



Article

Using Digital Technologies to Build Connections between Families and Schools as Children Transition to School

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Abstract: This paper reports research that investigated how digital technologies were used to develop and maintain home–school connections and develop positive relationships when children transition to nursery schools and schools. School case studies, comprising four purposively selected schools with nursery provision in Northern Ireland and four primary schools in New Zealand, provided the context and evidence to enable a small-scale comparative study of how digital technologies enabled the development of relationships between homes and schools over time. In this paper, the findings were analysed using a conceptual model and framework derived from earlier studies in this field. However, given the contemporary social and technological context, it was found that the framework could be reviewed and elaborated, enabling the creation of a new conceptual framework that is offered here. Our findings reveal methods of employing digital technologies to positively support parental engagement when children transition to nurseries and schools. From the analysis of our findings using the framework developed, points to consider for future practice, policy, and research are highlighted, with an emphasis on understanding and integrating parents’ aspirations into the transition process. Opportunities that use existing and emerging methods for home–school–community connections need to be made known to teachers and schools. While the digital technologies used must be capable of maintaining appropriate regular communication, additionally, supporting ways for involving parental voice in reviews of existing practices and exploring new opportunities should be shared with teachers and schools. Future research should explore how the use of digital technologies in developing wider and deeper engagement and participation of parents and carers with nurseries and schools might lead to a longer-term and positive engagement in later years beyond nursery schools and initial transition to school.

Keywords: parental engagement; home–school–community links; school transition; early years engagement; parent–school engagement framework; school leadership



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1. Introduction

The development of “educationally powerful connections and relationships” ([1], p. 3) between schools and families has long been a focus of research in achieving positive social and educational outcomes for learners. Such relationships are defined by collaborative approaches to a common effort, reflected in the concept of mahi tahi (mahī tahi is a te reo Māori term that means to work together as one), the idea of working together to achieve specific goals [1]. While this theory sounds conceptually promising, the implementation of these ideas in practice is more complicated than schools may initially anticipate. To truly embrace a collaborative approach, schools may need to considerably alter their relationships with families to ensure they are forming a meaningful partnership with them, aimed at meeting specific needs in children’s learning and development. To facilitate the development of these relationships, there has recently been an increase in nursery and school uses of digital technologies and tools to forge communication links with families.

Whilst digital communications are used and developed widely across sectors of society, communications using digital technologies have not been used greatly to support the engagement possibilities and needs of parents, children, and teachers (schools).

This research explores how digital technologies are used by nurseries and primary schools to develop connections that support families as their children transition to school. This research further seeks to investigate how digital technologies are used to maintain home–school connections and develop positive relationships. School case studies, comprising four in Northern Ireland, taking evidence from purposively selected schools with nursery provision, and four primary schools in New Zealand, provided the context and evidence to enable this small-scale comparative study of how digital technologies enable the development of relationships between home and school over time.

2. Literature Review

This brief literature review selects published articles that provide a background to the focus of this paper—digital technologies building connections between families and schools as children transition to school. As part of the transition to school, parents and children are required to make sense of their new school contexts and their roles and places within them [2]. As parents adapt to their new role and manage the changes associated with shifts in the responsibilities of supporting a child's transition, research has called for schools to have a greater appreciation and understanding of the changes that families cope with and adjust to [3]. Hill et al. [4] warn that there is a danger that families may be “left behind in the transition process” (p. 232) as they adapt to meet the school's new expectations of them.

Developing positive and respectful connections between families and schools has been highlighted in the literature as a major factor in supporting a family's transition to school [5,6]. By developing these connections, schools can foster a welcoming approach to families as they start school. Research that highlights innovative ideas using digital technologies to connect with families is generally focused on familiarising families with the new school environment. The literature is sparser on how digital technologies may be used by schools to develop positive relationships with families as they navigate the unfamiliar school environment. Research exploring the continuing use of digital technologies to connect and foster relationships between schools and families in the period after their children have transitioned to school is even less prevalent. Comparative case studies focusing on digital technologies that can be used to support the transition and ongoing relationships represent a gap in the literature. These gaps provide a rationale for this research. There is a considerable body of literature that focuses more broadly on developing positive home–school partnerships, including examples of case studies highlighting the role of digital technologies (see [7,8]).

Transitions involve a process, which can result in a life change or a definition of self over time, whereby an individual learns to adapt to certain conditions to enable their movement from one position or group to another. This research focuses on a transition as a movement from one context to another, specifically, the movement between early childhood/years and primary school.

Educational transitional practices are two-fold; firstly, to develop a parent's knowledge of the school system and a familiarity with the school environment, and secondly, to develop positive home–school relationships. Reichmann [9] reinforces the importance of allowing time to develop a trustful and respectful relationship. The importance of developing and maintaining a two-way communication process between families and schools to enable the sharing of information and to build connections is well documented in the literature [7,8,10]. As the families settle into their new roles and new school communities, continued development of educational connections between families and schools needs to be maintained. These connections need to support reciprocal communication through informal and formal opportunities to build confidence and trust through respectful relationships [11].

To be effective, communication needs to be flexible, with educational settings needing to promote opportunities to connect with families, and this involves seeking different innovative ways to communicate with families. Digital forms of communication are used by schools to provide families with information and updates about the class or school events. According to Kuusimäki et al. [12], “most parent-teacher communication nowadays takes place on digital platforms” (p. 1). The use of digital technologies as a social practice may assist in the development of the relationship between families and schools in a manner that fosters reciprocal expectations, involves parents with schools, and alleviates some of the communication challenges of time and distance that can be faced by teachers and families [13–16]. Examples in the research raise the concern that schools’ communication with their families can be overly general and lack a personalised connection. In a study by Chou [7], the more personalised the communication between home and school, the more uplifting and positive the effect on families and the building of relationships between homes and schools.

There is a lack of research concerning the use of digital technologies in facilitating and maintaining communication and developing relationships over time between families and schools during transition to school and how these connections are maintained after children start school. These are underexplored areas that have scope for further research. Consequently, this study aimed to address the following four fundamental research questions:

1. To what extent are digital technologies being used by schools to develop supportive links with families in their transition to school?
2. Once families have started school, how do schools use digital technologies to maintain and build connections with their families?
3. What similarities and differences are there in how digital technologies are used by a sample of NI and NZ schools to develop home–school relationships?
4. What can we learn from the two cases about policy and practice?

3. Theoretical Framework

To address the four research questions of this study, the data-gathering process involved the creation of a bespoke interview schedule, whilst the analysis of those findings used a theoretical framework developed from three existing frameworks that relate specifically to the focal topic of concern—parental engagement. Hoover-Dempsey and Sandler [17,18] provided a five-level theoretical model of the parental involvement process, while Walker et al. [19] provided a two-level model, and Epstein [20] identified six types of parental involvement. Previous researchers have applied these models in their own studies [21–29]. However, in this study, and for this paper, the three models were integrated into a single theoretical framework to accommodate the current social context (particularly for early years transition) more specifically and the ways in which emerging digital technologies can and have become used in practice.

Hoover-Dempsey and Sandler’s [17,18] theoretical model showed how student outcomes (skills, knowledge, and self-efficacy for school success, arising from outcomes of parent involvement with the school and the child) at Level 5 are influenced by previous levels as follows: at Level 4, tempering and mediating variables concerned with the extent that parents use developmentally appropriate strategies; at Level 3, the mechanisms that enable parental involvement; at Level 2, factors that influence involvement (parent skills and knowledge, demands on parent time and effort, and specific invitations from the child and school); and at Level 1, parent decisions for involvement based on four major reasons (construction of the parent role, parental sense of efficacy for helping their children, school invitations for involvement, and the child’s invitations for involvement). Walker et al.’s [19] model considered the psychological and motivational factors that influence involvement, leading to the following: forms of involvement at Level 1; parental perceptions of their life context at Level 1c; parental perceptions of invitations for involvement at Level 1b; and parental motivational beliefs at Level 1a. Epstein’s [20] parent involvement model highlighted six factors affecting parent involvement as follows: parenting (where teachers

support parents to establish a positive home learning environment); communicating (establishing two-way communication between homes and schools about the school and a child's learning); volunteering (recruitment of volunteer parents to help support school maintenance and offer classroom support); learning at home (teachers providing parents with ideas, activities, and information to support parents in helping their children with their home learning); decision-making (where parents act as representatives on school committees and lead shared activities); and collaborating with the community (integrating community groups and services to improve opportunities and links to the children's classroom learning). These three models were integrated into a single four-level model that accommodates this study's context (see Table 1).

Table 1. Integration of existing models into a single proposed model.

Hoover-Dempsey and Sandler's [17,18] Levels	Walker et al.'s [19] Levels	Epstein's [20] Factors of Parent Involvement	Proposed Model
Level 1: Factors that influence parents' basic involvement		1: Parenting	Level 1: Initiate communication and build connections with new parents
Level 2: Factors that influence parents' choice of involvement	Level 1a: Parents' motivational beliefs Level 1b: Parents' perceptions of invitations Level 1c: Parents' perceived life context	2: Communicating	Level 2: Develop opportunities for parents to engage with the school community and support their involvement in their children's learning
Level 3: Mechanisms of parental involvement		3: Volunteering	Level 3: Maintain support to meet parents' evolving needs
Level 4: Tempering/mediating variables	Level 2: Parental forms	4: Learning at home	Level 4: Review existing practices and explore new opportunities
Level 5: Student outcomes		5: Decision-making 6: Collaborating with the community	

From the basic model shown in the right-hand column of Table 1, more specific factors that influence each of these levels at the early years transition time relate to the current social and digital context. These factors are shown in Figure 1.

This model (shown in Figure 1) was constructed to reflect the perspectives of school leaders facilitating parental engagement using digital technologies, as shown in the previous literature. Level 1 reflects the purpose of research related to the focus of this study, to "initiate communication and build connections with new parents", ensuring that families can access communication tools and that educators get to know families. At Level 2, the existing models are expanded to cover further opportunities offered by online technologies aimed at involving families. Each layer of the model also reflects the changing needs of families, as the reviewed models by Walker et al. [19], Hoover-Dempsey and Sandler [17,18], and Epstein [20] do not account for evolving requirements from parents, which is highlighted further at Level 3. None of the reviewed models provided a level where progress was reviewed and strategies were evaluated. Given that the model is tuned to the perspectives of school leaders, Level 4 inserts a necessary step of reflection. The stages in the reviewed models focused more on the psychology of parental involvement, which informed the proposed model, but tracking development relevant to the context and perspective studied was deemed to be vitally important. Epstein's model [20] was useful in this regard, given that it emerged from a practitioner's perspective and highlighted ways in which parents could become involved.

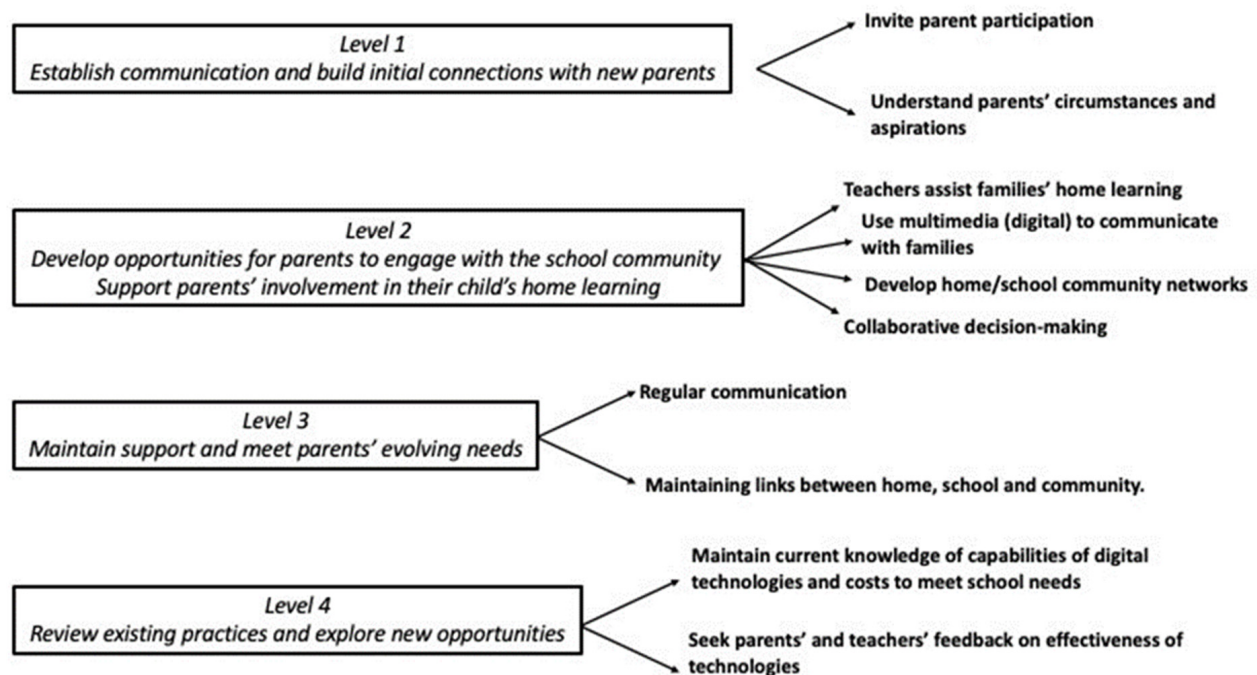


Figure 1. Factors influencing parental engagement and involvement at each of the levels of the proposed model.

The proposed model accommodates online technologies and accounts for the development of engagement to a greater extent so that a wider picture of community is developed, as technologies can be used to respond to families' changing needs by developing a community. Schools that connect with families online can access a wider network for community involvement and can hear directly from parents about what support they need. The model provides the scope for dialogue to no longer be merely home/school but to also involve connections between parents and families. Likewise, multimodal communication is considered. Schools can be more reflective and well-informed through Internet technology and, as COVID-19 demonstrated, engagement within school communities does not always have to occur on school grounds.

In reconceptualising the contributions of the previous three parental engagement models and viewing these through the research perspective of a school leader, there is an ongoing focus on two main strands “establishing communication” and “building and developing school-home-community connections using digital technologies”. These two strands reflect the focus of this study, which explores school leaders establishing practices of engagement with new families entering school using technologies. Whilst this proposed model (Figure 1) is used initially to analyse the findings of this study (through a deductive analysis), the findings are also used to identify further factors that influence parental engagement in the social and technological contexts investigated (through an inductive analysis). Whilst digital technologies are used widely in society to develop very wide and dispersed communication, for example, with chats through instant messaging and social networks, the forms of communication that lead to deeper engagement between parents and schools are particular to practices that involve a three-way concern—among the parent, teacher (school), and child. Whether and how digital technologies that are common in social practice might be used by parents, children, and schools to develop deeper understanding and engagement are the key questions that this study explores.

4. Methodological Approach

To address the research questions, this study adopted a qualitative approach, seeking to gain narratives and rich in-depth descriptions of actions and experiences [30]. In conducting this qualitative research, the researchers were aware that they were part of

the process of discovering meaning, but as advised by Flick [31], the researchers sought to have an appreciation of subjectivity and exercise the essentiality of reflexivity. In this regard, this research fell within an interpretive framework, involving the analysis of socially meaningful action in order to interpret how people created and maintained their social worlds [32], offering an explanation of multiple perspectives of the phenomenon that were the focus of this research.

To gather and analyse the evidence, a combined case study and comparative approach was deemed a best fit for this research, enabling comparisons essential in establishing any “similarities and differences between two observed phenomena” ([33], p. 439). The case studies offered flexibility for explorative and theory-building research that utilised narrative structures to immerse the reader in the discourse and also communicate the evidence necessary to articulate the argument [34]. Although standalone case studies can be powerful as they typically produce rich, qualitative data through the development of rich descriptions of how participants understand and frame their own experiences [35], in this study, multiple case studies were explored.

Interpretive case study methodology is “bounded”. Bounding the case defines the uniqueness of the phenomenon being studied [34] and is achieved through constructed research questions, the specific identification of context and timeframe. However, it is recognised that an interpretive case study of a single case may not readily connect with breadth, as the focus is placed on one case rather than considering the “generalisation beyond” ([36], p. 236). In focusing only on a specific location, the opportunity to compare social structures and processes of another location may be missed [35]. Comparative case studies may strengthen the “heuristic value” of individual cases by bringing in-depth understanding in different circumstances ([37], p. 40) and can potentially be more powerful than a standalone case, allowing researchers to gain a wider perspective on the context in which the research is undertaken [38]. Comparative approaches consist of two or more situations simultaneously deployed to address a research question [39]. As with individual case studies, the comparative analysis of case studies is usually narrative, although some statistical or theoretical models are possible means of conceptualising research outcomes [40]. By adopting similar methods common to a single case study, comparative approaches to case studies typically link a hypothesis to certain cases, gather information about the cases, develop evidence and present the cases, and construct an explanation or generalisation from the evidence.

Within the context of this research, each case study was one of four schools in New Zealand or one of four schools in Northern Ireland. School leaders were interviewed in each context to establish a basis for comparing the use of digital technology in their transition practices. Furthermore, how parental engagement was maintained after a child started school was explored. The case studies were conducted separately by two researchers in the two locations.

5. Qualitative Research Instruments

The exploratory comparative approach to the case studies used qualitative methods of data collection, document analysis, and semi-structured interviews.

5.1. Document Analysis

Document analysis is a form of qualitative research in which documents are interpreted by researchers to provide evidence and answer research questions [41]. A request was made to view any school policies or documents that provided more information on the school’s use of digital technologies to develop parent partnerships and transition-to-school information, along with the school’s latest Education Review Office (ERO) report or alternative inspection report. The ERO/inspection report provided an indication of how effective the school practices with their families were, as assessed by a government agency. In the Northern Ireland (NI) context, the school’s latest Education and Training Inspec-

torate inspection report provided similar information to that provided in New Zealand by the EROs.

5.2. Semi-Structured Interviews

A semi-structured interview is often used as an exploratory tool [42] and consists of a mix of pre-planned and spontaneously used questions. Semi-structured interviews allow comparisons to be made across respondents and also allow flexibility so that themes can begin to emerge from the interview [43]. The questions in the semi-structured interview schedule were based on the features identified in Figure 1, which are represented in the sub-headings for the findings presented in Section 7. The semi-structured interviews in this study were recorded, and an inductive analysis was used to draw out key factors.

A school principal's leadership holds some influence over the systems, routines, and values that contribute to how a school will communicate and build relationships with families and the role that digital technologies can play in facilitating this process. A semi-structured interview with the school principal and/or lead teacher(s) concerned with pupil transition to the school, where guiding questions were provided before the interview, was used to gain insight into these aspects. If the school had a nominated staff member responsible for maintaining the school's social media/website, their perspective was also explored where possible through a semi-structured interview.

5.3. Data Analysis

A characteristic of case study research is the large amount of narrative data generated through multiple sources of evidence. Making sense and interpreting the various sources of data generated through the case study approach is not necessarily a linear process and may require repeated reviews of the generated data [44]. In this study, manual reviews of the transcribed evidence from school interviews were undertaken by the three researchers. Initially, evidence was collated and analysed through the structure of the interview questions [45]. For this paper, evidence related to the elements of the conceptual framework (see Figure 1) was identified and reported in Section 7.

6. School Contexts

6.1. Digital Technology Provision

6.1.1. Digital Technology Provision in the Northern Ireland Schools

In terms of digital technologies in education, Northern Ireland has a long and strong history (dating back to 1990) of supporting schools with digital technologies that can be used for teaching, learning, management, governance, and professional development. Three managed service provision contracts have been in place since 1990, which provided these levels of support. Regarding the current status of those three contracts, the Department of Education (DE) website (<https://www.education-ni.gov.uk/articles/ict-schools>, accessed on 18 January 2024) states the following: "The C2k project was established to procure the infrastructure and services necessary to support the enhanced use of information and communication technology (ICT) in schools in Northern Ireland." While the centrally funded service provides a high level of service to all grant-aided schools, many schools augment the service, usually by purchasing additional devices and making one-to-one provision for pupils. However, provision for nursery schools and classes was not included in the current contract or in either of the two previous contracts, although it is being provided for in 2024, as the latest and fourth generation contract (EdIS (<https://www.eani.org.uk/services/education-information-solutions-programme-edis>, accessed on 18 January 2024) comes into play. This means that the NI findings of this study relied heavily on the investment in digital technologies from individual nursery schools and class budgets, rather than being centrally financed, coupled with the ingenuity, innovativeness, and visionary approaches of principals and teachers who have been responsible for and involved in nursery-level education.

6.1.2. Digital Technology Provision in the New Zealand Schools

In terms of digital technologies, funding for each state school in New Zealand is provided by the Ministry of Education annually through the school's operational funding budget. Operational funding includes the financial resources that are received by a school's Board of Trustees, calculated by the Ministry of Education, based on each school's July roll return for primary schooling years 1–8 and the school's decile rating. More recently, the Ministry of Education (1st January 2023) replaced the decile rating system with a different funding methodology, termed "equity funding". In 2023, schools transitioned into experiencing how this new methodology may have changed the amount of operational budget that each school received. As part of their operating budget, and listed under the "furniture and equipment funding grant", schools were able to prioritise and allocate their budget to fit their own specific needs, which included their decisions for spending or improving digital technologies in school. In facilitating Internet access, schools could choose whether they wanted to use the Ministry of Education's Network for Learning (N4L) service or pay for a different retail service. The Ministry of Education negotiated prices to support schools in purchasing software such as Apple, Google, and Microsoft along with the procurement or lease of ICT equipment available through the Ministry of Education. To support the purchasing of ICT equipment, schools may have asked parents and caregivers to donate a financial contribution at the start of the school year, which was used to support the running of the school. In addition, a school's Parent Teacher Association could further fundraise to support the school's targeted needs.

6.2. Admission to Nursery Schools and Schools

6.2.1. Admission to Nursery Schools and Schools in Northern Ireland

The Department of Education in Northern Ireland, through its Education Authority (EA), offers pre-school provision. Their website (<https://www.education-ni.gov.uk/articles/applying-funded-pre-school-place-202324>, accessed on 18 January 2024) states the following: "Funded pre-school education is provided under the Pre-School Education Programme. This is a programme funded by the Department of Education (DE) with the aim to provide one year of non-compulsory pre-school education to every child in their immediate pre-school year whose family want it. It provides a rich variety of challenging play-based learning activities and other experiences in a stimulating environment and will help prepare your child for primary school". Parents can apply through the Education Authority website for 12.5 h per week of free pre-school education online, for three- and four-year-olds.

6.2.2. Admission to Nursery Schools and Schools in New Zealand

There are a variety of early childhood services available to children and families in New Zealand. Among the services available are education and care settings, kindergartens, play centres, home-based settings, playgroups, and te Kōhanga Reo, Ngā Puna Kōhungahunga and Pacific Island Early Childhood groups. On average, 75% of all three-year-olds and 84% of all four-year-olds attend early childhood education (ECE) for at least 10 h a week (Ministry of Education, 2019). Early childhood provision is not provided by a school. In New Zealand, although not compulsory until children are six years old, school entry for most children begins when they turn five years old and are called New Entrants. This long-standing tradition in New Zealand contrasts with the more commonly used biannual entry found in OECD countries. Children in New Zealand mostly start school on or near the date of their fifth birthday, where schools operate a continuous entry system. It is not uncommon for a child to be the only one starting school on a particular date.

More recently, some larger schools have begun to use a cohort entry system [46], which, in the New Zealand context, involves children starting in one of the four terms in which they turn five years old. Of the four schools that formed part of the New Zealand case study, two schools operated a continuous entry system, whilst two had shifted to cohort entry.

6.3. Case Study School Backgrounds

6.3.1. Case Study School Backgrounds in Northern Ireland

For this study, nursery provision was studied in four schools in Northern Ireland. These schools were purposely selected based on differences in geographical location and pupil entry numbers, but all had likely known uses of digital technologies. In the outlines that follow, free school meals (FSMs) is taken as a proxy of a relative measure of social deprivation. As this study sought to identify the uses of digital technologies in nursery provision, this latter criterion was particularly important.

Throughout this report, the schools are identified by letters, and the outlines of the four schools (statistical details were drawn from the Department of Education's "Schools Plus" statistical directory at <https://www.education-ni.gov.uk/services/schools-plus>, accessed on 18 January 2024) are as follows:

- School A is in a rural area with a wide catchment. It is a large Controlled school, with two nursery class enrolments of 50+ children. Free school meals are below the Northern Ireland average (Details about free school meals in Northern Ireland were drawn from the Northern Ireland Research and Statistics Agency (2023). School Meals in Northern Ireland: 2022–2023. Department of Education: Belfast.) The enrolment is mixed on a religious basis.
- School B is approximately half the size of School A and is located by a large market town but with a wide catchment. It is a Controlled school, with a predominantly Protestant enrolment and a single nursery class enrolment of 25+ children. Free school meals are below the Northern Ireland average.
- School C is in a rural area. It is a small Grant-Maintained Irish medium school, with a single nursery class enrolment of 25+ children. Free school meals are around the Northern Ireland average. The enrolment is predominantly Roman Catholic.
- School D is a large inner-city school. It is a Maintained school, with two nursery class enrolments of 50+ children. Free school meals are well above the Northern Ireland average. While the enrolment is largely Roman Catholic, the school is ethnically diverse, with a significant minority of children who are newcomers to Northern Ireland.

6.3.2. Case Study School Backgrounds in New Zealand

Four schools located in the Hamilton area and the wider area of Waikato in the North Island of New Zealand were selected. All four schools catered to children aged 5–11 years old. In the New Zealand education system, the decile is a key measure of socio-economic status used to target funding and support to schools. The ratings are 1–10, with 10 being the lowest proportion of students from lower economic backgrounds that are provided for each school, along with a demographic breakdown of the numbers of children on the roll. Two schools (Schools 3 and 4) were described as "country models". Under section 193 of the Education and Training Act (2020), certain primary schools were designated as "model" schools. These schools are specifically used for teacher training and, in the past, were usually associated with a teacher training college.

Schools in New Zealand tend to operate in zones. Children who live in the school's area (the zone) are guaranteed a place at their local school. If the school has a specific number of allocated places, children who live outside the zone can apply for those places. Outlines of the four schools are as follows:

- School 1 is a small rural school in the wider Waikato area (Matamata area), Decile 5 (83 children), with demographics as follows: Māori 19%, NZ/European 51%, Filipino 9%, and other 2%.
- School 2 is a large Decile 10 new-build urban primary school (2019) in an area of growing housing development in Hamilton, with 800+ students and demographics as follows: 17% Māori, 23% NZ/European, 18% Chinese, and 15% Indian.
- School 3 is a country model school on the outskirts of Hamilton/Waikato, Decile 10 (465 students), with demographics as follows: Māori 10%, NZ/European 81%, Asian 8%, and other 1%.

- School 4 is a country model school with 147 students, Decile 7, with 17 Māori students and a small number of students from culturally diverse backgrounds. Half of the students are “in-zone enrolments”, while the other half are “out-of-zone enrolments”.

7. Results

Evidence gathered from the individual case studies was initially related to the questions asked in the semi-structured interviews (which are reported fully elsewhere). But for this paper, and particularly in this section of this paper, representative evidence from that collation is related to the elements of the model shown in Figure 1. The evidence is presented in the sub-sections that follow.

7.1. Level 1—Establish Communication and Build Initial Connections with New Parents: Initial Parent Participation

As a principal at School A in NI said, “If you have good communication between families and school... you head off all those issues. All those problems that come down the line and having... much more that pastoral element... well it sets up for a much greater, a much better working relationship with parents, so it does”. The critical importance of communication was also emphasised by a school in NZ, who said the following: “Because they can come back to me with a question and then come back to me if they need it again, and that is really important for them to be able to do that”.

The mechanisms used to support initial parent participation went beyond the use of email or online applications (apps) such as Seesaw. In School 2 in NZ, for example, before and after school, the class teachers set up digital displays on screens in their spaces that play images and showcase the children’s learning. As a teacher said, “Families can then feel part of their children’s learning... A child can then tell their parents more about what they are seeing on the screen”. In School B in NI, a class teacher identifies “people of the week” and posts the achievements of the people of the week on Seesaw. Parents across the class are reported to in this way to develop a sense of class community by congratulating other parents and children. As the principal said, “Sometimes I think there’s a feeling that parents are so obsessed with their own children that they don’t see others, but just to see that, you know... I think its people taking the time to encourage someone else’s child”.

7.2. Level 1—Establish Communication and Build Initial Connections with New Parents: Understand Parents’ Circumstances and Aspirations

The schools provided a variety of online and onsite support for parents. For example, in NZ, School 2’s website provides access to families through purposefully designed fact sheets for restorative practices, learning through play, and family development programmes. There is a hub on the website dedicated to families, where families can access information about the school apps Hero and Kindo. The Kindo app allows families to access the “shop”, where they can order school stationery ready for their children’s first day. School D in NI provides ongoing topic support as follows: “If it is a new topic that week, we would post links to YouTube or maybe an educational video... here are some stories that will help your child identify the numbers 1 and 5 or learn about counting from 1 to 5, so there could be something every single week for engagement with parents”. In School C in NI, the school’s use of technologies helps families in their management of calendars, events, and messages. Additionally, digital communication is much easier to keep track of, as messages remain in the school app.

Parents are also enabled to engage with each other. In School D in NI, for example, there is a group chat with all potential transitioning parents. Some of them are first-time applicants, and in one case, it was reported that a parent hit an obstacle, but with the group chat another parent jumped in to help them. As the lead teacher said, “It’s a chat that’s open to all parents, so they can see a parent saying ‘I’ve done this’. You can see other parents saying, ‘I can’t do it’... We don’t have to step in there, and it’s developing that wee bit of interaction between parents before they start school”. Some schools are aware that parents and guardians can set up their own communication facilities. As the principal at School A

in NI said, “I know that families within our classes set their own WhatsApp groups and that’s how they communicate, but it’s not something that we set up”. The principal at School C confirmed that “We are aware that our parents have a parent’s support group... And they make fantastic use of social media, they have their own group chats, which they use for fundraising efforts and school initiatives”.

7.3. Level 2—Develop Opportunities for Parents to Engage with the School Community and Support Parents’ Involvement in Their Children’s Home Learning: Teacher-Assisted Family Home Learning

Teachers in schools adopt a range of practices to assist families with home learning. In School A in NI, some teachers record a video explaining a learning task on Seesaw. Parents can download the activity and print it out for their children to complete on paper. The parents then upload a photograph of the completed activity and send it to the teacher. In School 2 in NZ, to support families in their own development of using technologies as part of their children’s home learning, the school hosts “techy sessions” for parents to show families “how to access that sort of stuff”.

There are also more formal mechanisms in place. In school D in NI, the end-of-year report is shared with parents. A lead teacher explained that “we record it on to a transition profile, which is all of the skills, so that it’s recorded in an actual document that’s shared with parents... You see the skills listed here and red, amber, green code against each skill and additional text describing the level of the child’s skill”.

7.4. Level 2—Develop Opportunities for Parents to Engage with the School Community and Support Parents’ Involvement in Their Children’s Home Learning: Drawing on Multimedia (Digital) Communication to Communicate with Families

Schools reported drawing on a range of digital technologies to provide all parents with regular access to communication. For example, four schools in NZ shared a weekly newsletter with parents using at least three different methods including the following: email; app-based communication; or via the school website. Drawing on a range of digital tools enabled schools to communicate in a way that “fit[ted] with parents’” lifestyles and routines. Reciprocally, having a range of technologies was also found to be an advantage to schools. A principal at School C in NI advised that having a choice of tools provided schools with “much greater freedom and flexibility... between ourselves at school and families at home”. More generally, messaging options were found to be a less intrusive form of communication in “comparison to a phone call... where you may be calling at times that are not suitable” (as stated by the principal at School C).

Schools mostly found that telephone technologies were effective in enabling parents to receive “real-time” communication, with a principal at School 4 affirming that “parents never have phones out of their hands”. However, a principal at School B in NI identified that this was not always the case and that “some parents may not have access to a phone during working hours”. The schools questioned found that Seesaw provided a flexible way for all parents to receive communication. For example, as a principal at School A in NI affirmed, sometimes the “immediacy of response or contact is important”. The principal at School A explained how Seesaw facilitated the sending of immediate notifications or postings to parents. “When something is posted, [in Seesaw] it pings the parents’ mobiles, so it gives them real-time information”. However, in non-urgent communication, should parents wish to message school staff at a more convenient moment, the principal at School A noted that parents can choose to message in the evening, enabling the staff member “[to] get [the message] when [they] come into school the next morning”.

App-based technology such as Seesaw, accessible through parents’ smartphones, was found by the principal at School 4 in NZ to be particularly popular with the parents in their community for receiving and responding to messages about their children directly from their class teachers. The principal at School A in NI identified that in transitioning young children to school, it may be important to provide parents with reassurance that their children have experienced a settled day in school. They shared an example that the

nursery/reception teachers in their school used Seesaw “to sen[d] a picture [to a parent] at 9:00 of their child to show that they are settling in well, so that they can see that everything is fine”.

Regular communication that shared children’s learning with parents was established by School 2 in NZ using Seesaw, ensuring that all families were “connect[ed] to the app at the start of the year”. The app was then used to provide parents with regular updates about their child’s learning “to send home messages, photographs, and videos of children during the day”.

7.5. Level 2—Develop Opportunities for Parents to Engage with the School Community and Support Parents’ Involvement in Their Children’s Home Learning: Develop Home/School Community Networks

Using digital technologies, the schools provided a variety of invitations to new school parents to parent-based groups and to support wider community initiatives. For example, School 4 in NZ used Facebook to post photographs and videos of families involved in a recent “working bee” day to recruit further parent volunteers in maintaining the school gully. School 1 in NZ provided a further example of how they used Facebook to “get involved in chicken and lamb placements or manage the school shop or something like that”. School 1 also encouraged parents to use Facebook to “talk to each other as well”, where parents set up “little messenger groups so that they can communicate with their child’s sport’s team” to organise training and support games. School A in NI found that Eventbrite provided an effective online option for parents to book their child into school-based clubs such as the breakfast club.

School C in NI used their digital platforms to extend invitations to families to connect with wider community-based groups. In “The local Irish language group, the Irish language officer, who runs adult Irish language classes” offers opportunities for parents to be involved in developing their own learning. Community group events proposed for the whole family were also promoted by School C, with activities such as “summer camps, playgroups and toddler and mother groups” shared with their parent community.

7.6. Level 2—Develop Opportunities for Parents to Engage with the School Community and Support Parents’ Involvement in Their Children’s Home Learning: Collaborative Decision-Making

In long-term school development planning, leadership teams used digital technologies to consult and seek parents’ feedback. For example, in School 1 in NZ, the principal used an online “parental questionnaire for school development planning, for the three-year cycle”. Day-to-day monitoring of parents’ online activities engaging with a school’s digital technologies provided schools with data to “constantly review how we work” (School C in NI). Data about parent activity within a school’s chosen digital platform was usually tracked by class teachers to monitor “when parents have logged into Hero... we can see what they have looked at and when” and to offer support if parents appeared to be struggling with engagement.

When making decisions about the effectiveness of digital technologies, schools were keen to gain parent and teacher feedback. Parent feedback shared directly with schools through online postings supported a collaborative review of what was working well. The principal at School A in NI shared that when “we look at our communication via Twitter, via a website, and via Seesaw. You know the response has been overwhelmingly positive”. In reviewing digital technologies, teachers and parents’ feedback supported school leaders in their decision-making. Schools were found to be “always open to change” (School C in NI). In reviewing their decisions about whether to renew a contract for a digital communication app, Schools 3 and 4 in NZ chose to explore the parents’ use of the app. Although the principal at School 3 found value in how the “School loop offer[red] text notifications”, both schools found that when they reviewed the number of parents who had downloaded and accessed the app, there was “not much uptake”.

Although the schools indicated that they were “certainly open to new initiatives” (School C in NI), in their review and planning for digital technologies, the principal also

found value in that “At present we feel we have struck a manageable and effective balance for our school community. What we’re doing seems to be working very well”.

7.7. Level 3—Maintain Support and Meet Parents’ Evolving Needs: Regular Communication

As children started nursery/school, teachers liked to encourage them to share class updates with their parents. One example was shared by a nursery teacher in School C in NI who developed a routine where a group of children would be chosen each week. These “focus” children would take photographs of general things that they had completed, which would be posted online so that the parents “know what is happening”.

Generally, regular communication with parents was managed by class teachers across all schools interviewed. This was achieved in different ways. Teachers shared postings to reach the whole class, where the day’s learning activities could be illustrated, and to message an individual parent, for example, to reassure them about the wellbeing of their child. Seesaw was highlighted as being a tool that School A in NI found to facilitate “parental correspondence”. As a result of class teachers sharing postings with selected children or groups, parents often replied, sending messages “back and forward” (School C in NI). The principal at School B in NI stated that having an instant messaging facility “has really changed the type of engagement we are getting”. Parents could message their children’s teachers at a time that was convenient to them, which was found to be “less hassle for the parents” rather than “looking for a phone number, taking time out of their day to go and make a phone call”. Parents were found to be more likely to get in touch if the messaging facility was open and accessible to them when they needed it. As affirmed by the principal at School B in NI, through maintaining regular home–school communication, “I think we know them [parents] a lot better”.

7.8. Level 3—Maintain Support and Meet Parents’ Evolving Needs: Continue Maintaining Links among Homes, Schools, and Communities

A priority for schools during the lockdown periods of COVID-19 was to maintain their connections with their parent communities to support them in supervising their children’s home learning. Digital technologies enabled teachers to maintain links with families and parents, who were generally found to respond positively to the schools’ efforts. The principal at School A in NI reflected that “Our parents opened their doors and their houses to us... And they continue to do so”.

Engaging children with home learning was a challenge for some families. The principal at School A in NI shared one example where digital technologies facilitated support through the development of an ongoing dialogue between a class teacher and a parent to encourage a child to re-engage with their school learning, “We had a girl during lockdown who had switched off from school completely... The only thing she was interested in was photography. Every day she sent me photos of the different things she had been doing... Then we introduced a photography competition to the whole school, and it brought the child back”. The principal at School A reflected that since the lockdowns, parents had continued to maintain their connections with the school and were often keen to contact teachers to share home activities and events. School 4 in NZ and School A in NI both experienced parents sharing videos and photographs of family news and weekend outings with their children’s teachers. As the principal at School 4 commented, “We get a few of those each week!”. The photographs and videos are then shared with the rest of the child’s class “at news time on Monday” or “during sharing time”. Those parents’ willingness to share family moments with the teachers indicated to the principal at School A that “It shows they trust us”.

A school leader at School 2 in NZ offered an example of how their school had used private Facebook groups to invite a smaller group of parents to develop their own smaller community. This group facilitated parents whose children had an inclusive learning need and encouraged the parents to “openly talk in there and support each other”. Ongoing

support did not just come from the school leader, who was part of the groups, but also from the parents.

The interviewed schools acknowledged that there were several smaller parent community groups available for new families to join, which were initiated and run by parents. For example, the principal at School A in NI shared the following: “I know that families within our classes set their own WhatsApp groups and that’s how they communicate, but it’s not something that we set up”. The principal at School C in NI shared how their parents had a parents’ support group “And they make fantastic use of social media, they have their own group chats”. The group provided a place for families to seek advice and ask questions to other parents in the school community. Similarly, the lead teacher at School D in NI also highlighted the community support developed by parents through an online parent group as follows: “It’s a chat that’s open to all parents, so they can see a parent saying ‘I’ve done this’. You can see other parents saying, ‘I can’t do it’”. Another example of a parent-initiated community group was focused on encouraging parents to get involved in “fundraising efforts and school initiatives”.

7.9. Level 4—Review Existing Practices and Explore New Opportunities: Maintain Current Knowledge of Capabilities of Digital Technologies and Costs to Meet School Needs

The schools monitored the effectiveness of their own digital technologies and assessed other possibilities that might better fit their needs. For example, School 3 in NZ explored the possibility of moving from using several different technologies to one integrated system. Initially, through a small trial, the school leader had found that “The Edge” app sent email notifications, stored school reports for families to access, took class attendance, saved administrative staff time, and sent out emergency notifications. With the app being new to NZ, School 3 had “not been able to gain much feedback from other school experiences”. However, through their own research, they found that a big advantage was “the financial savings... to be able to stop subscriptions to other technologies”.

Schools sometimes found that their current use of digital technologies facilitated their needs; however, the cost of maintaining a subscription caused school leadership teams to reconsider their continued use. Schools 1 and 2 in NZ are both small rural schools, and both principals highlighted the increase in the price of one digital technology. “Seesaw is going to price themselves out of the market because of the MASSIVE hike in price, it has been working well for us, such a shame!” (as stated by the principal at School 4 in NZ). The principal at School 2 commented, “\$2500 for Seesaw across a small school!”. However, the lack of other options available prompted the same principal to admit the following: “I suppose we are at a crossroads in terms of Seesaw provision... I don’t want to lose what we already have... I don’t feel there’s anything out there at the minute that is doing the job as well, and we’ll make sacrifices somewhere else”.

In weighing up what the school needed from technology along with the affordability of the cost, the principal at School A in NI considered the following: “[Seesaw] is causing a lot of talk, we have to find something that’s an alternative where we can have individuals and classes, all accessible by password for each family—we want every parent to be able to see their child’s learning”.

At another level, a reliable connection to ultrafast broadband was not experienced by all the schools that were interviewed. Some of the school principals interviewed found their community’s Internet connections to be inconsistent, and this limited how they would ideally like to use digital technologies. As the principal at School A in NI commented, “My fear is that we have not yet been transformed with the superfast wireless... whenever we tried to do Zoom assemblies, it was an absolute disaster... I could imagine the whole school going online for SoundCloud for interviews and somebody dropping off”. Similarly, School 1 in NZ also commented that because of parents’ sometimes patchy Internet connections, “We [try] to do a lot of things [with families] that are phone-based”.

In looking forward, schools acknowledged that the administrative task of parents making payments to the school needed to be facilitated by digital technology. As the principal

at School A in NI explained, “The next [step] is to look at the online payments... Nobody has cash. You know we’re used to paying for everything online”. In their exploration of the “Edge” app, School 3 in NZ similarly identified the advantage of it facilitating “a shop function for uniform and stationery purchases”.

7.10. Level 4—Review Existing Practices and Explore New Opportunities: Seek Parents and Teachers’ Feedback on the Effectiveness of Technologies

The schools generally felt that parents accessed and used online platforms to support them in facilitating their children’s home learning. As the principal at School C in NI commented, “We feel parents and pupils enjoy receiving homework tasks via our online platform”. Class teachers used their online platform to facilitate home learning by providing families with “websites, teachers are able to attach verbal instructions, poems, songs and other audio materials to scaffold, support learning at home”, “Record videos”, and “QR codes”. In addition, School 2 in NZ found “a translation function” in Hero to be of great benefit to the “many families [who] use English as a second language in our school community”.

Despite drawing on many options to maintain communication and develop connections with parents, in reviewing their existing practices, some schools still found that they had “a core of parents that is don’t matter what you do, or what tool we use, they are still not going to read the newsletters, they are not checking emails”. In exploring new opportunities, parents who were not engaging with the school prompted the principal at School 1 in NZ to consider the following: “you’re always asking yourself ‘How can we reach these parents? What can we do differently?’”.

In thinking forward, another principal, at School B in NI, focused their vision on “Using technology to improve teaching and learning, to improve administration... I think I’m constantly evaluating and critiquing what I am doing. You know getting feedback from your parents to tell me what they’re saying”. Gaining parental feedback about new school initiatives and promoting parental engagement was raised by the principal at School C in NI. In the next planned initiative, the principal intended to monitor parent engagement closely to inform any future decisions. As the principal shared, “We are looking forward to rolling out [‘Safer schools’ app]. We will monitor engagement and use among families to see if we should expand on its use. Initially we plan to use this new app to help educate and inform parents and guardians on internet safety and safe use of technology. There are quizzes and tests that we can assign to families after reading material. So hopefully this will encourage greater engagement among our families”. In developing new opportunities and reviewing existing practices, building parent engagement was prioritised by the schools by monitoring online platform data, and seeking parent feedback, the schools were able to assess which digital technologies met their communities’ needs.

8. Conclusions

Using the outline model proposed in Figure 1, and based on the findings that are presented and discussed in Section 7, some new features beyond those shown in Figure 1 were identified. As a consequence, this paper presents a new framework for school leaders to develop parental engagement using digital technologies with new families to their schools (see Figure 2).

The findings of our study show the ways that digital technologies can positively support parental engagement when children are transitioning to nursery schools and schools. Our newly developed conceptual framework (shown in Figure 2) highlights the features that can support positive engagement to benefit children, parents and carers, and teachers. From a practice perspective, whilst schools and teachers need to understand parents’ circumstances and aspirations, they also need to invite parental contribution through bulk and group invitations as well as through individual invitations. Beyond this, they should seek to work with parents to support home learning, maintain multimodal communication, and develop home–school–community support and collaborative decision-

making. Maintaining regular communication is vitally important, as is identifying existing and emerging opportunities to offer and build home–school–community collaboration. Ongoing monitoring and exploration of new opportunities should, where possible, be based upon feedback and ideas from parent voices.

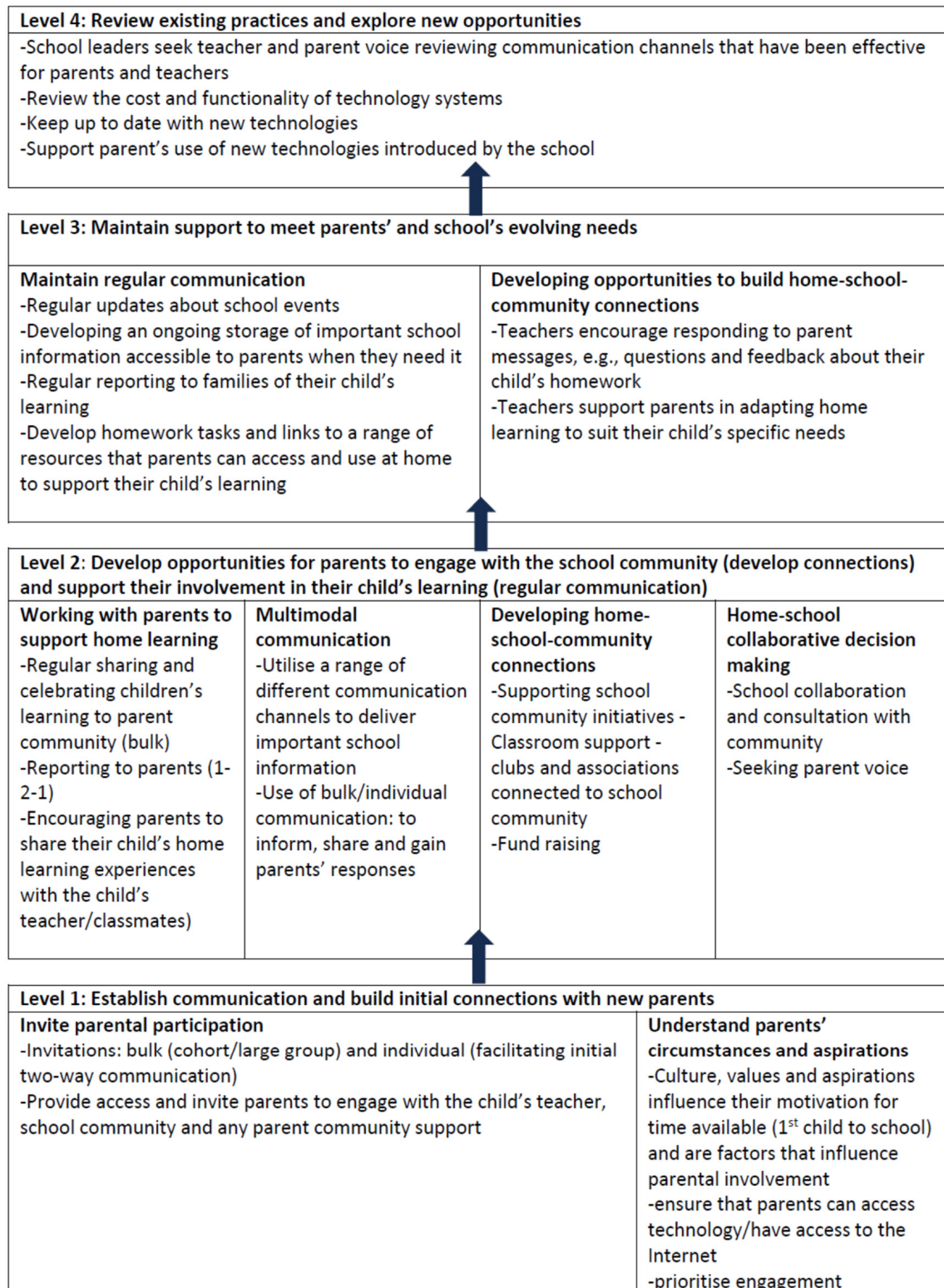


Figure 2. Conceptual framework showing how school leaders can develop parental engagement using digital technologies with new families to their schools.

From a policy perspective, providing guidance to schools on how to understand parents' circumstances and aspirations and how to provide digital technologies to invite parental participation and engagement will be fundamental to initial progress. Beyond this, guidance on how teachers can work with parents to support home learning; the provision of digital technologies to support multimodal communication; what home-school-community connections might be established; and how to develop approaches to collaborative decision-making will all be needed. Digital technologies provided must be capable of maintaining appropriate regular communication, and opportunities that use existing and emerging methods for home-school-community connections need to be made known to teachers and schools. Supporting ways for parent voices to be involved in reviews of existing practices and the exploration of new opportunities should also be shared with teachers and schools.

From a research perspective, there is a need to widen the research context beyond those in this study to understand parents' circumstances and aspirations in other specific contexts and what ways of inviting parental participation are likely to be more effective. Beyond this, greater contextual understandings of how schools might support home learning, which forms of multimodal communication are of likely benefit, and appropriate ways to develop home-school-community connections and collaborative decision-making should all be explored and identified. Research should also explore emerging opportunities and practices that might develop regular communication and the greater building of home-school-community connections. Last but not least, research should explore how the use of digital technologies in developing wider and deeper parental engagement and the participation of parents and carers with nurseries and schools might lead to a longer-term and positive engagement in later years beyond nurseries and the initial transition to school.

This paper offers a structure (shown in Figure 2) through which practitioners, policymakers, and researchers may view the development of parental engagement when children transition to nurseries and schools, which is supported within a digital technology context. As Passey, Woodhouse, Anderson, and Charania [47] previously stated, this and previous papers offer insights "into discussions about the shifting roles of parents, schools and teachers in a digital age. Continued work in this research field has much to offer for the future".

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