

Digital inclusion in Spanish mainstream and special schools: Teachers' perceptions of Internet use by students with intellectual disabilities

Esther Chiner  | Marcos Gómez-Puerta | María Cristina Cardona-Moltó

Departamento de Psicología de la Salud,
Faculty of Education, University of Alicante,
San Vicente del Raspeig, Spain

Correspondence

Esther Chiner, Departamento de Psicología de la Salud, Faculty of Education, Universidad de Alicante, Edificio de Ciencias Sociales, Ctra. San Vicente del Raspeig, s/n, 03690 San Vicente del Raspeig, Spain.
Email: esther.chiner@ua.es

Funding information

Conselleria d'Educació, Investigació, Cultura i Esport, Generalitat Valenciana, Spain, under Grant No. GV/2017/006.

Accessible summary

- Students with intellectual disabilities in mainstream and special schools can benefit from information and communication technologies, including the Internet.
- We asked teachers about the benefits, risks and safety of online activities for students with intellectual disabilities.
- Teachers perceive that online activities are not safe enough for this group.
- Teachers in special and mainstream schools hold different perceptions.
- Teacher training is necessary to promote digital inclusion.

Abstract

Background: Although there is research-based evidence on the educational potential of information and communication technologies as teaching and learning resources for schools, studies focused on the real benefits and risks associated with online activities of students with intellectual disabilities are still scarce. The purpose of this study was to describe and compare teachers' perspectives on this topic in relation to a school setting (mainstream and special schools), teaching specialty (general and special educators) and teaching level (primary and secondary education).

Methods: A cross-sectional survey design was conducted in which a sample of 208 general and special education teachers from mainstream and special schools participated. Participants had to respond to a questionnaire that included questions related to the opportunities and risks of the Internet and online safety.

Findings: Teachers perceive that the Internet is unsafe for students with intellectual disabilities and it entails more risks than benefits for these students. Such perceptions may determine the educational intervention, especially when the Internet has shown to be crucial during the coronavirus disease 2019 pandemic. Differences were found regarding school setting, teaching specialty and teaching level. The data reflect a lack of consensus regarding the potential benefit of digital inclusion for students with intellectual disabilities, based on the perception that the online environment is not safe for this population.

Conclusion: There is a need to train teachers on how to achieve the maximum educational potential of the Internet for these students, as well as to learn to implement strategies to prevent and manage online risks.

KEYWORDS

benefits, intellectual disabilities, Internet, mainstream schools, online safety, risks, special education, teachers

1 | INTRODUCTION

People with intellectual disabilities have limitations in their intellectual functioning and adaptive behaviour, which coexist with diverse capacities for learning and participation in society, in the context of the wide heterogeneity of this group of people (Schalock et al., 2021). To develop this potential, people with intellectual disabilities may require various types and degrees of support to participate in diverse social settings (e.g., leisure, education, employment). These supports arise from the needs and demands of the person, and are framed in the human right to make decisions (United Nations, 2006). However, it is believed that the person's functioning is often improved if personalised support is provided longitudinally. To learn to use the Internet, which is considered a right for this group (United Nations, 2006), students with intellectual disabilities need appropriate training and support from the people around them (Palmer et al., 2012). Among others, they should receive support aimed at maximising the potential benefits and reducing the risks to which they may be vulnerable (Wright, 2017).

Regarding benefits, online activities facilitates, among others, engaging in social interaction and enhancing relationships (Normand & Sallafranque St-Louis, 2016), promoting self-determination, participation and social identity (Molin et al., 2015), developing digital literacy skills (Salmerón et al., 2019) and participating in recreational activities (Jenaro et al., 2018a). Online activities may also involve certain risks. Some of those that have been identified specifically for people with intellectual disabilities is excessive use of the Internet (Jenaro et al., 2018b), exposure to inappropriate or unwanted content (Löfgren-Mårtenson et al., 2015), cyberbullying and cybervictimisation (Jenaro et al., 2018b), online sexual solicitation (Buijs et al., 2017) or engaging in undesirable online behaviours (Löfgren-Mårtenson et al., 2015). These and other online risks have been classified into three main categories, also known as the 3Cs: (1) *conduct* (engaging in antisocial behaviours involving the use of the Internet), (2) *contact* (making or experiencing negative contacts online, such as cyberbullying or grooming) and (3) *content* (exposure to content that may be harmful, manipulative or exploitative) (Staksrud et al., 2009). Recently, a fourth category, *contract*, has been added to the model to refer to potential harmful contracts or commercial interests (Livingstone & Stoilova, 2021).

In this regard, teaching staff play an important role in promoting or hindering online activities. Although there are few studies available, research has shown that teachers tend to show less favourable attitudes towards the inclusion of people with disabilities and with greater support needs, such as people with intellectual disabilities (Avramidis &

Norwich, 2002), who feel that they are not treated appropriately by their schools (Corr McEvoy & Keenan, 2014). The beliefs that reinforce this attitude may result in teachers providing less training and support to students with intellectual disabilities to overcome the digital divide, even though these are key to their ability to use the Internet (Kydland et al., 2012; Näslund & Gardelli, 2013). Moreover, there is evidence that these beliefs that the Internet is unsafe for people with intellectual disabilities may be manifested with greater intensity when teachers perceive that the online risks are greater than the potential benefits (Lough & Fisher, 2016), a tendency that has been found in several studies in both student and practising teachers (Chiner et al., 2021; Gómez-Puerta & Chiner, 2020). As found by Clifford Simpican et al. (2018) in a qualitative approach research, results suggest that staff members' support of technology decreases when they perceive that technology may jeopardise service users' safety in online activities. Therefore, this perception can become a mediating variable of the digital inclusion of students with intellectual disabilities. In view of the perception that people with intellectual disabilities do not know how to manage risks, teachers may develop attitudes of infantilisation and overprotection towards these students by monitoring Internet access, limiting its use and/or controlling the content they access (Seale & Chadwick, 2017). Paradoxically, the study conducted by Beaton et al. (2021) has shown that the coronavirus disease 2019 (COVID-19) pandemic has generated enhanced opportunities for the social inclusion of students with learning disabilities. For example, it has helped these students to communicate in alternative ways with their teachers and friends. This, according to the authors, is probably due to an increased agency for students and their families and/or the emergence of new modes of connectedness. Although the study was conducted with a small sample, the results reflect an improvement in the relationship with the key stakeholders of the school.

