

Syncing with Families: Using Technology in Early Childhood Programs

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ABSTRACT

Family engagement in education has been proven to positively support children's learning. For many children, their first school experience is now in an out-of-home child care facility where they begin care between six weeks and six years old prior to attending kindergarten. Families of young children depend on child care programs now more than ever, and the importance of family engagement is even more apparent as children spend long hours in the care of others. Innovations in tools and devices, especially the addition of the smartphone, have allowed teachers to leverage technology to meet the individual needs of each family, bridging the gap between school and home like never before. This study, using Epstein's Framework for Six Types of Parental Involvement examined how early childhood programs use technology to engage families. Based on data from child care directors' survey responses, three trends emerged: 1) programs used technology mostly to communicate with families, 2) programs leveraged real-time technology to communicate with all family members, and 3) programs still find technology challenging. These findings have implications for teacher preparation programs as well as in-service professional development systems related to the use and application of technology to engage families.

Keywords: *Child care programs, Early childhood education, Epstein's framework for six types of parental involvement, Family engagement, Real-time communication, Technology.*

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Highlights of this paper

- Family engagement in education has been proven to positively support children's learning.
- This study, using Epstein's framework for six types of parental involvement examined how early childhood programs use technology to engage families.

1. EARLY CHILDHOOD EDUCATION AND FAMILY ENGAGEMENT

The field of Early Childhood Education (ECE) is essential to helping families and preparing children to succeed in primary school (Clark, 2007). ECE refers to the field of education serving children as young as six weeks old up to, and in some cases, through kindergarten. Many children also attend child care programs before and after school in dedicated centers or community programs. Center-based child care has grown rapidly in recent decades, and the number of children who attend child care has increased substantially (Bloechliger and Bauer, 2016). Young children are spending more hours with their out-of-home caregivers and families are relying more on these professionals for the care and education of their children.

Family engagement in education has been identified as a beneficial factor in young children's development promoting both parent and child outcomes (National Research Council, 2001). Also referred to as family involvement, this term encapsulates the proactive engagement of families in various activities that aim to promote the learning and development of their child (Fantuzzo *et al.*, 2000). While there have been systematic and targeted attempts to improve family involvement through the integration of national (National Association for the Education of Young Children) and state level (using Quality Rating and Improvement Systems) standards, many teachers and administrators are frustrated by the ongoing lack of parent involvement with many children (Olmstead, 2013).

The most recognized framework on the topic is Epstein's framework for six types of parental involvement (Epstein, 2005). This includes parenting, communication, volunteering, learning at home, decision-making, and collaborating with the community. Historically, this framework has been used to describe practices appropriate for engaging families of children in elementary school; however, it also applies to families with even younger children.

2. IMPACT OF FAMILY ENGAGEMENT

Epstein's six types of involvement establish the framework for developing meaningful relationships between families and teachers that have an impact on the child (academic achievement, positive behaviors, and overall success), the teachers and other program staff, and families (improved parent empowerment). Head Start, a model of education that focuses primarily on young children age three to five years, has found that family engagement is a critical strategy in promoting children's long-term learning (Hurwitz *et al.*, 2015). Multiple studies have validated the positive impact that increased levels of family involvement have on children's academic achievement (Miedel and Reynolds, 1999; Desforges and Abouchaar, 2003; Englund *et al.*, 2004; Jeynes, 2005; Galindo and Sheldon, 2011; Froiland *et al.*, 2013; Castro *et al.*, 2015; Cole, 2017), children's socialization, coping skills, and personality development (Cole, 2017; Guclu and Bada, 2017), and positive health, wellness and emotional development (Plantin *et al.*, 2011; Van Voorhis *et al.*, 2013). Additionally, Ansari and Gershoff (2016) examined a sample of 1,020 children attending Head Start programs finding that those programs with policies promoting family involvement predicted greater parent involvement, increased cognitive stimulation, and decrease spanking. These changed behaviors in parenting were linked to improved academic gains and behaviors for their children. These results extend from early childhood into the preschool and primary school years with lasting effects in college and adulthood. Additionally, it has been found that the level of one parent's involvement does not statistically affect the other parent's involvement (Flouri and Buchanan, 2010).

While supporting the growth and development of young children through effective communication with parents has been described as challenging for early childhood and special educators (Reedy and McGrath, 2010), the frequency of parental involvement has been linked to positive impacts for children specifically for those students whose families were more involved during the pre-primary years (Miedel and Reynolds, 1999). Additionally, students supported by family members who have high academic expectations and communicate regularly with teachers and school staff are often the highest achieving (Jeynes, 2005; Galindo and Sheldon, 2011; Castro *et al.*, 2015; Guclu and Bada, 2017). These findings are important because the level of parental involvement during the early grades is an indicator for how involved family members will be in years to come (Englund *et al.*, 2004).

