Strategies to Virtually Support and Engage Families of Young Children during COVID-19 (and Beyond)

Lessons from Research and Considerations for Your Community

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Introduction

In March 2020, the coronavirus (COVID-19) pandemic deeply affected our professional and personal lives and resulted in major disruptions in services for children and families. These disruptions impact children of all ages but are particularly problematic for children from birth to age 5[a] given that this is a critical time period for children's learning and development. Children's early experiences shape brain development, and strong, healthy relationships with adults are pivotal to children's development and learning. Early care and education settings (e.g., child care centers, Head Start, home-based care) offer a space for children to prepare for school, which includes monitoring and developing their social, emotional, cognitive, and physical skills and abilities.

The National Institute for Early Education Research (NIEER) 2020 Preschool Learning Activities Survey provided information on a national sample of households with preschool-aged children to describe the consequences of the pandemic.[1] Notable shifts included the following: preschool participation fell from 61 percent to 8 percent due to classroom closures or parents' decisions not to have their children attend; as a result of center closures, available supports for children's learning and development were significantly reduced, with only 47 percent of closed programs continuing to provide remote learning opportunities; and while family engagement in home learning activities continued, the amount of at-home learning experiences did not compensate for active learning time lost in preschool centers.[1]

As preschools and schools continue to reopen, caregivers (e.g., child care providers and teachers) are quickly pivoting to using virtual platforms to support and engage families in children's learning. This rapid transition has left little time to assess what we know (and do not know) about family engagement best practices within the virtual space. This brief offers an overview of four best practices and lessons learned from research and practice to assist caregivers and teachers with the transition to engaging families virtually during the COVID-19 pandemic, and beyond.

> "Family engagement is an interactive process through which program staff and families, family members, and their children build positive and goal-oriented relationships."
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> **– Head Start Early Childhood Learning & Knowledge Center's Head Start Parent, Family, and Community Engagement (PFCE) Framework**

[a] Early childhood includes care, education, and services for children from birth through the age of five.

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Virtual early childhood services prior to COVID-19

Some early childhood systems provided virtual services prior to COVID-19. Specifically, virtual early childhood services have been used with families who have specialized needs, live in remote areas, or have less access to early care and health services. In this way, virtual services have expanded access for families to receive services from a variety of specialists, beyond close geographic proximity. In a study of nine states' early childhood systems, virtual services have been used in a variety of ways in early care and education, home visiting, and early intervention.[2] For example, early intervention services use virtual platforms as a main service delivery mechanism. Early intervention services are provided to infants and toddlers with disabilities or developmental delays through Part C of the Individuals with Disabilities Education Improvement Act (IDEA). Virtual service delivery is a great tool to connect children with more providers and allow them to receive services that otherwise are not available in the community. Similarly, home visiting programs, pediatricians, and other health service programs have provided virtual services to both parents and children (e.g., parent training programs, telehealth visits, etc.). These programs serve a wide range of populations, including children with special needs, families at elevated risk of child abuse or neglect, and families living in remote or hard to reach areas. Through virtual service delivery, these programs provide a wide range of services to meet the needs of children and families.

Benefits of virtual service delivery

Based on pre-COVID virtual service delivery research and a handful of recent studies during COVID, we know there are many benefits to virtual service delivery. The two most common benefits include: (1) increased access and (2) improved convenience and flexibility. These benefits are enjoyed by families as well as service providers. For example, families who receive virtual service that would otherwise require an in-person visit save time and money by not driving the distance to receive services. Additionally, providers who usually visit family's homes to provide services (e.g., home visitors), reduce time driving to family homes when offering virtual services and can therefore offer services to more families. Virtual services can also increase access for families who speak a language other than the one spoken by the provider. For example, materials and supports can be easily translated to different languages by recording audio in multiple languages, translating online materials, or using an app to translate texts.

Virtual service delivery also improves convenience and flexibility. Most notably, the biggest convenience to service delivery and support for program retention is improved flexibility in scheduling and fewer cancellations because there are no travel barriers (e.g., no access to a car, a need to stay home with a sick child). Additionally, with the ability to easily record sessions, or provide online materials that are accessible 24 hours a day, families can review or complete activities or lessons at their own convenience. Virtual service delivery also makes it easier to adapt the method of delivery to meet parents' different needs and learning preferences (e.g., making use of tools like screen sharing, allowing parents to view materials at their own pace and as many times as they need, texting instead of emailing).

Other, less commonly cited benefits to virtual service delivery include: reduced provider cost compared to in-person delivery; improved levels of comfort for families since they are receiving services in their own home; improved integrity in the delivery of interventions or programs; more frequent (virtual) supports which encourage participation and retention; and improved outcomes for family and/or children.

Virtual Family Engagement and Support Strategies

In the following sections, we present four overarching strategies that emerged from the literature on engaging and supporting families with young children. These four strategies are listed below.

Strategy 1: Use engaging online lessons to support parent learning and skills

Strategy 2: Use virtual communication technologies to help parents integrate learning into real-life contexts

Strategy 3: Use technology to make sure that helpful information and resources are at parents' fingertips

Strategy 4: Use technology to build relationships and improve a sense of community

In each section, we discuss different ways the virtual engagement strategy was described and used across the literature. We also note the extent to which studies found that these virtual supports were feasible to implement and useful to parents (through measures of satisfaction, helpfulness, ease of use, etc.), as well as the extent to which programs integrating virtual supports yielded positive outcomes for parents and children.

Use engaging online lessons to support parent learning and skills

Engaging online lessons can support parent and child learning. Websites can be used to house self-guided lessons for parents to review at times convenient to them, and allow parents to learn skills, behaviors, or practices to support their child's development. Further, websites can provide digital, learning media (e.g., educational games) for children to use with parent support to make learning at home fun and convenient.

Modular and interactive self-guided lessons for parents

Several studies focused on the provision of online learning and training materials to support families in building new skills and/or engaging in at-home activities with their children. These virtual learning programs included features like self-paced presentations with embedded audio that described concepts, techniques, or behaviors parents could try with their children. To accommodate different learning styles and provide real-life examples, many modules balanced written information with videos to model behaviors, steps, or techniques.[3,4,5,6,7] Incorporating checkpoints for understanding, such as quizzes and opportunities for practice during the lesson or as "homework," were other techniques that helped reinforce and support learning.[8,9,3,4,10,6,7] Some programs also incorporated questions to help parents reflect successes and challenges after trying out techniques with their child.[4,10] While these modular lessons varied in structure as well as content, many were adaptations of programs, trainings, treatments, or models typically delivered in-person and with an established evidence base, suggesting that it is possible to adapt established programs and materials typically provided in person to an online learning format.

While all virtual engagement strategies were implemented in programs that aimed to increase parent knowledge, content varied. For example, programs focused on strategies for positive parenting, parent-

mediated interventions for children with Autism Spectrum Disorder (ASD), and supports for reducing maternal depression. Despite differences in content, overall, studies identified in our literature scan (and prior reviews) found that it was possible to successfully deliver programs using online learning platforms and families were able to access content without issue.[8] Several studies noted that parents were satisfied with these supports, finding online platforms to be easy to use and convenient.[9,3,4,5,10,6,7] Many studies also found that video vignettes and demonstrations of skills were particularly helpful strategies to support learning through online modules.[3,7,10] Even more, studies found that completion of these modular online programs[b] was associated with gains in parent knowledge of intervention techniques[4,6] and parent reported implementation of positive parenting skills at home,[3] providing evidence that these virtual programs can impact parent behaviors.

Digital learning platforms for children to use with parent support

While most studies examined programs for supporting parents' learning, online learning programs can also be geared towards children to use with their parent's support. For example, one successful strategy is to provide families access to an online educational game suite and supplemental information about hands-on activities for parents and children to complete together to build on online learning.[11] Like virtual programs described above that incorporated reflection questions to encourage parents to think about successes and challenges implementing strategies at home, families were also provided an opportunity to meet weekly to connect with other participating families and discuss their progress and experience with the at-home activities. While research is limited, the study provides evidence that online learning programs for children that incorporate parental supports can boost children's knowledge and mathematics skills as well as parents' knowledge of strategies for supporting learning at home.[11]

Use virtual communication technologies to help parents integrate learning into real-life contexts

Using virtual communication technologies like phone or videoconferencing to provide tailored support to families is another common virtual engagement strategy. These technologies can be used to provide one-on-one, remote coaching as an alternative to traditional in-person supports (e.g., clinic-based interventions for children or home visiting). Virtual communication technologies can also be incorporated into online learning programs (like those described above) to support parents' engagement with learning materials and provide additional education and information tailored to their unique and individual situations.

One-one-one coaching in place of in-person visits

Virtual coaching was a strategy frequently described across the literature. Similar to studies that implemented modular and self-paced learning programs for parents, studies of virtual coaching were often adaptations of existing home- or clinic-based programs. Virtual coaching sessions were often used to provide education and information on a variety of topics (e.g., parent-child interactions, parenting, family well-being), teach strategies parents could implement with their child and talk through challenges, develop family goals and discuss ongoing progress, and connect families with resources.[12,13,14,15,16,17] Several studies also used video to conduct observations and provide feedback to families. For example, videoconferencing was often used to provide teleintervention services to children with special needs by observing and coaching parents through interactions with their child.[18,19,20,14,21,22,23] Video clips were also used to share additional feedback with parents about what they were doing well and what could improve from self-recorded video or live virtual observations.[14,7,24,25,26] Together, these studies provide support for the feasibility of using videoconferencing to engage families and provide tailored support. Many studies noted that families were satisfied with the services provided through videoconferencing[12,26,18,20,14,16] and some

[b] Some programs also incorporated the use of online discussion forums described below. The individual contribution of the online forums to program success is unknown.

found that parents thought the virtual programs were the same or better than those delivered in person.[12,20] While focused on children with special needs, positive support for the use of teleintervention was also noted in a prior review of the literature.[27]

Given that practitioners are not physically in the room with parents and children during virtual visits, it is unsurprising that one study noted differences in the time spent on different kinds of interactions during virtual and in-person visits (with more coaching and conversations about intervention strategies occurring in virtual visits and more time spent engaging children in strategies in face-to-face visits).[21] Despite differences in session activities, several studies comparing virtual coaching to traditional in-person delivery reported the same or even better child outcomes through virtual delivery.[18,28,20] Virtual coaching may also provide space for parents to take the lead and force more parent-centered interventions. In fact, parents in one study that compared teleintervention to traditional in-person early intervention services for children who are deaf or hard of hearing found that parents reported that they were more involved and learned how to help their child more through virtual compared to in-person visits.[19]

Check-ins to support online learning

Remote coaching via phone or videoconferencing was used in several studies as a supplement to online learning programs described above, providing opportunities for staff to connect with parents and provide tailored support. Most programs that included a coaching component to support independent learning incorporated regularly scheduled phone or video check-ins with parents to discuss strategies reviewed in modules, answer questions or review areas of difficulty, discuss how to apply strategies in everyday routines, or observe parents' use of learned skills and provide feedback (either through videoconferencing or a self-recorded video upload). Overall, programs that incorporated a coaching component to support online learning[c] were used successfully to reduce maternal depression,[9] support parents in implementing intervention practices to fidelity,[5,10] and impact child outcomes.[77] Studies also noted that parents were satisfied with these virtual check-ins, rating these components of online learning programs highly or as particularly helpful in supporting their understanding of applying learned skills.[10,5,7]

While online learning programs like those described in the prior section are helpful as they allow parents to learn at convenient times and at their own pace, the addition of check-ins and person-to-person connections can support engagement with learning materials and encourage parents to stick through to the end of a program. Studies that compared online learning with a hybrid online learning and coaching approach found that parents who received coaching were more engaged with online learning materials, visiting platforms more frequently and exploring more of the supplementary materials available to them, and more likely to complete the program and use intervention techniques accurately.[4,10] A prior review of the literature[d] similarly concluded that blended intervention approaches that use technology and personal contacts between staff and parents may demonstrate greater engagement and positive outcomes for parents and children.[8]

Use technology to make sure that helpful information and resources are at parents' fingertips

Technology can also be used to send helpful resources, information, or reminders to families, so important information is easy to access or sent without parents' needing to ask. One common way to share helpful information with parents is through regular tips sent via text message. Online resource lists can also be used to compile helpful information in one place for parents to access and explore on their own. Finally, calling, texting, or emailing families to remind them of goals or upcoming meetings, provide suggestions,

[c] Some programs also incorporated the use of online discussion forums described below. The individual contribution of the online forums to program success is unknown.
[d] Several studies reviewed by Hall & Beirman (2015) were captured in our scan of the literature, however, they also included studies published before 2010.

tips, or prompts to try out an activity, or just check in can be used to supplement in-person or virtual interventions keep important information on parents' minds and encourage best practices.

Text blasts to share information with parents quickly and easily

Texting was used as a standalone virtual support across several studies to share helpful information with families and encourage positive behaviors to support children's healthy development. The frequency and content of these texts varied but was often used to promote perinatal and postnatal preparedness and health or encourage parents to extend learning at home. Some of the studies identified in our scan explored the use of regularly scheduled (e.g., weekly or daily) "text blasts"[e] to encourage healthy behaviors during and following pregnancy (e.g., encouraging immunizations, breastfeeding, etc.), [29,30] provide information about important skills their child is developing, suggest parent-child activities, and/or words of encouragement.[31,32] Overall, several studies noted that parents found informational texts to be helpful and a good way to receive information from a trusted source).[30,32,31] Despite being a light-touch support, evaluations of text blasts found that exposure to text messages could impact some parents' beliefs, for example, about their preparedness for motherhood,[29] and even increase parent engagement in activities with their child at home.[32,31]

Resource lists to provide additional information to parents

Several web-based learning programs also included virtual resource pages to share additional information with families. Parents could visit these pages or virtual "resource centers" to find other reading materials and supports related to the program content. These resources varied, but included relevant literature, online resources or toolkits, links to informational websites, information about community events, and/or local services and resources.[10,5,4,33]

Calling, emailing, or texting parents to supplement interventions

Several studies have also explored using text messages, emails, and/or phone calls to provide important reminders, additional information, and tips as a program supplement to encourage participation and improve outcomes. Most often, these quick messages or check-ins were used to supplement in-person positive parenting interventions, like home visiting, or group classes. The content and frequency of these communications varied, but generally programs used the supplemental outreach to ensure parents received regular and convenient reminders of the strategies taught and discussed in person (e.g., suggestions for how parents could incorporate strategies in daily routines, prompts to use a strategy or newly learned skill), opportunities to share about skill use and child behavior, and/or encouragement or suggestions for free or low-cost activities in the community.[34,35,36] Simply reminding participants of scheduled in-person parenting class meetings via text message was a strategy tested in one study; while families receiving text messages still missed scheduled classes, they were more likely to attend make-up classes and complete the full program compared to families who had not received reminders.[37] Studies examining communication supports as an add-on to home visiting found that families who received regular outreach, or more frequent communications, were more engaged compared to families who only received in-person supports, implementing more of the learned intervention strategies.[34,35] The uptake of intervention strategies was also related to more positive child outcomes.[34,35,36]

Sharing important or helpful information through text message has also been used to supplement entirely virtual interventions and encourage engagement and use of available virtual supports. For example, one study that provided families with a tablet containing over 500 children's books to encourage reading at-home found that using text message reminders to work towards their set reading goal more than doubled the time parents spent reading with the digital library. In addition to text message reminders, parents were

[e] A text blast is a text message sent from a single source to a large group of people at once. The message is the same for all who receive it and is typically used to share information quickly and in one direction rather than sparking an exchange.

also able to easily see the progress they made towards their goal in a "virtual goalkeeper" and were recognized with a group text to all participants when they met their reading goal.[38]

Use technology to build relationships and improve a sense of community

While developing strong relationships and a sense of community is often built through face-to-face connections, technology can also be used to support relationship and community building. Online forums and virtual group meetings can be used to support connections between parents and foster a sense of community support. Tailored, two-way communication between providers and parents can also help build relationships between parents and providers and ensure parents have a trusted source to turn to for information and support.

Online forums and virtual group meetings

Online forums and virtual group meetings were engagement strategies used to supplement several online learning and virtual coaching programs identified in our review. Virtual "bulletin boards" or forums were common and enabled participants to share their experiences and participate in discussions, sometimes in response to prompts posted by staff, as they completed training programs.[8,9,4,7] In addition to online learning programs, monthly group videoconferences was also used as a strategy in one-on-one virtual coaching programs to allow opportunities for families to connect and support one another.[12]

Given that online forums and virtual group meetings were often used to supplement other robust virtual supports, little can be said about the helpfulness of these individual features from the studies described above; however, evidence suggests that establishing an online forum (e.g., a Facebook group) as a standalone support might facilitate social support and feelings of efficacy for certain groups of parents .[8] Despite differences in the purpose of the membership groups, online forums across studies helped participants exchange information and connect with others .[39,40] An online support group that convened women with a shared difficult and rare disorder found that in addition to facilitating information sharing and community, members described feeling hopeful and less alone as a result of the online space.[39] A previous review of the literature also found evidence that regular group videoconferences could facilitate feelings of social support.[41] Although the research is limited, a review of online communities highlighted the importance of incorporating shared goals, interactivity, collaboration, and trust in developing a successful online teacher and family communities.[42]

Tailored communication to support parents and build relationships

Bi-directional, ongoing communication between providers and families that focused on answering questions, sharing tailored information, and building relationships was another standalone virtual engagement strategy explored in the literature. For example, mentors paired with mothers who had just given birth were able to answer mothers' specific questions, provide emotional support, encourage activities that support maternal wellbeing and children's developmental health, and share information about community resources that met the family's unique needs all through text message conversations.[43] Email and applications on iPads provided to teachers in one study were used to send pictures and notes to parents and communicate with them directly outside of in-person interactions at typical drop-off and pick-up times.[44] While there were fewer studies that tested the benefits or impact of ongoing telecommunication, one practice-based and several descriptive papers highlighted the prevalence and usefulness of using text message or e-mail to facilitate communication between teachers and families and support relationship building in facilitating strong parent-teacher connections .[45,46,25]

Discussion of Findings

Much of the literature reviewed and the evidence generated by the scan varied in scope, population, and the research methodologies undertaken. In addition, there was a considerable focus on virtual service delivery strategies for families of children with disabilities and other unique needs. As such, we are unable to draw firm conclusions about the benefit of one virtual engagement method over another. These limitations, however, should not preclude use of the identified strategies.

The research- and practice-informed strategies discussed above offer a base understanding of virtual engagement best practices in family support services. While the available literature does not identify a single virtual strategy, or combination of strategies, as most effective, there are a number of strategies teachers (and caregivers) can chose from. In general, our scan of the literature supports that these virtual communication and engagement strategies encourage program participation and retention, as well as increase intervention engagement. There also appears to be some evidence of improved parental knowledge and to a lesser degree improved child outcomes. Additional evidence is needed, however, to learn more about the strategy and intervention that best fits families' needs; as well as how they might be adapted, combined, and monitored to better understand families' progress toward particular outcomes.

For example, research has indicated that providing information and/or services virtually may prove to be less successful for some groups of families, including those for whom English is not their first language, families in rural areas,[47] and parents with less education. Direct service providers may need to consider providing resources in multiple languages or incorporating dual-language technology, such as apps that include children's books in English and Spanish,[38] or ensuring that videos and visuals represent diverse family identities.[48] Other considerations include facilitating access to mobile internet in cases where there are home broadband internet connection challenges,[48] or ensuring that the services or resources provided can be easily accessed/viewed from a small phone screen[49] if access to a computer is limited because of financial challenges.

There are also unique considerations for virtual engagement strategies compared to in-person interactions. Specifically, when practitioners interact with families online, they should discuss privacy risks and limits of confidentiality.[42] Programs may want to consider using a network that allows parents and providers to share information privately, enabling password protection to log into secure websites or videoconferences, and/or developing guidelines about the types of information that are safe to share online. Another important consideration for virtual engagement strategies is comfort using technology. As videoconferencing technologies are used more frequently for personal use in homes across the U.S., there will likely continue to be increased acceptance and willingness to explore integrating technology into service delivery. Still, offering technology trainings, opportunities for shadowing, or guidelines for staff who are less comfortable with technology can help build confidence. Ensuring there are staff who can assist families and practitioners, if and when, technology challenges arise is also important. As learning new technologies can be burdensome and reduce the effectiveness of supports, asking for family input to decide methods of communication and ensure they are intuitive and easy to use is pivotal to sustain engagement over time.

In sum, virtual engagement strategies offer the promise of supporting the family's role in children's learning. The challenge, for programs will be attending to the diversity that exists across families and selecting engagement strategies that positively support families' beliefs and attitudes, considering variations in cultural, social, and economic backgrounds and circumstances.

Considerations for Your Community

The strategies identified above should be considered by programs and direct service providers to support families. Prior to implementation we suggest *practitioners think carefully about their specific program goals and families' needs when selecting virtual engagement strategies and deciding the content and delivery methods.* This includes making decisions about how to tailor, separate, or mix strategies to best support families. The following questions are offered to help practitioners think through ways to design and tailor virtual supports for their communities.

What are the family's (and community's) needs and strengths?

- How can you connect with families to understand their needs and goals for online learning programs?
- What would virtual support look like if centered around the strength and needs of families?
- What supports do care providers/teachers need to fully support families?

How are you considering your mental health needs, and those of families, in delivering virtual services?

- What routines or activities might support you in reducing your own feelings of anxiety? How can you schedule your day to allow for reflection and self-care?
- Parents and families are likely coping with feelings of distress and/or uncertainty during this time. How will you encourage programs to attend to and support parents' emotional wellbeing in addition to that of their child?
- Have you developed an action plan or resource guide for providers to handle discussions with families about mental health and emotional wellbeing?

How are you considering equity when selecting virtual engagement strategies?

- How can you work with families in co-designing engagement strategies and/or co-developing programs and solutions that meet their needs?
- Have you explored (e.g., through discussion with the family) the root causes of gaps between where families are and where they want to be to inform virtual services provided?
- How can you use technology as a tool to address long standing inequities in children's learning and family's ability to receive services? How might you leverage community resources or other partnerships to expand the reach of technology?

How are you integrating cultural sensitivity throughout virtual service interventions?

- How can you incorporate families' cultural values and beliefs in virtual engagement strategies?
- What languages do resources need to be provided in? What translation supports are available, if needed?
- How will you ensure that diverse family identities are represented in program visuals and messages?

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Appendix A. Methods

The research team conducted a broad literature scan to identify peer-reviewed, scholarly literature as well as gray literature (e.g., reports, papers, and training or technical assistance documents) on the use of technology to support family engagement and service delivery to parents with children from birth to age five. For the purposes of the scan, virtual family engagement and services were defined as any programs, interventions, strategies, or practices that involved the use of electronic information and telecommunication technologies (e.g., text, phone, video conferencing, online chat, apps etc.) to provide support (e.g., education, training, resources) to caretakers of young children up to age 5.

To identify literature for inclusion, searches were conducted using combinations of the following sets of terms: (1) *family or parent*, *family service or support worker/manger*, *(2) telework*, *virtual or remote service or support*, *engagement*, *and (3) strategies*, *best practices*, *delivery*, *and home visiting*. The term *early childhood* was also included to facilitate a focus on parents of children from birth to age five. Results were limited to publications between 2010 and 2020. Searches in Google Scholar, Research Connections, and Academic Search Complete yielded a total of 1,914 articles, though many were duplicates across search terms and engines. Given the number of hits identified through each search, particularly through Google Scholar, all results were reviewed until the team encountered 30 irrelevant results in a row.

Titles and abstracts were reviewed for relevance according to the following eligibility criteria: 1) the article was published in the United States between 2010 and 2020, 2) the article focused on supporting parents with children five years of age or younger[f], 3) the article described service delivery to both children and families[g], 4) strategies presented were applicable or adaptable to family service workers, teachers, or others who work to connect families with supports that meet their needs and facilitate healthy development for children, and 5) strategies presented were not overly burdensome or costly to families. After scanning titles and abstracts based on the criteria above and removing duplicates, 55 articles were accessed for inclusion and further examination. The research team reviewed each article and documented the article type (e.g., literature review, practice-based article, descriptive study, experimental study, etc.), the program/service type (e.g., positive parenting, interventions for children with ASD), main research questions, methods of virtual delivery used, evidence of feasibility/satisfaction, and evidence of efficacy/change in outcome measures (see Table 1). Through this review process, a total of 20 studies were excluded as they did not fit the focus of the scan, and an additional 17 articles were identified through references or targeted searches to fill in gaps.[h] In all, 52 articles informed the development of this brief.[i] The literature was summarized based on virtual engagement strategies described in order to provide a comprehensive overview of the strategies that have been used in the past to support families of young children. Given the variety of technological tools used in the reviewed literature—as well as differences in content, populations served, and the research base for individual programs—we did not aim to compare studies in order to provide recommendations about strategies or content that is most effectively delivered through these virtual formats. Similarly, strategies described throughout the brief were used in various combinations across the literature. When presenting outcomes achieved through a particular delivery method, we focused on the primary method of delivery and have noted if other strategies may have contributed to a program's success.

[f] Studies of supports designed for families of older children were excluded, but those that included children within the 0-5 age range were retained.
[g] Studies of interventions directed solely towards children and not parents were excluded.
[h] The inclusion of "early childhood" as a search term may have excluded articles examining supports provided during or immediately following pregnancy, so targeted searches were conducted with the terms "pregnant/pregnancy" and "home visiting."

Table 1. Overview of Literature

Author & Year	Title	Article Type	Program/Service Type
Baggett et al., 2010	Technologies for Expanding the Reach of Evidence-Based Interventions: Preliminary Results for Promoting Social-Emotional Development in Early Childhood	Experimental (with control)	Positive parenting
Behl et al., 2017	A Multisite Study Evaluating the Benefits of Early Intervention via Telepractice	Experimental (with control)	Parent-mediated intervention for children who are deaf/hard of hearing
Bigelow et al., 2020	Quarterly Text messaging as an Enhancement to home visiting: Building Parents' Capacity to Improve Child Language-Learning Environments	Experimental (with control)	Parent/family engagement or extending learning at home
Blaiser et al., 2013	Measuring Costs and Outcomes of Tele-Intervention When Serving Families of Children who are Deaf/Hard-of-Hearing	Experimental (with control)	Parent-mediated intervention for children who are deaf/hard of hearing
Brager et al., 2019	Low-Income Parents' Perceptions of and Engagement with a Digital Behavioral Parent Training Program: A Mixed-Methods Study	Descriptive	Parent/family engagement or extending learning at home
Brown et al., 2014	Health Promotion Text Blasts for Minority Adolescent Mothers	Descriptive	Perinatal/postpartum health
Carta et al., 2013	Randomized Trial of a Cellular Phone-Enhanced Home Visitation Parenting Intervention	Experimental (with control)	Positive parenting
Cason, 2011	Telerehabilitation: An Adjunct Service Delivery Model for Early Intervention Services	Literature review	Telehealth/early interventions (general)
Chi & Demiris, 2015	A Systematic Review of Telehealth Tools and Interventions to Support Family Caregivers	Literature review	Telehealth/early interventions (general)
Cole et al., 2019	Report on the Use of Telehealth in Early Intervention in Colorado: Strengths and Challenges with Telehealth as a Service Delivery Method	Descriptive	Telehealth/early interventions (general)

Author & Year	Title	Article Type	Program/Service Type
Comer et al., 2017	Remotely Delivering Real-Time Parent Training to the Home: An Initial Randomized Trial of Internet-Delivered Parent–Child Interaction Therapy (I-PCIT)	Experimental (with control)	Program for parents of children with a disruptive behavior
Currie-Rubin & Smith, 2014	Understanding the Roles of Families in Virtual Learning	Practice-based/research-informed models or reports	Parent/family engagement or extending learning at home
Curtiss et al., 2015	Bringing Instructional Strategies Home: Reaching Families Online	Practice-based/research-informed models or reports	Parent/family engagement or extending learning at home
Dotson et al., 2017	Development and Evaluation of an iPad Application to Promote Knowledge of Tobacco Use and Cessation by Pregnant Women	Descriptive	Perinatal/postpartum health
Evans et al., 2012	Pilot Evaluation of the Text4Baby Mobile Health Program	Experimental (with control)	Perinatal/postpartum health
Hall, 2018	Parent Consultation and Transitional Care for Military Families of Children with Autism: A Teleconsultation Implementation Project	Practice-based/research-informed models or reports	Parent-mediated intervention for children with ASD
Hall & Bierman, 2015	Technology-assisted Interventions for Parents of Young Children: Emerging Practices, Current Research, and Future Directions	Literature review	Telehealth/early interventions (general)
Hamad et al., 2010	Extending the Reach of Early Intervention Training for Practitioners: A Preliminary Investigation of an Online Curriculum for Teaching Behavioral Intervention Knowledge in Autism to Families and Service Providers	Experimental (no control)	Parent-mediated intervention for children with ASD
Hernandez, 2015	Uses of Technology to Support Early Childhood Practice	Literature review/descriptive	Parent/family engagement or extending learning at home

Author & Year	Title	Article Type	Program/Service Type
Hess et al., 2010	"I Am Not Alone" A Survey of Women with Peripartum Cardiomyopathy and Their Participation in an Online Support Group	Descriptive	Perinatal/postpartum health
Houston, 2011	TeleIntervention: Improving Service Delivery to Young Children with Hearing Loss and Their Families Through Telepractice	Descriptive	Parent-mediated intervention for children who are deaf/hard of hearing
Houston & Stredler-Brown, 2012	A Model for Early Intervention for Children with Hearing Loss Providing through Telepractice	Practice-based/research-informed models or reports	Parent-mediated intervention for children who are deaf/hard of hearing
Hurwitz et al., 2015	Supporting Head Start parents: Impact of a Text Message Intervention on Parent–Child Activity Engagement	Experimental (with control)	Parent/family engagement or extending learning at home
Ingersoll & Berger, 2015	Parent Engagement with a Telehealth-Based Parent-Mediated Intervention Program for Children With Autism Spectrum Disorders: Predictors of Program Use and Parent Outcomes	Experimental (with control)	Parent-mediated intervention for children with ASD
Jabaley et al. 2011	Using iPhones™ to Enhance and Reduce Face-to-face Home Safety Sessions within SafeCare®: An Evidence-based Child Maltreatment Prevention Program	Quasi-experimental (no control)	Positive parenting
Jeffre et al., 2020	Providing Telebehavioral Health to Youth and Families During COVID-19: Lessons from the Field	Practice-based/research-informed models or reports	Telehealth/early interventions (general)
Lefever et al., 2017	Long-Term Impact of a Cell Phone–Enhanced Parenting Intervention	Practice-based/research-informed models or reports	Positive parenting
Marshall et al., 2020	Statewide Implementation of Virtual Perinatal Home Visiting During COVID-19	Descriptive	Perinatal/postpartum health and positive parenting
Martin et al., 2020	Text-Based Mentoring for Postpartum Mothers: A Feasibility Study	Descriptive	Perinatal/postpartum health

Author & Year	Title	Article Type	Program/Service Type
Mayer et al., 2019	Using Behavioral Insights to Increase Parental Engagement: The Parents and Children Together Intervention	Experimental (with control)	Parent/family engagement or extending learning at home
McCarthy et al., 2013	PBS KIDS Mathematics Transmedia Suites in Preschool Homes	Quasi-experimental (with control)	Parent/family engagement or extending learning at home
McCarthy et al., 2019	Telepractice Delivery of Family-Centered Early Intervention for Children Who are Deaf or Hard of Hearing: A Scoping Review	Literature review	Parent-mediated intervention for children who are deaf/hard of hearing
McCormick et al., 2020	Reflective Consultation with Groups via Virtual Technology: What Is Best Practice?	Practice-based/research-informed models or reports	Reflective supervision
Meadan et al., 2013	Coaching Parents of Young Children with Autism in Rural Areas Using Internet-Based Technologies: A Pilot Program	Descriptive	Parent-mediated intervention for children with ASD
Meadan et al., 2016	Internet-Based Parent-Implemented Intervention for Young Children With Autism: A Pilot Study	Quasi-experimental (no control)	Parent-mediated intervention for children with ASD
Medan & Daezewitz, 2014	Internet-Based Intervention Training for Parents of Young Children with Disabilities: A Promising Service-Delivery Model	Literature review	Parent-mediated intervention for children with ASD
Mogil et al., 2015	FOCUS for Early Childhood: A Virtual Home Visiting Program for Military Families with Young Children	Descriptive	Positive parenting
Muñoz et al., 2017	Paediatric Hearing Aid Management: A Demonstration Project for Using Virtual Visits to Enhance Parent Support	Experimental (no control)	Parent-mediated intervention for children who are deaf/hard of hearing
Murray et al., 2015	Using Text Messaging to Improve Attendance and Completion in a Parent Training Program	Experimental (with control)	Positive parenting

Author & Year	Title	Article Type	Program/Service Type
Olsen et al., 2012	An Evaluation of Virtual Home Visits in Early Intervention: Feasibility of "Virtual Intervention"	Descriptive	Parent-mediated intervention for children with ASD
Poorman et al., 2015	Use of Text Messaging for Maternal and Infant Health: A Systematic Review of the Literature	Literature review	Perinatal/postpartum health
Saatijan, 2014	Building Early Childhood Education Communities Using Social Media	Descriptive (graduate thesis)	Parent/family engagement or extending learning at home
Sheeber et al. 2012	Development and Pilot Evaluation of an Internet-Facilitated Cognitive-Behavioral Intervention for Maternal Depression	Experimental (with control)	Maternal depression
Snell et al., 2020	Exploring the Use of Texting to Support Family-School Engagement in Early Childhood Settings: Teacher and Family Perspectives	Descriptive	Parent/family engagement or extending learning at home
Traube et al., 2019	Advancing Home Based Parenting Programs Through the Use of Telehealth Technology	Descriptive	Positive parenting
Vaughan & Beers, 2017	Using an Exploratory Professional Development Initiative to Introduce iPads in the Early Childhood Education Classroom	Descriptive	Parent/family engagement or extending learning at home
Vismara et al., 2013	Preliminary Findings of a Telehealth Approach to Parent Training in Autism	Experimental (no control)	Parent-mediated intervention for children with ASD
Weiner & Ingersoll, 2015	Increasing Access to an ASD Imitation Intervention Via a Telehealth Parent Training Program	Quasi-experimental (no control)	Parent-mediated intervention for children with ASD
Weinstein et al., 2014	Telemedicine, Telehealth, and Mobile Health Applications That Work: Opportunities and Barriers	Literature review	Telehealth/early interventions (general)
York & Loeb, 2014	One Step at a Time: The Effects of an Early Literacy Text Messaging Program for Parents of Preschoolers	Experimental (with control)	Parent/family engagement or extending learning at home

Author & Year	Title	Article Type	Program/Service Type
Zero to Thrive, 2020	Telehealth Service in Infant Mental Health Home Visiting	Practice-based/research-informed models or reports	Reflective supervision
Zhang et al. 2017	Extending Face-to-Face Interactions: Understanding and Developing an Online Teacher and Family Community	Literature review	Parent/family engagement or extending learning at home

Source: Child Trends, 2020

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