públicas

chilenas. *Revista Interuniversitaria de Formación del Profesorado. Continuación de la antigua Revista de Escuelas Normales*, *97*(36.1), 301–319. https://doi.org/10.47553/rifop.v97i36.1.90221

Silva Quiroz, J., & Miranda Arredondo, P. (2020). Presencia de la competencia digital docente en los programas de formación inicial en universidades públicas chilenas. *Revista de Estudios y Experiencias en Educación*, *19*(41), 149–165. https://doi.org/10.21703/rexe.20201941silva9

Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L., Staksrud, E., Olafsson, K., Livingstone, S., & Hasebrink, U. (2020). *EU Kids Online 2020: Survey results from 19 countries*. https://www.eukidsonline.ch/files/Eu-kids-online-2020-international-report.pdf

Stoilova, M., Livingstone, S., & Khazbak, R. (2021). *Investigating risks and opportunities for children in a digital world: A rapid review of the evidence on children's internet use and outcomes*. https://doi.org/10.18356/25211110-2020-03

Timotheou, S., Miliou, O., Dimitriadis, Y., Sobrino, S. V., Giannoutsou, N., Cachia, R., Monés, A. M., & Ioannou, A. (2023). Impacts of digital technologies on education and factors influencing schools' digital capacity and transformation: A literature review. *Education and Information Technologies*, *28*(6), 6695–6726. https://doi.org/10.1007/s10639-022-11431-8

UNESCO. (2019). *Marco de competencias de los docentes en materia de TIC*. UNESCO.

UNICEF. (2024). *Kids Online Chile 2022*. CEPPE UC / IE-CIAE / MINEDUC / UNICEF.

Velásquez Castro, L. A., & Paredes-Águila, J. A. (2024). Systematic review of the challenges facing the development and integration of digital technologies in the Chilean school context, from the teaching perspective. *Región Científica*, *3*(1), 2024226. https://doi.org/10.58763/rc2024226

Verdú-Pina, M., Lázaro-Cantabrana, J. L., Grimalt-Álvaro, C., & Usart, M. (2023). El concepto de competencia digital docente: Revisión de la literatura. *Revista Electrónica de Investigación Educativa*, *25*, 1–13. https://doi.org/10.24320/redie.2023.25.e11.4586

How to cite: