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The future of parent-school partnership and the digital exclusion conundrum: A comparative analysis of the experiences of primary-school parents in Northern Ireland during the pandemic and the implications for inclusivity in education

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Abstract

The partnership between school and home is pivotal in supporting children throughout their education. During the Coronavirus pandemic, repeated lockdowns tested collaboration and partnership between teachers and parents/guardians as the delivery of teaching moved online and children remained at home. This widespread deployment of remote online teaching to support learning continuity has provided an unexpected opportunity to learn about the challenges relating to digital exclusion in education. This paper provides a comparative analysis of the experiences of parents of primary school-age children in Northern Ireland over a two-year period between March 2020 and March 2022 and their experiences supporting their child/children with online remote learning. It compares the experiences of parents from two distinctive primary school groups, first, schools that have '*demonstrated experience in the development and use of information and communication technologies (ICT)*' and second, schools that were at an *'early stage in the development and use of ICT*'. In doing so, it explores the response of primary schools to the challenge of providing online remote teaching and issues relating to digital inclusion. In addition, parents'/guardians' own attitudes and confidence in using digital technologies are explored and measured. It asks what can be learned about the future of parent-school partnership and inequalities in access for digital education and how the challenges relating to inclusion can be addressed.

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1. Introduction: The future of parent-school partnership and the digital exclusion conundrum

The experience of the pandemic has renewed interest in parent-school partnerships and factors relating to digital exclusion among educators, learners, parents and policy makers. The term digital exclusion refers to people who lack the access, skills, confidence and motivation to use digital technologies and the Internet (Citizens Online, 2023). Digital inequalities are experienced by a diverse range of individuals and communities, including young people (Ragnedda & Mutsvairo, 2018; Scolari, 2019) and sections of society at increased risk of other social and economic inequalities are more likely to also experience digital exclusion (Marien et al., 2016). Socio-economic gaps, therefore, are potentially increased by digital exclusion, and this is a trend that is anticipated to increase as developments in digital technologies continue.

Regarding parent-school partnerships, evidence regarding the vital role of parents to support their child's education is well established, with schools encouraged to increase levels of parental engagement to support children's learning (Epstein et al., 2006; Goodall et al., 2012; Goodall et al., 2014). Pre-Coronavirus, the important role that parents and guardians had in supporting children to critically engage with the digital environment was also well known, with parent mediation of children's digital experiences seen as key to developing digital skills and agency online (Livingstone et al., 2019). During the Coronavirus period, the pivotal role of primary school parents/guardians in supporting their children to participate in online remote learning was highlighted by many scholars in Northern Ireland and elsewhere, with effective parental engagement and mediation strategies supporting online learning and helping children to engage and develop digital skills (Bates et al., 2021; O'Connor Bones et al., 2020; Sciacca et al., 2022; Walsh et al., 2020).

The emergency shift to widespread online remote teaching, necessitated by Coronavirus, also highlighted inequalities in access to education during this time. Subsequent reports regarding the educational response to Coronavirus in Northern Ireland acknowledged that inequalities existed for learners. Based on first-hand observations and evidence gathered from schools and teachers between March 2020 and June 2021, the Education and Training Inspectorate for schools in Northern Ireland highlighted that '*the challenges of unfamiliar teaching approaches and, for example, the cessation of practical elements of the curriculum resulted in variable and inconsistent quality and pace of delivery'* (ETI, 2021). Regarding online learning, one report cited that 50% of parents in Northern Ireland thought that online learning tools they were provided with were inadequate and did not provide an experience of schooling comparable with their normal school day before Covid (Parenting NI, 2020).

This article focuses on data collected within a recent PhD study which explored the experiences of school leaders, teachers, and parents/guardians in Northern Ireland during a two-year period between March 2020 and March 2022. The wider study explored the response of schools in Northern Ireland regarding online remote learning during the pandemic and issues contributing to digital exclusion. As part of this larger study, experiences of parents/guardians in supporting their children's learning online were gathered, as well as exploring parental/guardian attitudes and confidence in using digital technologies.

Exploring these data further, this article aims to learn from the experience of parents in Northern Ireland during the pandemic by answering three research questions. First, can a comparative analysis of the experiences of primary-school parents in Northern Ireland during the pandemic identify issues relating to digital exclusion? Second, can a measurement of parents'/guardians' own attitudes and confidence in using digital technologies provide further insights into digital exclusion, and third, what might the implications be for future parent-school partnerships?

2. Digital exclusion, digital inequalities and implications for education

The emergence of the concept of a digital divide followed the arrival of the Internet in the mid-1980s. Digital exclusion was originally understood as being limited to the availability of, or access to, technology. However, in the decades since, our understanding of the digital divide has evolved from debates about digital natives and digital immigrants (Bayne & Ross, 2007; Bennett et al., 2008; Brown & Czerniewicz, 2010; Prensky, 2001) to a much more complex understanding of digital exclusion and how it manifests in society. Empirical evidence, gathered by researchers from across the world, confirms that digital inequalities are experienced by a diverse range of individuals and communities, including young people (Ragnedda & Mutsvairo, 2018; Scolari 2019).

Although various definitions exist (DiMaggio et al., 2004), digital inequalities are gradations in the effective use of technology. Scholars have identified three levels of the digital divide which have evolved over time (Helsper, 2021; Ragnedda & Muschert, 2013; Van Dijk, 2020). The first-level

divide (1995-2003) refers to access, those who can access information and communication technologies (ICT) and those who cannot. The second-level divide (2004-the present) is defined by variations in skills and usage of technology and the Internet. Within the second-level divide, scholars assert that access to technology and the Internet are useless if you lack the skills, knowledge and literacies required to use digital technology in a meaningful way (Hargitti, 2002; Van Dijk, 2020). Finally, the third level (2012–the present) focuses on the outcomes; the benefits accrued from knowledge of and access to digital technology across contexts and in different domains. These outcomes are not just concerned with what an individual does with technology or online, but are defined by offline characteristics and motivations, potentially influenced more by factors relating to classical inequalities, for example, educational, social, economic, cultural, or political (Helsper, 2021; Ragnedda, 2018; Van Dijk, 2020).

To understand the impact of digital exclusion it is necessary to reflect on *just how digital* societies have become. Over the past twenty years, digital technology has transformed major sectors, from finance to healthcare, and the experience of the pandemic has accelerated this further, igniting interest in digital exclusion among educators and policy makers. The concept of socio-digital inequalities offers a new lens to examine the recent experiences of teachers and learners, particularly if we are to speculate on what a more inclusive digital education would involve.

3. Context

Northern Ireland (NI) is located in the northern part of the island of Ireland but is part of the United Kingdom (UK). It has a population of 1.9 million and education in Northern Ireland is devolved to the Northern Ireland Assembly and the Department of Education. The region's school education system includes 794 primary schools comprising 181,075 pupils in 2022/23 (DENI, 2023a).

The first case of coronavirus in Northern Ireland was reported on the 27th February 2020. In the weeks that followed, rates of transmission increased rapidly across the UK and the Republic of Ireland, prompting calls for the Governments to introduce measures to reduce the virus spread. In Northern Ireland, government strategies to control the virus spread included the closure of school buildings for educational use, initially from 23rd March 2020. In the confusion and uncertainty of a rapidly evolving emergency, teachers and schools had a week to prepare for widespread school closures. As Northern Ireland's primary schools responded to this unprecedented situation, strategies were developed to provide distance/remote learning, prompting many to use digital technology to provide for online teaching and learning.

The Northern Ireland Department of Education regards Northern Ireland as '*a recognised leader in the use of ICT in education*' (DENI, 2023b); this follows decades of investment in digital technologies in schools alongside a progressive curriculum including 'Using ICT' as one of three central cross-curricular skills (CCEA, 2023). However, the sudden uptake of digital and online tools for teaching remotely brought into sharp focus the degree of preparedness of teachers, learners and parents across the school system. During this initial period of school closure, two studies were conducted examining the experiences of parents in supporting home-learning in Northern Ireland. Findings identified that a clear digital divide existed between households and that parents' confidence in supporting their children varied (O'Connor Bones et al., 2020; Walsh et al., 2020).

This article draws from the findings of these studies and other emerging work on digital exclusion (Helsper, 2021; Ragnedda, 2018; Van Dijk, 2020). It utilises information gathered from parents/guardians about their experiences supporting their child/children with online remote learning as the pandemic continued (January 2021 to March 2022) with a view to exploring digital exclusion further and examining the implications for the future of parent-school partnerships.

4. Method

4.1 Participants

A total of 146 parents/guardians responded to an online survey and the term 'parents/guardians' was used to include all those with parental responsibility. Responses to this survey were overwhelmingly female, with 93% (n=136/146) and 7% male (n=10/146). This overwhelmingly female response was also noted in other studies involving parents and guardians at this time in Northern Ireland (O'Connor Bones et al., 2020; Walsh et al., 2020).

The original research which provided the data for this article used mixed approaches and included an online survey which was circulated to the parents/guardians from 10 primary schools, inviting them to share their experiences of online remote learning. These primary schools were carefully selected and consisted of two distinct groups to allow for comparative analysis. In total, 67% of parents/guardians

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(n=98) were from Group 1 schools and the remaining 33% (n=48) from Group 2 primary schools. Group 1 primary schools were considered as having '*demonstrated experience in the development and use of ICT*' and Group 2 primary schools as being at an '*early stage in the development and use of ICT*'. The inclusion criteria for both groups are as follows.

4.1.1 Group 1 definition

Primary schools who had been recognised and celebrated for their use of ICT for teaching and learning. Schools in this group were categorised as having 'demonstrated experience in the development and use of ICT'.

4.1.2 Inclusion criteria for group 1

- Recommendation by District Officers with the Education and Training Inspectorate and;
- Recent award received (i.e., since 2015), recognising how ICT use had transformed teaching and learning. Applicable awards included Capita NI Schools ICT Excellence Awards, Naace ICT Mark, Microsoft Schools of Distinction or Showcase Schools, Apple Distinguished Schools or the Digital Schools Award, and;
- Mainstream primary school and;
- Representative geographical spread and across urban/rural settings.

4.1.3 Group 2 definition

Primary schools who were early on in their journey using ICT for teaching and learning. Schools in this group were categorised as being at 'an early stage in the development and use of ICT'.

4.1.4 Inclusion criteria for Group 2

- Recommendation by District Officers within the Education and Training Inspectorate and/or;
- Recommendation by senior staff within the Creative Learning Centres (regional government-funded ICT training centres) and;
- Self-certified as a school in the early stage of development with ICT for teaching and learning and;
- Mainstream primary school and;
- Representative geographical spread and across urban/rural settings.

4.2 Procedure

As part of the original mixed approaches study, an online survey was circulated to parents/guardians by each participating primary school via email databases and social media. This included general questions regarding parent/guardian experiences of remote learning, and it also included a section entitled '*Digital technology and you*'. This section explored parents'/guardians' own 'digital capital' and adapted Ragnedda and Ruiu's 2020 model to operationalise digital capital. Digital capital is defined by Ragnedda and Ruiu as a combination of digital competence, '*internalised ability and aptitude'* with access to digital technology, '*externalised resources*' (Ibid, 2020). For the purposes of this survey, parents were asked a series of 8 questions about their access to digital technology, their skills and competence when using digital technology and attitudes and motivations about using digital technology. Questions used a mix of nominal and ordinal scales including Likert scales to rate opinions and attitudes. For example, regarding attitudes and motivation, parents were asked a series of questions, such as, '*I look forward to using my digital skills and applying these skills in new and innovative ways'*, and asked to select if they 'Strongly Agree', 'Agree', 'are Neutral', 'Disagree' or 'Strongly Disagree'. The information gathered enabled a measurement to be attributed to individual responses and, using descriptive statistics, a 'digital capital score' to be calculated and analysed. Due to time restrictions and as the original research used mixed approaches, statistical analysis to date has been limited to the calculation of descriptive statistics.

Using descriptive statistics, results could then be compared between Group 1 primary schools, which had '*demonstrated experience in the development and use of ICT'*, and Group 2 primary schools, who were at an '*early stage in the development and use of ICT'*.

5. Results

5.1 Can a comparative analysis of the experiences of primary-school parents in Northern Ireland during the pandemic identify issues relating to digital exclusion?

5.1.1 Readiness for online remote learning

Parents and guardians were asked in the online survey if they agreed with the following statement: 'Before the initial lockdown in March 2020, technology was regularly used by my child's school to support my child/children's learning'. As Figure 1 shows, respondents from Group 1 schools were

more likely to 'agree' (49%, n=49/98) or 'strongly agree' (18%, n=18/98) with this statement, which aligns with the characterisation of the school groups, as Group 1 schools were selected as schools which had 'demonstrated experience in the development and use of ICT'. Half of parents from Group 2 schools also 'agreed' or 'strongly agreed' with this statement (50%, n=24/48). However, the remaining half were either 'Neutral' or 'Disagreed' (50%, n=24/48), which was at a much higher level than in Group 1 schools.

Parents and guardians were also asked in the online survey if, prior to the initial lockdown in March 2020, they had received information regarding how technology was used in the school and their role in supporting their child/children's ICT development. As Figure 2 shows, respondents from Group 1 schools said 'yes' (66%, n=65/98) more frequently compared with 50% from Group 2 (n=24/48).

Parents and guardians were also asked in the online survey if they agreed with the following statement about their own confidence using technology to support their child's learning: 'Before the initial lockdown in March 2020, I felt confident I could use technology to support my child/children's learning'. As Figure 3 shows, respondents from Group 1 schools were more likely to 'agree' (48%, n=47/98); however, more Group 2 parents responded, 'strongly agree' (31%, n=15/98) to this statement compared with Group 1 parents/guardians. In addition, more parents/guardians from Group 1 schools were likely to 'disagree' or 'strongly disagree' (14%, n=14/98) compared with 6% from Group 2 who 'disagreed' (n=3/48). These responses across parents from Group 1 and Group 2 schools indicated that parent responses regarding their own confidence in using technology to support their child/children's learning followed the same pattern as the whole group sample. Overall parent satisfaction regarding online remote learning and digital education

Parents and guardians were asked to rate their child/children's experience of online remote learning during Coronavirus-related lockdowns. Parents/guardians were asked to give their school a 'star' rating between 1 (poor) and 5 (excellent) based on their children's satisfaction levels. The results are shown in Figure 4.

During the first lockdown, Group 1 parents and guardians were more likely to award a higher rating of 3, 4 or 5 stars to their school (72%, n=71/98) compared with 60% for Group 2 schools (n=29/48). Converting to an average score out of 5, the Group 1 average was 3.2 compared with 2.98 for Group 2. During the second lockdown, the star

Figure 1. Before the initial lockdown in March 2020, technology was regularly used by my child's school to support my child/children's learning

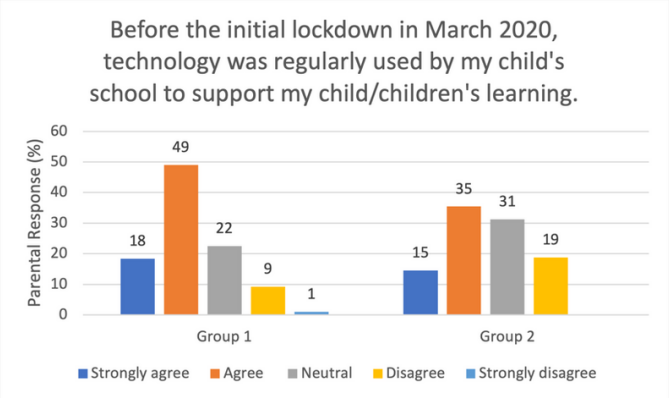
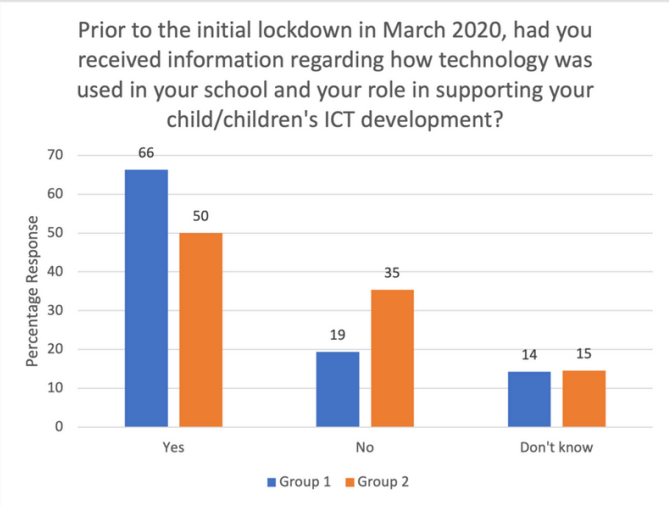


Figure 2. Prior to the initial lockdown in March 2020, had you received information regarding how technology was used in your school and your role in supporting your child/children's ICT development?



rating and corresponding scores had increased for both groups, with Group 1 scoring 3.82 and Group 2 scoring 3.48. In lockdown 2, satisfaction levels awarded to Group 1 schools had increased to 89% now receiving 3, 4 or 5 stars (n=87/90) compared with 81% (n=39/48) for Group 2. However, notably, satisfaction levels in Group 2 schools had improved considerably between the first and second lockdown. In the first lockdown, the most popular response from Group 2 parents was 2 stars (27%, n=13/48), which improved in the second lockdown, with 4 stars being returned as the most popular response from parents (35%, n=17/48).

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Figure 3. Before the initial lockdown in March 2020, I felt confident I could use technology to support my child/children's learning

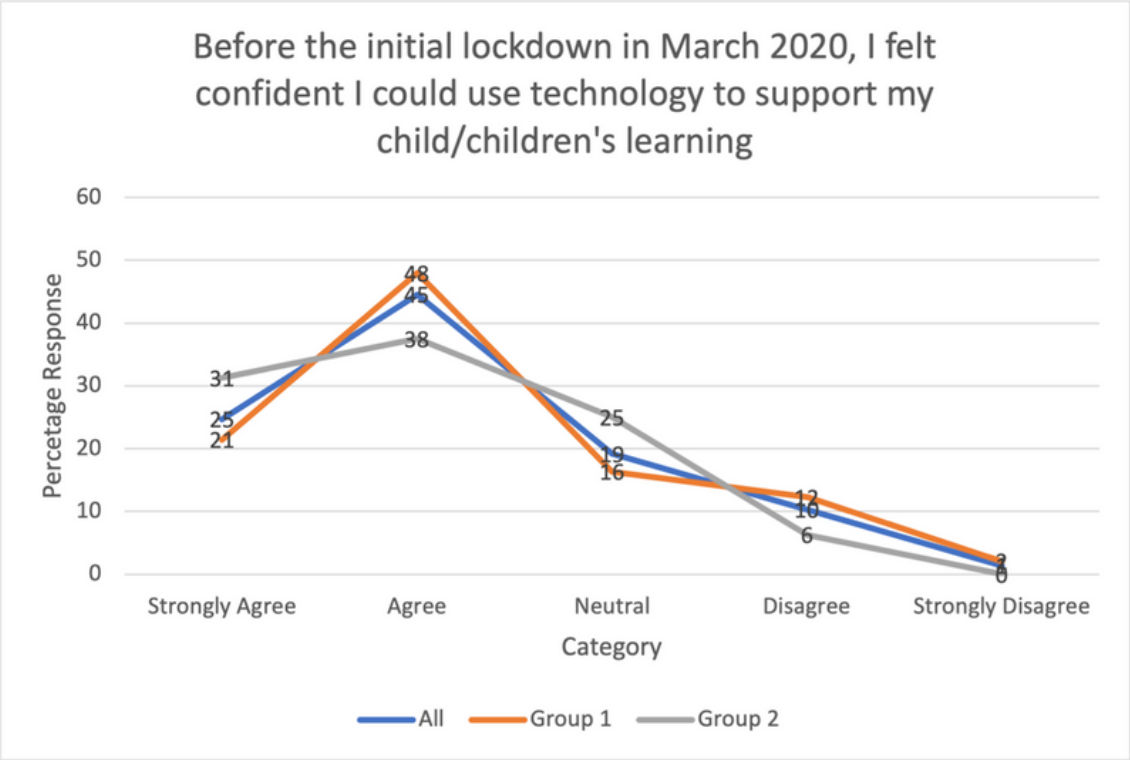

Figure 4. How would you rate your child/children's experience of online remote learning during Coronavirus-related lockdowns?

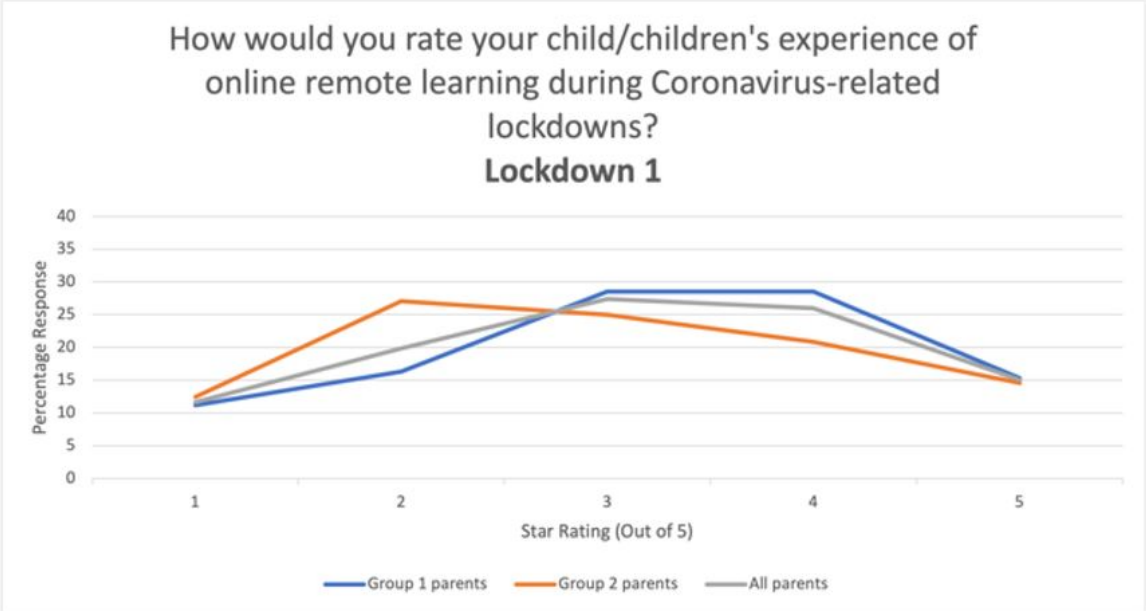

Figure 4. (cont). How would you rate your child/children's experience of online remote learning during Coronavirus-related lockdowns?

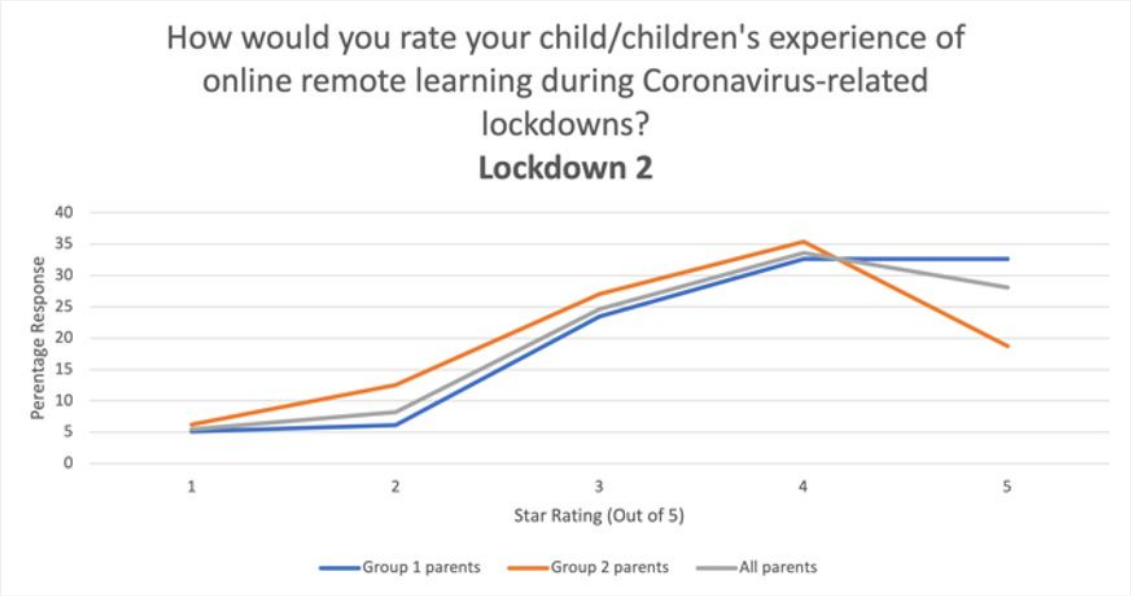

Figure 5 shows overall parent/guardian satisfaction levels for digital education across Groups 1 and 2 primary schools. Satisfaction levels for Group 1 schools were much higher, with 86% (n=84/90) of parents/guardians 'strongly agreeing' or 'agreeing' that 'the school my children attend is excellent at providing a quality digital education for all learners'. This compares with 65% for Group 2 schools (n=31/48). Group 2 parents/guardians were also more likely to 'Disagree', with 13% (n=6/48) compared with Group 1 parents/guardians (2%, n=2/90).

5.1.2 Continued parent/guardian support and advocacy

Parents and guardians were asked 'Has this experience *[of supporting online learning during Coronavirus]* made you more or less likely to advocate for increased use of digital technology in your child/ren's education?' Overall, slightly more parents/guardians from Group 1 schools responded 'more likely' with 59% (n=58/90), compared to Group 2, 52% (n=25/48) (see Figure 6).

Parents and guardians were also asked 'Has this experience made you more or less likely to advocate for professional digital skills training for teachers?' Group 1 parents/guardians responded more frequently to 'more likely' with 82% (n=80/98) compared with Group 2, 69% (n=33/48) (see Figure 7).

Parents and guardians were lastly asked 'Has this experience made you more or less likely to advocate for digital skills training for parents/guardians?' Both Groups of parents/guardians responded equally with the majority response 'more likely' with both groups at 71% (Group 1, n=70/98; Group 2, n=34/48) (see Figure 8). Interestingly, comparing advocacy levels for training for both teachers and parents/guardians, parents/guardians in Group 2 schools were more likely to advocate for their own digital skills training (71%, n=34/48) than for professional digital skills training for teachers (69%, n=33/48). Reflecting on Figure 1 and Figure 2, prior to the initial March 2020 lockdown, Group 1 schools were not only using technology more in school, but also Group 1 parents and guardians were more likely to have received information on their role in supporting their child/children's ICT development. Openly acknowledging the school's role, the professional role of teachers and the role of parents and guardians regarding children's ICT development perhaps raised the expectation of parents and guardians when considering the professional training needs of teachers, whereas Group 2 parents remained more likely to advocate for their own ICT training than for professional skills training for teachers.

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Figure 5. The school my children attend is excellent at providing a quality digital education for all learners

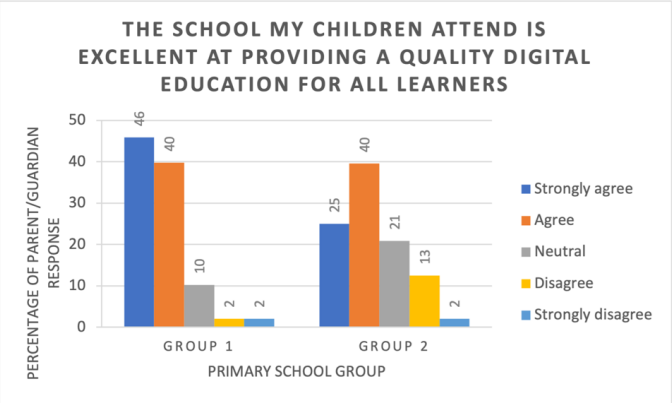


Figure 6. Has this experience made you more or less likely to advocate for increased use of digital technology in your child/ren's education?

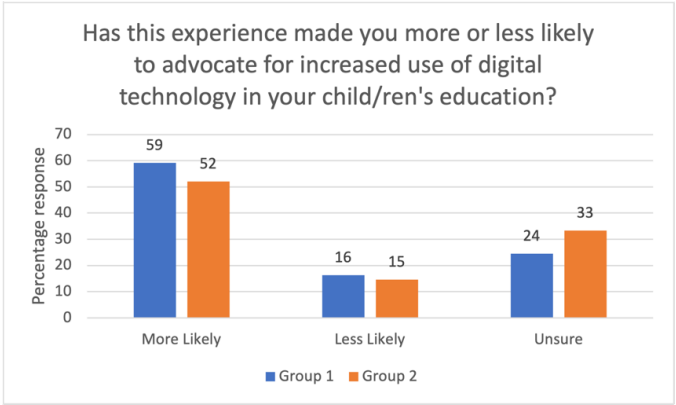


Figure 7. Has this experience made you more or less likely to advocate for professional digital skills training for teachers?

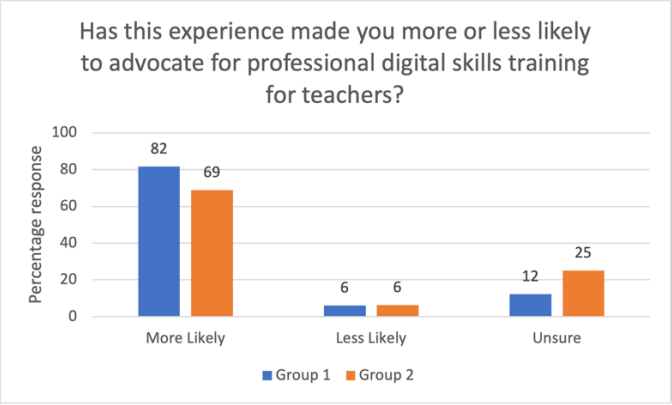
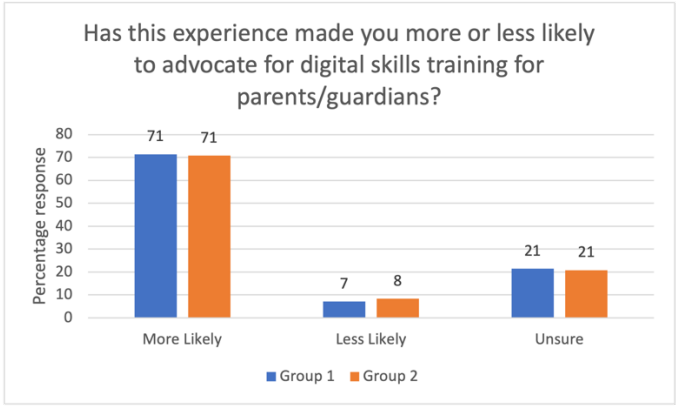


Figure 8. Has this experience made you more or less likely to advocate for digital skills training for parents/ guardians?



5.2 Can a measurement of parents'/guardian's own attitudes and confidence in using digital technologies provide further insights into digital exclusion?

The concept of digital capital differs from considering digital inequalities as simply a lack of access or lack of digital skills. It suggests that to be digitally included you need an appropriate level of digital capital, and this means appropriate access to ICTs but also internal competencies and attitudes (Ragnedda et al., 2020). Digital capital is therefore interconnected with other forms of capital, and is interdependent and cumulative with other forms of capital. To explore this further, in their study of Digital Capital, Ragnedda and Ruiu studied digital capital and its relation to 5 socio-economic and demographic variables - age, gender, level of education, income and place of residence (Ragnedda et al., 2020). For the purposes of this paper, digital capital measurements are calculated for both school groups, and following this the 5 socio-economic variables are applied to the parent/guardian responses.

5.2.1 Parent digital capital by group comparison

Exploring how digital capital could be measured across schools participating in the comparative study, average digital capital scores, which comprised of accumulated scores for access, skills and motivation were calculated for the parents/ guardians in both Group 1 and Group 2 schools. The results are depicted in Figure 9.

The results show that across both school groups very little variation in digital capital scores or the component access, skills and motivation scores exist. This suggests that there is no relationship between parent/guardian digital capital scores and the level of ICT development in their corresponding primary school.

Figure 9. Parent/guardian average digital capital score across comparative school groups

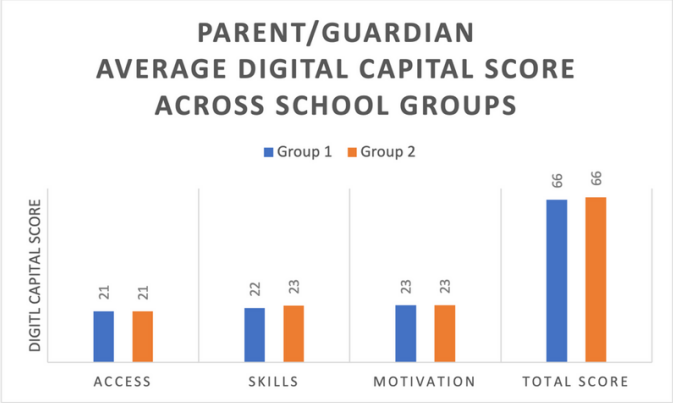
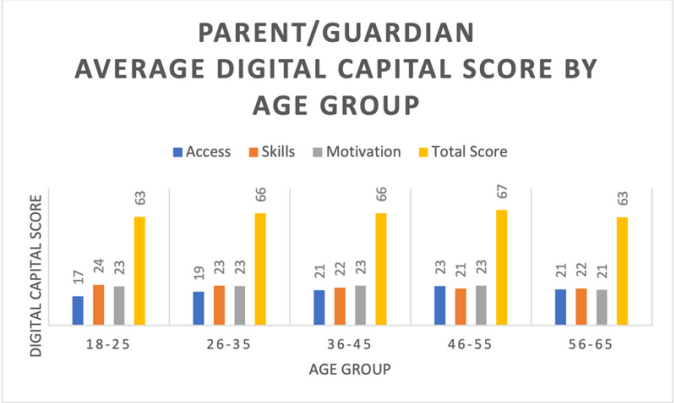


Figure 10. outlines the average digital capital score across all age groups from the parent/guardian group



5.2.2 Age

Digital capital scores across parents/guardians varied, with the lowest average digital capital score being within the 18-25- and the 56-65-year age groups at 63/90. However, results need to acknowledge that the number of respondents from age groups varied, as shown in Table 1.

The score for the 56-65-year age group only contained one response. The 18-25 age group returned two responses; also notable in that it had the lowest access score at 17/30. The second two highest scoring age groups were 26-35 and 36-45 years, both scoring 66/90. The highest scoring age group was the 46-55-year group scoring 67/90. However, comparatively, the 46-55 age group had a lower skills score (21/30) compared with the highest skills score, which was the 18-25 age group (24/30).

Table 2 shows the mean and standard deviation across all age groups. The standard deviation in the 56-65-year age group can be discounted as there was only one response from this category, and the 18-25-year age group also needs to be considered with care as there were only two responses in this category. As can be seen, the smallest standard deviation was recorded in the 18-25-year age group. The largest was in the 26-35 age group (9.97). This larger range of digital capital scores evident in this age group indicates a greater variation in the level of digital capital present within this cohort.

5.2.3 Gender

Figure 11 outlines the average digital capital score across all gender groups from the parent/guardian groups.

Digital capital scores across parents/guardians was higher for male respondents (70/90) than female (66/90), although it is worth noting that the sample size was much smaller (Female = 136, Male = 10). Scores for both genders for access were the same (21/30), but female scores for skills (22/30) and motivation (23/30) were slightly lower.

Table 3 shows the mean and standard deviation across both male and female gender responses. The male group standard deviation was higher than that for the female category (male = 11.28, female = 9.26) indicating that a wider range of digital capital scores existed across the male group.

5.2.4 Level of education

Figure 12 shows the average digital capital score levels relating to educational attainment from the parent/guardian groups.

Digital capital scores across parents/guardians related to level of educational attainment varied, with respondents with ‘no qualifications’ returning the lowest average digital capital score of 57/90. The second lowest was the ‘would prefer not to say’ grouping with 60/90, followed by ‘O level/ GCSEs or equivalent’ at 62/90. The highest scores were within the ‘undergraduate/postgraduate’ group, with 68/90, and the ‘higher national certificate/diploma’ group with 68/90. The sample does show that digital capital was linked within this sample with the level of educational attainment, with the higher scores evident across groups with the highest level of educational attainment. It is also notable that the lowest average ‘access’ score was recorded for those with ‘no qualifications’ at 16/30.

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Table 1. Parent/guardian responses by age

Age Group (in years)	Number of respondents
18-25	2
26-35	35
36-45	83
46-55	25
56-65	1
Total	146

Table 2. Digital capital per parent/guardian age cohort

Age Range (in years)	Mean	Standard Deviation
18-25	63.41	5.13
26-35	65.50	9.97
36-45	65.63	9.57
46-55	67.42	8.78
56-65	63.27	0
Total	65.86	8.36

Table 3. Digital capital per gender

Gender	Mean	Standard Deviation
Male	69.52	11.28
Female	65.59	9.26
Total	67.56	10.27

Table 4. Parent/guardian digital capital per educational attainment

Category	Mean	Standard Deviation
No Qualifications	50.18	19.61
O Levels/GCSEs or equivalent	63.86	7.31
A Levels or equivalent	67.59	8.03
Higher National Certificate/Diploma	68.16	9.54
Undergraduate/ Postgraduate Degree	67.30	8.16
Would prefer not to say	55.66	12.50
Total	65.41	10.85

Table 4 shows the mean and standard deviations across all educational attainment groups. As can be seen, the smallest standard deviation was recorded in the three categories that recorded the highest average digital capital score, 'O Levels/GCSE or equivalent' (7.31), 'A Levels or equivalent' (8.03), 'undergraduate/postgraduate degree' (8.16) and 'higher national certificate/diploma' (9.54). The largest standard deviation was recorded in the 'no qualifications' category (19.5), which was also the category which produced the lowest average digital capital score.

5.2.5 Household income

Figure 13 shows the average digital capital scores for the parent/guardian groups per annual household income.

Digital capital scores across income groups for parents/guardians varied, with respondents whose annual household income was 'under £10k' returning the lowest average digital capital score of 58/90. This group also returned the lowest access score (16/30) compared with the highest access score (27/30), which was returned by the 'over £100k' group. Across the sample, broadly speaking, as annual household income increased, so did the average digital capital score and all component parts. This suggests, perhaps unsurprisingly, that there is a strong relationship in this sample between income and digital capital, including component parts of access, skills, and motivation.

Table 5 shows the mean and standard deviation across all annual household income groups within the parent/guardian sample. As can be seen, the smallest standard deviation was recorded in categories that recorded the highest average digital capital score, for 'over £100k' (5.44). The largest standard deviation was recorded in the 'under £10k' category (13.9) which was also the category which produced the lowest average digital capital score (57.68).

5.2.6 Place of residence: Rural or urban

Digital capital scores across parents/guardians by location (see Figure 14) indicated that parents/guardians living in urban areas had the lowest average digital capital score, 65/90, compared to those in rural areas (67/90).

Table 6 offers a little more detail. Comparing the means and standard deviations across all locality groups, the smallest standard deviation was recorded for parents/guardians living in rural areas (8.89). This is compared to the higher figure of 10.09 within the parents/guardians living in urban areas.

Figure 11: Parent/guardian average digital capital score by gender

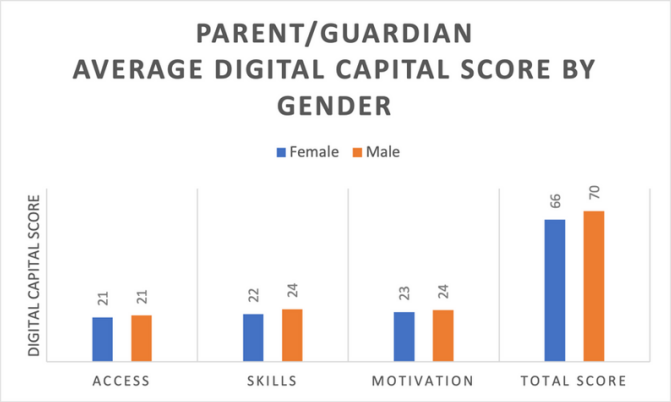


Figure 12: Parent/guardian average digital capital score by level of educational attainment

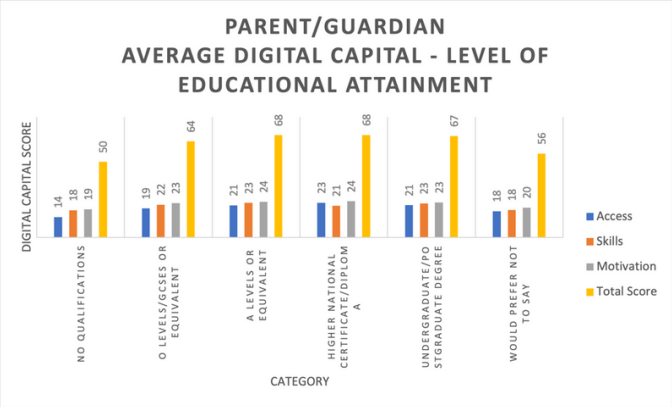


Figure 13: Average parent/guardian digital capital score by annual household income

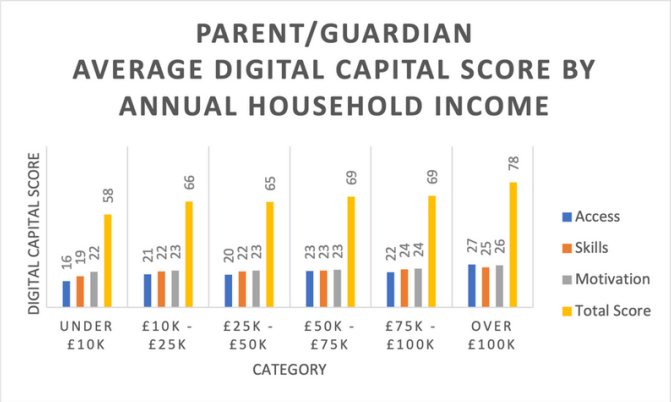
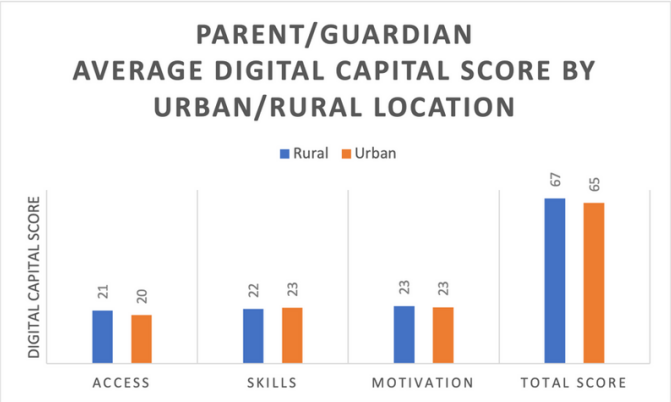


Figure 14: Average parent/guardian digital capital score by location



6. Discussion: What might the implications be for future parent-school partnerships?

Exploring the experiences of parents and guardians during this time can help to highlight the differences that were evident between schools, and provide additional information that can add to knowledge relating to digital exclusion. The data included in this article utilise part of the data set collected as part of a wider study and, as such, can only provide a snapshot of some of the emerging issues. However, comparing the experience of parents from Group 1 schools who had '*demonstrated experience in the development and use of ICT'* with Group 2 primary schools who were at an '*early stage in the development and use of ICT'* helps to identify some of the factors which contributed to varying experiences of remote online learning for learners in primary schools across Northern Ireland.

What characterises Group 1 schools is that the degree of preparedness was higher than in Group 2 schools. Figure 1 and Figure 2 provide information regarding how technology was used in school prior to the arrival of Coronavirus. These questions asked parents to reflect on their school's ability to provide support and highlighted that Group 1 schools were more prepared prior to Coronavirus arriving regarding being able to support learning for learners and that information had been provided to parents regarding how they could support their child's ICT development. Parents and guardians from Group 1 primary schools indicated that support available prior to the arrival of Coronavirus meant that the school was in a better position to support their children during online remote learning. However, parental support, and parental confidence to use technology to support their child's learning, depended on other factors, for example, considering Figure 3, which asked, '*Before the initial lockdown in March 2020, I felt confident I could use technology to support*

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Table 5. Parent/guardian digital capital per annual household income

Income	Mean	Standard Deviation
Under £10k	57.68	13.9
£10k - £25k	65.86	7.62
£25k - £50k	65.44	8.99
£50k - £75k	68.79	7.66
£75k - £100k	69.41	6.26
Over £100k	77.77	5.44
Total	67.49	9.6

Table 6. Table 6: Parent/guardian digital capital by location

Locality	Mean	Standard Deviation
Rural	66.64	8.89
Urban	64.78	10.09
Total	65.71	9.49

my child/children's learning' highlighted that when reflecting on their own confidence, parents from Group 1 and Group 2 schools returned similar responses across the survey.

This increased level of preparedness was evident from parent and guardian responses in relation to satisfaction levels regarding rating their children's experiences of online remote learning during Coronavirus-related lockdowns, with Group 1 respondents more likely to give 3 or more stars in both lockdowns. Comparing satisfaction levels across both groups for 'providing a quality digital education for all learners' also aligned with the characteristics of each primary school grouping.

Central to the ongoing partnership between parents and guardians and primary schools was continued parent/guardian support and advocacy, and there appeared to be a positive relationship between the level of ICT use in school, increased levels of parental satisfaction, and parental desire for continued parent/guardian support and advocacy for technology in school. Group 1 parents and guardians were more likely to advocate for increased use of digital technology in their children's education and more likely to advocate for professional digital skills training for teachers. Group 2 parents were more likely to advocate for digital skills training for themselves rather than for professional digital skills training for teachers. However, although both groups overwhelmingly responded positively for the need for more digital skills training for parents and guardians, there were similar responses from both groups.

Exploring the measurement of digital capital for parents and guardians across the dataset, and cross-referencing digital capital with socio-economic and demographic variables, age, gender, level of education, income and place of residence provided insights into how digital inequalities existed within parent-school partnerships. Parent and guardian digital capital scores did not vary according to whether or not they were parents/guardians of Group 1 or Group 2 schools. Variation, however, did occur across the other variables explored.

Digital capital scores for parents/guardians varied with differences evident across age groups. The 18-25-year age group had the lowest digital capital score (63/90), and female parents had a lower digital capital score compared to male parents (66/90 compared to 69/90 for males). Concerning the level of educational attainment, the digital capital score was lowest for those with no qualifications (57/90). Regarding income, the digital capital score was highest for those earning over £100k per annum (78/90) whereas those earning less than £10k scored the lowest (57/90). Finally, and perhaps surprisingly, parents and guardians from rural areas returned marginally higher digital capital scores than their urban counterparts.

Helsper identifies the *intersectional* and *systematic* nature of socio-digital inequalities and highlights concerns regarding the inequalities of outcomes in digital societies and the avoidance of negative outcomes of ICT use. Developing a greater understanding of why digital inequalities exist within our schools and school communities is essential to mitigate against the harmful effects of digital exclusion. As Helsper states:

> those who have been historically disadvantaged face tougher odds. They are less likely to translate ICT use into high-quality educational outcomes and are more likely to have negative experiences with online learning. (Helsper, 2021, p.93)

The results presented in this paper suggest that, within our school system, variations in how schools prioritise and develop their uses of digital technologies produce systematic inequalities regarding the use of digital technology in education. However, to understand all the factors contributing to digital exclusion within our school communities, it is an imperative to understand that digital inequality is intersectional.

The experience of the pandemic has ignited interest in digital exclusion among educators, learners, parents and policy makers. The concept of socio-digital inequalities offers a new lens to examine the recent experiences of learners, their parents/guardians and their teachers, particularly if we are to speculate on future parent-school partnerships and what they should involve.

7. Conclusion: The digital exclusion conundrum

Selywn asserts that drawing lessons about the future of education, in this case following the Coronavirus pandemic, should be seen through the lens of social science, as the act of learning is '*entwined with many other stratifications of social life*' (Selywn, 2017, p.7).

The research presented in this paper has provided a comparative analysis of the experiences of primary-school parents and guardians in Northern Ireland during the pandemic to examine potential implications for digital inclusivity in education. It has highlighted inconsistencies in learner experiences regarding remote online learning, which reflected the pre-Coronavirus level of development of educational technology within primary school groups. However, the evolution of our knowledge of digital exclusion post-Coronavirus presents an increasingly complex picture. Exploring the measurement of digital capital among parents and guardians highlights that the digital divide is indeed a multidimensional phenomenon (Ragnedda, 2018). Herein lies the digital exclusion conundrum: fundamentally, addressing the challenges of the intersectionality of digital inequalities and mitigating the risks of digital exclusion for learners will require an enhanced understanding of how third-level digital divides operate in education. A renewed focus on the future potential of parent-school partnerships might well provide opportunities to improve outcomes not just for learners, but for their parents as well.

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