With regard to risk management, research has shown that people with intellectual disabilities are aware of online risks and are able to avoid them for the most part. They also demand more training to understand the risks and learn to manage them autonomously (D. D. Chadwick, 2022). Therefore, it is important to identify teachers' perceptions to provide them with information and training to overcome such barriers to digital inclusion (Morin et al., 2013). This is especially relevant because of the growing tendency among people with intellectual disabilities to use portable devices to use the Internet, making it more difficult to control access (Jenaro et al., 2018b). Thus, teacher training should be offered for the optimisation of Internet benefits and positive risk management

(Seale, 2014) based on mediation for the prevention and management of these risks (Karaseva et al., 2015). As Seale (2014) pointed out, positive risk management is based on managing those risks instead of avoiding or ignoring them. To achieve this, a shared and negotiated decision about online risks is promoted between the student with intellectual disability and the supporter. All this must be done from the perspective of the persons' right to make decisions about their own life, respecting their dignity and assuming the human right to take risks (Perske, 1972). This proposal is key if we consider that teachers report that they receive little training on risk mediation on the Internet (Gómez-Puerta & Chiner, 2020), that the focus has been more on risk identification than on enhancing the benefits (Glencross et al., 2021) and that exclusion is exacerbated in situations that require extensive digital skills by the person and/or competent assistance, which was the case during the period of confinement due to the global pandemic caused by COVID-19 (D. Chadwick et al., 2022). Nevertheless, there are studies that show good perspectives on the potential for learning and positive use of the Internet by these students who are learning the effective use of the smartphone (Lancioni et al., 2022), or accessing and critically reading information on the Internet (Delgado et al., 2019). Likewise, there are also studies that have highlighted that in a period as complex as the confinement due to COVID-19, students with intellectual disabilities increased agency and explored new ways of staying connected with other people, improving their relationships (Beaton et al., 2021).

The tendency of teaching staff to limit access to online activities of students with intellectual disabilities as a result of perceived risks may also differ according to the degree of contact teachers have with the students, as in the case of general and special education teachers. In Spain, the education of students with intellectual disabilities is carried out mainly in mainstream schools, where both general and special education teachers collaborate, and only students with a higher degree of support needs are educated in special education schools (Rao et al., 2014). In this regard, previous studies have found that a broader experience in meeting the educational needs of students with disabilities fosters more positive attitudes towards inclusion (Batsiou et al., 2008). However, the attitude of teachers towards the inclusion of students with intellectual disabilities seems to be conditioned by their perception of the severity of the disabling condition (Avramidis & Norwich, 2002), and the level of special education training they have (Lacruz-Pérez et al., 2021).

Despite a growing research interest in the digital inclusion of people with intellectual disabilities (Mengual-Andrés et al., 2020), there are still few studies in this area, especially on the analysis of possible discrepancies among teaching staff, an aspect that this study aims to address. Thus, the purpose was to identify and compare the perceptions that teachers in mainstream and special schools have about the use of the Internet by students with intellectual disabilities by addressing three issues: (i) degree of safety in the use of the Internet, (ii) benefits of the Internet and (iii) risks of the Internet. The study of teachers' perceptions is relevant in the whole of the previously stated argument, as a variable involved in the digital

inclusion process. However, it should not omit and replace the own voice of students with intellectual disabilities. It should be considered as, instead, one more element of this complex process.

2 | METHODS

2.1 | Participants

Participants were selected by means of a stratified cluster sampling in which province (Alicante, Valencia and Castellon) and type of school (primary, secondary and special education) were used as strata to randomly select schools in the Valencian Community, Spain ($N = 138$). Subsequently, the collaboration of six teachers per centre was requested. The final sample consisted of 208 teachers from 49 mainstream schools (72.1%) and special schools (27.9%). The majority were female (73%), aged between 22 and 64 years ($M = 45.09$, $SD = 9.58$) and with an average work experience of 17.57 years ($SD = 9.15$, $Min = 1$ – $Max = 39$). According to their specialisation, 113 (54.3%) were general educators and 95 (45.7%) were special educators. Of the special education teachers, 38.9% taught in mainstream schools and 61.1% in special schools. Regarding the educational stage, 54% of teachers in mainstream schools (general and special education teachers) taught in primary education and the remaining 46% in secondary education.

2.2 | Instruments

For the purpose of this study, an online questionnaire was designed to collect information on issues related to Internet use by students with intellectual disabilities, based on previous work by the European network EU Kids Online (Livingstone et al., 2011) and D. D. Chadwick et al. (2017), with appropriate adaptations made according to the objectives of the research project and the population under study. The questionnaire included four sections: (i) Perceptions of Internet use, (ii) Internet use and online behaviour of students with intellectual disabilities, (iii) Internet training and online safety and (iv) Online risk prevention and management strategies. The instrument was reviewed by 10 experts in areas that could contribute to improving the content and wording of the questionnaire. The judges were selected intentionally, attending to the following criteria: work experience or academic and scientific reputation in the research field, willingness and motivation to collaborate and objectivity. Seven participants were scholarly experts in the fields of educational psychology, intellectual and developmental disabilities, inclusive education and information and communications technology in education from four universities, and three experts had work experience in intellectual disability support services. The content validity index was high ($CVI = 0.87$), according to Lawshe (1975). Additionally, a focus group of eight support workers and teachers was carried out to discuss the quality and understanding of the items. The information gathered from the

experts and the focus group was used to rephrase some questions and make them more understandable, and to adjust the instrument to the scope of the study. Regarding reliability, a good internal consistency was obtained from the sample's responses, with Cronbach's α values between 0.62 and 0.96 in the different sections of the questionnaire.

The current study presents the results obtained in the first part of the instrument, perception of Internet use (see Gómez-Puerta & Chiner, 2020; for more details on further findings). This section consisted of an item on the perception of Internet safety for different groups with and without intellectual disabilities, a list of 22 online benefits and a list of 30 online risks attending to the 3Cs classification suggested by EU Kids Online (Staksrud et al., 2009). Participants were asked to rate the items on a 5-point Likert scale ranging from a minimum of 1 to a maximum of 5. The internal consistency of this section was high ($\alpha = 0.91$).

2.3 | Procedure

A cross-sectional study was conducted based on a survey design. Before the development of the study, approval was obtained from the university's Ethics Committee (procedure UA-2017-11-15), guaranteeing at all times the ethical standards in research. Participants' responses were anonymous and informed consent to participate in the study was requested. The online questionnaire was sent by email to the different randomly selected schools including a cover letter with detailed information about the purpose and relevance of the study, and the general guidelines for completing the questionnaire. After the elimination of incomplete questionnaires, the final sample comprised teachers from 49 schools (35.5%). Although the sample was randomly drawn to guarantee representativeness from the three provinces of the Valencian Community, the return rate was low (25.1%). Therefore, a wave analysis was conducted to check for response bias (Creswell & Guetterman, 2019). According to the response continuum theory, those requiring several reminders to participate are more like nonrespondents than those who participate in a study upon the first invitation, indicating potential response bias (Lin & Schaeffer, 1995). Successive reminders were used to encourage participation in the study (every 3 weeks). Afterwards, participants were divided into three groups (waves), and their responses to the items and some demographic variables depending on the timing of participation were compared. No significant differences were found between waves, indicating similar responses ($p > 0.05$).

2.4 | Data analysis

Descriptive and inferential statistics were used for data analysis. To compare between groups, a series of one-way multivariate analysis of variance (MANOVA) were conducted and, if applicable, subsequent

independent *t*-tests were performed. The α level was adjusted using the Bonferroni correction to control for Type 1 error. When the sample size was too small, the nonparametric Mann-Whitney *U*-test was used (Tabachnick & Fidell, 2013).

3 | FINDING

3.1 | Teachers' perceptions of Internet safety

In general, teachers perceived that the Internet is an unsafe environment for this population ($M = 2.16$, $SD = 0.61$). Whereas for adults without intellectual disabilities the Internet is considered moderately safe ($M = 3.25$, $SD = 0.94$), the perception of lack of safety increases for adults with intellectual disabilities ($M = 1.97$, $SD = 0.73$), minors without intellectual disabilities ($M = 1.92$, $SD = 0.72$) and, especially, minors with intellectual disabilities ($M = 1.51$, $SD = 0.65$). Table 1 shows the responses of general education teachers and special education teachers in mainstream schools, and special education teachers in special schools. Although slight discrepancies were observed between the three groups, the MANOVA did not show statistically significant differences on the combined dependent variables [$F(8, 406) = 1.40$, $p = 0.196$, Pillai's trace = 0.05, partial $\eta^2 = 0.03$].

Similarly, no statistically significant differences between teachers in primary schools and secondary schools were found [$F(4, 145) = 1.04$, $p = 0.391$, Pillai's trace = 0.03, partial $\eta^2 = 0.03$]. Nor were significant the differences between general education teachers and special education teachers [$F(4, 203) = 1.23$, $p = 0.301$, Pillai's trace = 0.02, partial $\eta^2 = 0.02$]. However, regarding special education teachers, those in secondary schools ($n = 11$) did show a significantly higher perception of insecurity towards the use of the Internet by certain groups than primary school teachers ($n = 26$). The Mann-Whitney *U*-test showed differences in relation to adults without intellectual

TABLE 1 Comparison of teachers' perceptions of Internet safety for people with and without intellectual disabilities in mainstream and special schools

Group	GE ^a		SE ^b		SE ^c	
	M	SD	M	SD	M	SD
Adults without intellectual disabilities	3.29	0.86	2.97	1.18	3.35	0.89
Adults with intellectual disabilities	2.00	0.72	1.91	0.79	1.94	0.71
Children without intellectual disabilities	1.92	0.72	1.86	0.67	1.97	0.76
Children with intellectual disabilities	1.46	0.65	1.51	0.60	1.62	0.69
Total	2.17	0.60	2.06	0.68	2.22	0.63

^aGeneral education teacher in mainstream school.

^bSpecial education teacher in mainstream school.

^cSpecial education teacher in a special school.

disabilities ($Md_{\text{Primary}} = 3$, $Md_{\text{Secondary}} = 1$, $U = 62.00$, $z = 2.81$, $p = 0.006$, $r = 0.46$), adults with intellectual disabilities ($Md_{\text{Primary}} = 2$, $Md_{\text{Secondary}} = 1$, $U = 79.50$, $z = 2.27$, $p = 0.003$, $r = 0.37$) and minors without intellectual disabilities ($Md_{\text{Primary}} = 2$, $Md_{\text{Secondary}} = 1$, $U = 62.00$, $z = 2.98$, $p = 0.006$, $r = 0.49$). Regarding children with intellectual disabilities, primary and secondary special education teachers concur that the Internet is very unsafe for this group.

3.2 | Benefits of the Internet for students with intellectual disabilities

Overall, teachers viewed the benefits of the Internet for students with intellectual disabilities to be moderate ($M = 3.34$, $SD = 0.69$). The greatest benefits were associated with content and contact

possibilities such as staying in touch with friends and family (67.3%), as well as developing digital skills (83.7%), literacy (69.7%) and understanding new information (71.6%). In contrast, teachers did not perceive other opportunities such as dating online (19.2%), sharing information about their lives with others (30.8%) or developing closer relationships (40.9%) as very beneficial.

Special education teachers in mainstream schools reported a more favourable perception of the benefits that the use of the Internet can bring to students with intellectual disabilities than their colleagues in special schools and general education teachers, like saying things they would find uncomfortable saying face to face, sharing advice with friends, and widening their circle of friends (see Table 2). However, the MANOVA did not reveal statistically significant differences [$F(44, 370) = 1.36$, $p = 0.072$, Pillai's trace = 0.28, partial $\eta^2 = 0.14$]. Likewise, no significant differences were

TABLE 2 Comparison of teacher's perceived online benefits for students with intellectual disabilities in mainstream and special schools

Benefits	GE ^a		SE ^b		SE ^c	
	M	SD	M	SD	M	SD
Keeping in contact with friends and family	3.76	0.90	4.03	0.86	3.72	1.02
Widening their circle of friends	3.17	1.08	3.68	1.15	3.05	1.11
Developing technological skills	4.24	0.83	4.19	0.73	4.19	0.78
Saying things they would find uncomfortable saying face to face	2.66	1.07	3.30	1.26	2.43	0.97
Sharing advice with friends	3.16	0.93	3.62	1.01	2.71	1.00
Supporting friends	3.36	0.89	3.76	0.98	3.14	1.06
Developing perspective-taking skills	3.27	1.07	3.41	1.11	3.12	1.10
Developing social skills	3.28	1.02	3.73	1.14	3.38	1.05
Learning from other cultures	3.88	1.00	3.81	0.93	3.07	0.91
Developing decision-making skills	3.12	0.92	3.38	1.16	3.07	0.91
Learning about wider society	3.58	0.92	3.68	1.02	2.90	0.98
Developing a sense of who they are	3.00	0.92	3.14	1.20	2.90	0.98
Developing critical thinking skills	3.09	0.96	3.35	1.16	3.10	1.00
Becoming closer to friends	2.97	1.09	3.65	1.16	2.97	1.09
Developing literacy skills	3.81	0.91	3.95	0.84	3.88	0.90
Developing comprehension and understanding of new information	3.88	0.86	4.05	0.78	3.79	0.89
Learning about educational opportunities	3.67	0.94	3.81	1.10	3.57	1.07
Maintaining friendships	3.22	0.98	3.59	1.11	3.07	1.05
Sharing information about their lives with others	2.71	1.10	3.22	1.35	2.43	1.27
Learning about and being inspired to try new things	3.21	0.99	3.35	1.29	2.93	1.10
Developing expressive communication skills	3.58	0.90	3.84	0.92	3.67	0.98
Dating online	2.46	1.06	2.95	1.39	2.12	1.06
Total	3.32	0.62	3.61	0.86	3.20	0.68

^aGeneral education teacher in mainstream school.

^bSpecial education teacher in mainstream school.

^cSpecial education teacher in a special school.

observed when comparing, on the one hand, general educators and special educators (regardless of the type of school) [$F(4, 145) = 1.04$, $p = 0.391$, Pillai's trace = 0.03, partial $\eta^2 = 0.03$] and, on the other hand, teachers in primary and secondary schools [$F(4, 145) = 1.04$, $p = 0.391$, Pillai's trace = 0.03, partial $\eta^2 = 0.03$].

Finally, the Mann-Whitney U test was used to compare the responses of special education teachers in mainstream primary schools ($n = 26$) and secondary schools ($n = 11$). The findings showed statistically significant differences in most of the items analysed, with secondary education teachers' scores being significantly higher than those of primary education teachers in all instances. No significant differences were found with regard to the following benefits: keeping in contact with friends and family, becoming closer friends, learning from other cultures, learning about a wider society and educational opportunities and developing decision-making and literacy skills ($p > 0.001$). With respect to general educators, no significant differences were observed between educational stages.

3.3 | Risks of the Internet for students with intellectual disabilities

For the teachers participating in the study, the perception of risks in the use of the Internet by students with intellectual disabilities is clearly greater than the benefits ($M = 4.06$, $SD = 0.62$). The vast majority of teachers of any of the educational specialties and stages rated each of the risks as high or very high with mean values, in many cases, above 4 on a 5-point Likert scale, and for the three types of online risks: content, contact and conduct. This risk perception was especially high with regard to the possibility of being bullied online (89.4%), having contact with strangers (89.4%), being exposed to inappropriate or offensive pornographic content (88%), providing too much information over the Internet (87%), unintentionally downloading malware or spyware onto the computer (82.2%) and disseminating personal information or photographs of oneself (87%) or others (85.1%).

Overall, the perception of risk by general and special education teachers is similar and no statistically significant differences were observed between the two groups [$F(30, 177) = 1.01$, $p = 0.460$, Pillai's trace = 0.15, partial $\eta^2 = 0.15$]. Once again, special education teachers in mainstream schools scored higher on the scale (e.g., becoming addicted to the Internet and to social networks), implying a higher perception of risk in Internet use compared to special education teachers in special schools and general education teachers (Table 3). However, the MANOVA did not reveal statistically significant differences [$F(60, 176) = 1.09$, $p = 0.303$, Pillai's trace = 0.31, partial $\eta^2 = 0.16$].

When comparing teachers based on educational stage (primary and secondary schools), the MANOVA showed statistically significant differences [$F(30, 119) = 2.05$, $p = 0.004$, Pillai's trace = 0.34, partial $\eta^2 = 0.34$]. The independent sample *t*-tests, using the Bonferroni correction ($\alpha = 0.001$), indicated that

secondary education teachers rated the risks higher than primary education teachers in four items: communicating with strangers [$M_{\text{Primary}} = 4.15$, $SD = 0.70$, $M_{\text{Secondary}} = 4.55$, $SD = 0.65$, $t(148) = -3.591$, $p < 0.001$, Cohen's $d = 0.58$], being exposed to drug-related material [$M_{\text{Primary}} = 3.95$, $SD = 0.74$, $M_{\text{Secondary}} = 4.41$, $SD = 0.75$, $t(148) = -3.723$, $p < 0.001$, Cohen's $d = 0.61$], spending less time on work, learning or personal development [$M_{\text{Primary}} = 3.53$, $SD = 0.95$, $M_{\text{Secondary}} = 4.26$, $SD = 0.74$, $t(148) = -5.181$, $p < 0.001$, Cohen's $d = 0.84$], and having difficulty to discriminate the trustworthiness of online information [$M_{\text{Primary}} = 4.25$, $SD = 0.81$, $M_{\text{Secondary}} = 4.64$, $SD = 0.59$, $t(148) = -3.723$, $p < 0.001$, Cohen's $d = 0.54$].

Secondary general education teachers rated the risks higher than primary education teacher, but statistically significant differences were found only in two items: being exposed to inappropriate drug-related material ($Md_{\text{Primary}} = 4$, $Md_{\text{Secondary}} = 5$, $U = 1037$, $z = 3.43$, $p < 0.001$, $r = 0.32$) and spending less time studying ($Md_{\text{Primary}} = 3$, $Md_{\text{Secondary}} = 4$, $U = 791.50$, $z = 4.83$, $p < 0.001$, $r = 0.45$). Among special education teachers, differences were not statistically significant between educational stages ($p > 0.001$).

4 | DISCUSSION

The purpose of this study was to identify and compare teachers' perceptions in mainstream and special schools about the use of the Internet by students with intellectual disabilities. In relation to the results on the level of safety, teachers tend to perceive that the Internet is not a safe environment for students with intellectual disabilities, whether they are children or adults. This is a trend especially marked in special education teachers at secondary schools and is probably related to the risks of contact derived from the student's sexual development (Löfgren-Mårtenson et al., 2015), which is consistent with previous similar studies (Chiner et al., 2021; Gómez-Puerta & Chiner, 2020). However, the findings contradict those of Molin et al. (2015) in which teachers expressed their desire to see beyond the possible risks of online activities to promote opportunities for the development of social relationships. This situation seems to indicate that the perception of teachers may be mediated by some variables, such as their training, previous experiences, level of digital competence and so forth (Lacruz-Pérez et al., 2021). This fact is relevant due to the importance of providing support to favour the digital inclusion of students with intellectual disabilities (Barlott et al., 2020). Recent studies offer a positive view of the level of digital competence to learn to distinguish and choose information online (Delgado et al., 2019) and to manage the risks that may appear online (D. D. Chadwick, 2022). It is worth highlighting the relevance of decision-making as an inherent right of the human being, assuming that mistakes can be made or exposed to risks in such choices (Perske, 1972). We must, therefore, avoid an unfavourable view of the learning potential and risk management by people with intellectual disabilities, which

TABLE 3 Comparison of teachers' perceptions of online risks for students with intellectual disabilities in mainstream and special schools

Risks	GE ^a		SE ^b		SE ^c	
	M	SD	M	SD	M	SD
Being bullied or harassed	4.35	0.67	4.41	0.64	4.28	0.69
Communicating with people not known to them or their families	4.35	0.70	4.30	0.74	4.40	0.69
Being exposed to inappropriate or offensive adult pornographic content	4.34	0.72	4.49	0.65	4.36	0.64
Being exposed to inappropriate drug-related material	4.12	0.75	4.30	0.84	4.19	0.76
Being exposed to material which encourages antisocial or extremist behaviour	4.14	0.82	4.27	0.90	4.00	0.70
Providing too much personal information	4.36	0.75	4.41	0.68	4.38	0.72
Meeting in person with someone met online	4.10	0.89	4.32	0.78	4.12	0.88
Being threatened	4.02	0.96	4.22	0.78	3.97	0.93
Missing out on face-to-face interactions	3.73	0.87	4.03	0.92	3.59	0.87
Affecting physical health by spending too much time online	3.73	0.93	4.00	0.91	3.48	0.97
Becoming addicted to using social networking sites	4.11	0.84	4.24	0.86	3.64	0.87
Spending less time on work, learning or personal development	3.78	0.95	4.14	0.82	3.59	0.79
Becoming involved in bullying others	3.35	0.99	3.68	1.13	3.24	1.14
Spending less time with family and friends	3.74	0.90	4.05	0.88	3.40	0.86
Being exposed to inappropriate or offensive violent or gory content	4.05	0.86	4.22	0.82	3.98	0.86
Being susceptible to online marketing scams	4.21	0.76	4.32	0.81	4.14	0.96
Being stalked	4.12	0.87	4.16	0.83	4.05	0.84
Developing or writing harmful online content	3.59	1.04	3.76	0.98	3.47	0.95
Being 'groomed' for sexual exploitation or abuse	4.08	0.80	4.22	0.88	4.10	0.78
Becoming involved in using online gambling sites	3.81	0.87	4.05	0.88	3.72	0.98
Engaging in copyright infringement and illegal downloading	4.01	0.87	3.86	1.11	3.84	0.98
Having their personal data misused by other people	4.23	0.75	4.32	0.70	4.10	0.78
Having their accounts hacked	4.12	0.85	4.30	0.70	3.97	0.85
Inadvertently downloading spyware or malware (e.g., viruses) onto their computer	4.27	0.81	4.32	0.85	4.24	0.86
Spreading personal photos	4.35	0.72	4.38	0.68	4.34	0.66
Spreading others' personal information and photos	4.30	0.77	4.30	0.77	4.24	0.73
Having difficulty to discriminate the trustworthiness of the information on the Internet	4.42	0.74	4.43	0.76	4.40	0.64
Facilitating passwords to other people	3.99	0.76	4.16	0.76	4.03	0.81
Online managing and buying using bank accounts	3.76	1.06	4.14	0.85	3.53	1.08
Becoming addicted to the Internet	4.16	0.84	4.32	0.74	3.66	1.05
Total	4.05	0.59	4.20	0.66	3.97	0.64

^aGeneral education teacher in mainstream school.

^bSpecial education teacher in mainstream school.

^cSpecial education teacher in a special school.

can lead to attitudes of infantilisation, overprotection, control of Internet use (Seale & Chadwick, 2017) and the limitation of support for digital inclusion (Clifford Simpican et al., 2018). The findings of our study highlight the importance of showing teachers this learning potential of students with intellectual disabilities to carry out online activities and manage the associated risks.

In terms of benefits, these are moderate overall, with social contact, the development of digital skills and the consultation of new information being perceived as predominant. Differences were found specifically among special education teachers. First, despite not finding significant differences, we observe that special education teachers in mainstream schools tend to report greater benefits for

their students with intellectual disabilities than teachers in special schools. This perception may be due to the fact that in Spain, only students with higher degrees of support needs and, for the most part, with levels of curricular competence corresponding to preprimary or first year of primary school are enrolled in special schools. Given the importance of this trend and the small sample that could be accessed, it is recommended to study this tendency in larger samples to prove whether the differences are actually statistically significant or not. Second, special education teachers in secondary education considered that the benefits are greater for their students than in primary education. Overall, these data revealed that teachers perceived the benefits to be greater for students with higher intellectual ability and older students. This tendency is probably mediated, on the one hand, by the perception that students with higher levels of impairment are unlikely to achieve digital inclusion, which is consistent with Avramidis and Norwich (2002), and, on the other hand, by the idea that these environments are not safe for these individuals and that the risks outweigh the benefits, as also noted by Lough and Fisher (2016). However, it should be remarked that digital devices have proven to be a good alternative for developing and maintaining friendships (Barlott et al., 2020; D. D. Chadwick, 2022) and that the real risk is loneliness and social isolation of the student (Löfgren-Mårtenson et al., 2015).

With regard to risks, it is evident that teachers considered that risks predominate over potential benefits, in line with the findings of other researchers (Lough & Fisher, 2016), especially from special education teachers in mainstream schools who are concerned that digital inclusion will encourage excessive or addictive use of the Internet and affect the academic performance of their students. These prejudices need to be addressed through specific training and by showcasing research that highlights successful experiences in Internet use and risk mediation (Wright, 2017), such as the recent study by Caton and Landman (2021), which had a positive impact on both students and their teachers, or Delgado et al. (2019), which trained students to improve their ability to select reliable online information sources. The level of teacher training in special education has been shown to be a mediating variable that affects teachers' attitudes towards inclusion and towards the implementation of inclusive practices (Lacruz-Pérez et al., 2021). Therefore, if we increase teacher training, it is likely that we will achieve more favourable attitudes towards the digital inclusion of students with intellectual disabilities. Thus, the implementation of specific courses for the digital inclusion of students with intellectual disabilities should be encouraged.

This study has several limitations that must be taken into consideration when interpreting the results. First, the sample obtained does not reliably represent the teaching staff population, especially due to the low return rate obtained. To estimate the impact of nonparticipation, a wave analysis was conducted determining that the different groups were similar. Although there might be other factors that can influence individual participation in a study that can lead to biased results, the variables analysed helped to reduce the potential response bias of the study's findings and conclusions.

Nonetheless, future research should take additional steps to attain a good response rate and seek for a more representative sample. Second, it should be noted that the findings only reflect the perceptions of the teachers who responded, which may differ from the objective reality of the safety, risks and benefits of the Internet for students with intellectual disabilities. Third, this and other similar research could analyse the situation of students with intellectual disability and diverse support needs to obtain more specific profiles of perceptions of benefits and risks of certain online activities. Finally, the self-administered online survey method has several drawbacks, such as researchers' inability to answer questions, which may affect teachers' understanding of the questions, or result in a low response rate and the consequent risk of bias in the representativeness of the data (Creswell & Guetterman, 2019). Future works should conduct a pilot study and cognitive test for item evaluation to provide insight into how respondents understand and interpret the questions and reduce potential errors in survey data (Willis, 2005).

On the basis of the data obtained, it is recommended that future research should be carried out to collect more information on this subject in different countries and areas to mitigate the limitations of this study. Similarly, further studies could conduct interventions to identify how to optimise the benefits of online activities for students with intellectual disabilities. Knowledge regarding risk experiences and coping from the point of view of students with intellectual disabilities should be expanded, as already done by D. D. Chadwick (2022). Likewise, in addition to the types of risk reflected in this study, future research could focus specifically on the contract risks described recently by Livingstone and Stoilova (2021).

5 | CONCLUSION

This study has shown that teachers perceived that the Internet was not a safe environment for students with intellectual disabilities and that the risks to which they may be exposed outweigh the potential benefits. These perceptions may condition teachers to limit the digital literacy and inclusion of these individuals. Despite this, teachers believe that online activities can encourage students with intellectual disabilities to access more information and social interaction. Thus, improvement of the initial training and continuing professional development of teachers on how to optimise the benefits of online activities and to offer support to students with intellectual disabilities for online learning, participation, and social inclusion should be prioritised. Therefore, it is important to develop and implement training courses based on scientific evidence to limit these fears, show how to mediate online risks and provide guidance on how to get the most out of online activities.

ACKNOWLEDGEMENTS

This study was supported by the Conselleria d'Educació, Investigació, Cultura i Esport, Generalitat Valenciana, Spain, under Grant No. GV/2017/006.

DATA AVAILABILITY STATEMENT

Data are available on request from the authors.

ORCID

Esther Chiner  <http://orcid.org/0000-0002-1546-7071>

REFERENCES

- Avramidis, E., & Norwich, B. (2002). Teachers' attitudes towards integration/inclusion: A review of the literature. *European Journal of Special Needs Education*, 17(2), 129–147. <https://doi.org/10.1080/08856250210129056>
- Barlott, T., Aplin, T., Catchpole, E., Kranz, R., Le Goullon, D., Toivanen, A., & Hutchens, S. (2020). Connectedness and ICT: Opening the door to possibilities for people with intellectual disabilities. *Journal of Intellectual Disabilities*, 24(4), 503–521. <https://doi.org/10.1177/1744629519831566>
- Batsiou, S., Bebetos, E., Panteli, P., & Antoniou, P. (2008). Attitudes and intention of Greek and Cypriot primary education teachers towards teaching pupils with special educational needs in mainstream schools. *International Journal of Inclusive Education*, 12(2), 201–219. <https://doi.org/10.1080/13603110600855739>
- Beaton, M. C., Codina, G. N., & Wharton, J. C. (2021). Decommissioning normal: COVID-19 as a disruptor of school norms for young people with learning disabilities. *British Journal of Learning Disabilities*, 49(4), 393–402. <https://doi.org/10.1111/bld.12399>
- Buijs, P. C. M., Boot, E., Shugar, A., Fung, W. L. A., & Bassett, A. S. (2017). Internet safety issues for adolescents and adults with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities*, 30(2), 416–418.
- Chadwick, D., Ågren, K. A., Caton, S., Chiner, E., Danker, J., Gómez-Puerta, M., Heitplatz, V., Johansson, S., Normand, C. L., Murphy, E., Plichta, P., Strnadová, I., & Wallén, E. F. (2022). Digital inclusion and participation of people with intellectual disabilities during COVID-19: A rapid review and international bricolage. *Journal of Policy and Practice in Intellectual Disabilities*, 19, 242–256. <https://doi.org/10.1111/jppi.12410>
- Chadwick, D. D. (2022). "You want to know that you're safe": Experiences of risk, restriction, and resilience online among people with an intellectual disability. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 16(3), Article 8. <https://doi.org/10.5817/CP2022-3-8>
- Chadwick, D. D., Quinn, S., & Fullwood, C. (2017). Perceptions of the risks and benefits of Internet access and use by people with intellectual disabilities. *British Journal of Learning Disabilities*, 45(1), 21–31. <https://doi.org/10.1111/bld.12170>
- 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>
- Clifford Simplican, S., Shivers, C., Chen, J., & Leader, G. (2018). "With a touch of a button": Staff perceptions on integrating technology in an Irish service provider for people with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities*, 31(1), e130–e139. <https://doi.org/10.1111/jar.12350>
- Corr McEvoy, S., & Keenan, E. (2014). Attitudes towards people with disabilities—What do people with intellectual disabilities have to say? *British Journal of Learning Disabilities*, 42(3), 221–227. <https://doi.org/10.1111/bld.12032>
- Creswell, J. W., & Guetterman, T. C. (2019). *Educational research. Planning, conducting, and evaluating quantitative and qualitative research* (6th ed.). Pearson.
- Delgado, P., Ávila, V., Fajardo, I., & Salmerón, L. (2019). Training young adults with intellectual disability to read critically on the Internet. *Journal of Applied Research in Intellectual Disabilities*, 32(3), 666–677. <https://doi.org/10.1111/jar.12562>
- 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>
- Jenaro, C., Flores, N., Cruz, M., Pérez, M. C., Vega, V., & Torres, V. A. (2018b). Internet and cell phone usage patterns among young adults with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities*, 31(2), 259–272. <https://doi.org/10.1111/jar.12388>
- Jenaro, C., Flores, N., Vega, V., Cruz, M., Pérez, M. C., & Torres, V. A. (2018a). Cyberbullying among adults with intellectual disabilities: Some preliminary data. *Research in Developmental Disabilities*, 72, 265–274.
- Karaseva, A., Siibak, A., & Pruilmann-Vengerfeldt, P. (2015). Relationships between teachers' pedagogical beliefs, subject cultures, and mediation practices of students' use of digital technology. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 9(1), Article 6. <https://doi.org/10.5817/CP2015-1-6>
- Kydland, F., Molka-Danielsen, J., & Balandin, S. (2012). Examining the use of social media tool "Flickr" for impact on loneliness for people with intellectual disability. In T. Fallmyr (Ed.), *NOKOBIT 2012: Proceedings of the 2012 Norsk konferanse for organisasjoners bruk av informasjonsteknologi* (pp. 253–264). Akademika Forlag.
- Lacruz-Pérez, I., Sanz-Cervera, P., & Tárraga-Mínguez, R. (2021). Teachers' attitudes toward educational inclusion in Spain: A systematic review. *Education Sciences*, 11(2), 58. <https://doi.org/10.3390/educsci11020058>
- Lancioni, G. E., Singh, N. N., O'Reilly, M. F., Sigafoos, J., Alberti, G., Campodonico, F., & Desideri, L. (2022). A smartphone-based program enabling people with intellectual and other disabilities to access leisure, communication, and functional activities. *Universal Access in the Information Society*. Advance online publication. <https://doi.org/10.1007/s10209-021-00858-4>
- Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, 28, 563–575. <https://doi.org/10.1111/j.1744-6570.1975.tb01393.x>
- Lin, I.-F., & Schaeffer, N. C. (1995). Using survey participants to estimate the impact of nonparticipation. *Public Opinion Quarterly*, 59(2), 236–258. <https://www.jstor.org/stable/2749703>
- 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.
- Livingstone, S., & Stoilova, M. (2021). *The 4Cs: Classifying online risk to children* (CO: RE short report series on key topics). Leibniz-Institut für Medienforschung, Hans-Bredow-Institut (HBI). <https://doi.org/10.21241/ssoar.71817>
- Löfgren-Mårtenson, L., Sorbring, E., & Molin, M. (2015). "T@ngled up in blue": Views of parents and professionals on Internet use for sexual purposes among young people with intellectual disabilities. *Sexuality and Disability*, 33(4), 533–544.
- Lough, E., & Fisher, M. H. (2016). Internet use and online safety in adults with Williams syndrome. *Journal of Intellectual Disability Research*, 60(10), 1020–1030. <https://doi.org/10.1111/jir.12281>
- Mengual-Andrés, S., Chiner, E., & Gómez-Puerta, M. (2020). Internet and people with intellectual disability: A bibliometric analysis. *Sustainability*, 12(23), 10051. <https://doi.org/10.3390/su122310051>
- Molin, M., Sorbring, E., & Löfgren-Mårtenson, L. (2015). Teachers' and parents' views on the Internet and social media usage by pupils with intellectual disabilities. *Journal of Intellectual Disabilities*, 19(1), 22–33.

- Morin, D., Rivard, M., Crocker, A. G., Boursier, C. P., & Caron, J. (2013). Public attitudes towards intellectual disability: A multidimensional perspective. *Journal of Intellectual Disability Research*, 57(3), 279–292. <https://doi.org/10.1111/jir.12008>
- Näslund, R., & Gardelli, Å. (2013). 'I know, I can, I will try': Youths and adults with intellectual disabilities in Sweden using information and communication technology in their everyday life. *Disability & Society*, 28(1), 28–40. <https://doi.org/10.1080/09687599.2012.695528>
- Normand, C. L., & Sallafranke St-Louis, F. (2016). Risks and benefits of Internet use by people with neurodevelopmental disorders. *Annual Review of CyberTherapy and Telemedicine*, 14, 219–222.
- Palmer, S. B., Wehmeyer, M. L., Davies, D. K., & Stock, S. E. (2012). Family members' reports of the technology use of family members with intellectual and developmental disabilities: Family report of technology use. *Journal of Intellectual Disability Research*, 56(4), 402–414. <https://doi.org/10.1111/j.1365-2788.2011.01489.x>
- Perske, R. (1972). The dignity of risk and the mentally retarded. *Mental Retardation*, 10(1), 24–27.
- Rao, S., Cardona, C. M., & Chiner, E. (2014). Special education today in Spain. *Advances in Special Education*, 28, 147–180. <https://doi.org/10.1108/S0270-401320140000028012>
- Salmerón, L., Fajardo, I., & Gómez-Puerta, M. (2019). Selection and evaluation of Internet information by adults with intellectual disabilities. *European Journal of Special Needs Education*, 34(3), 272–284. <https://doi.org/10.1080/08856257.2018.1468634>
- Schalock, R. L., Luckasson, R., & Tassé, M. J. (2021). *Intellectual disability: Definition, diagnosis, classification, and systems of supports* (12th ed.). American Association of Intellectual and Developmental Disabilities (AAIDD).
- Seale, J. (2014). The role of supporters in facilitating the use of technologies by adolescents and adults with learning disabilities: A place for positive risk-taking. *European Journal of Special Needs Education*, 29(2), 220–236. <https://doi.org/10.1080/08856257.2014.906980>
- Seale, J., & Chadwick, D. (2017). How does risk mediate the ability of adolescents and adults with intellectual and developmental disabilities to live a normal life by using the Internet? *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 11(1), article 2. <https://doi.org/10.5817/CP2017-1-2>
- Staksrud, E., Livingstone, S., Haddon, L., & Ólafsson, K. (2009). *What do we know about children's use of online technologies? A report on data availability and research gaps in Europe* (2nd ed.). EU Kids Online, LSE.
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.
- United Nations. (2006). *Convention on the rights of persons with disabilities*.
- Willis, G. (2005). *Cognitive interviewing: A tool for improving questionnaire design*. Sage Publications.
- Wright, M. F. (2017). Parental mediation, cyber victimization, adjustment difficulties, and adolescents with autism spectrum disorder. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 11(1), A

How to cite this article: Chiner, E., Gómez-Puerta, M., & Cardona-Moltó, M. C. (2022). Digital inclusion in Spanish mainstream and special schools: Teachers' perceptions of Internet use by students with intellectual disabilities. *British Journal of Learning Disabilities*, 1–10. <https://doi.org/10.1111/bld.12503>