3. TECHNOLOGY AND FAMILY ENGAGEMENT

Research has shown that access to technology is not necessarily the barrier for child care programs that it was once thought to be (National Education Association, 2008a; Blackwell *et al.*, 2014; Burris and Hallam, 2018) and its adoption as part of the school environment is much more likely now than in the past (Bloom, 1997; Donohue, 2003; Baran, 2014). Technology has proven to be a useful tool in providing unique educational experiences, scaffolding learning for children with difficulties, and in exploring innovative ideas for the classroom. Studies have examined how teachers use technology for instruction and teaching young children (Elkind, 1998; Haugland, 1999; Haugland, 2000; Sivin-Kachala and Bialo, 2000; Judson, 2006; Keengwe *et al.*, 2008; Kirkorian *et al.*, 2008; Parette *et al.*, 2009; Rosen and Jaruszewicz, 2009) and how child care programs are integrating it for administrative purposes (Clark, 2007; Parette *et al.*, 2009) such as budgeting, attendance, and payroll. Additionally, through participation in Quality Rating and Improvement Systems and accreditation programs (e.g. the National Association for the Education of Young Children) programs have been motivated to use technology for assessment and documentation of learning, lesson planning, and other curricular activities.

While many of the example practices noted on the Epstein framework (Epstein, 2005) are strategies for face-to-face interaction, technology has advanced how ECE teachers and programs work and communicate in each of the six areas. Parenting traditionally focuses on helping families support their children as learners through parent support groups or sharing of articles, books, and other materials. These supports might include online links, social media groups to facilitate conversations and share resources, and conferencing options that rely on technology. Communication is characterized by common methods of send-home newsletters and hand written journals, which seem to still exist in the teacher toolkit but with the addition of technology-based strategies for more immediate communication (Reedy and McGrath, 2010). A creative example studied by Bacigalupa (2015) showed that the use of annotated photo collages were useful to increase parent's knowledge of child development and understanding of learning through play demonstrating that technology can be a valuable supplement to existing communication strategies (Hurwitz *et al.*, 2015). This is especially true considering how connected our society is with the current, available technologies and most notably the rapid growth of the smartphone.

The third type of engagement is volunteering defined as recruiting and organizing parent help and support often achieved through the use of paper surveys, on-site events, and the use of parent resource rooms. Many programs struggle to find extra space for family resource rooms and have instead developed online communities using social media. Paper surveys have gone online, using free tools like Google Forms or Survey Monkey, which allow directors to archive the responses and create reports from the data. Additionally, tools like email are used to plan on-site and community events, requiring less time face-to-face for busy families who want to be involved. Throughout the school year, it is important to inform families how their child is doing and to bridge the gap between learning environments. The learning at home strategy of Epstein's framework focuses on providing

families with support activities and ensures that teachers share the child's progress with families related to developmental standards (Epstein, 2005). The use of paid applications allow teachers to share photos, videos, and notes with parents throughout the day, record meals, activities, and nap times, prepare lesson plans, take attendance, and view important information about a child's allergies, medical information, and guardians. Teachers have the ability to share an image of a child's artwork or a video of a child taking their first steps at school, all linked to the state learning standards. Families can view their child's portfolio, inform a teacher if their child will be absent due to illness or vacation, and review and download images, videos, and alerts. This information can also be shared via text message if a family wants a more direct line of communication.

Historically, face-to-face meetings of the parent advisory board, board of directors, or parent teacher organization, have characterized decision-making as a family involvement strategy (Epstein, 2005). Schools and programs also provide families with a handbook outlining all of the program's policies and procedures. By integrating technology, social media, smartphones, and other technologies, many of these meetings now occur online using conferencing tools (e.g. Zoom, Skype, FaceTime). This allows busy families to participate in decision-making without compromising time spent with their children after work. It also allows families who may not be able to participate in face-to-face meetings to remain involved. Additionally, parent handbooks and program policy handbooks are now available online, often linked to a program or school website, making it easier for parents to access them and stay informed.

The last strategy described in Epstein's framework is collaborating with the community. Such collaboration involves integrating resources and services from the community to ensure strong relationships with local schools, systems of higher education, and agencies providing services to children and their families (Epstein, 2005). While much of this work still requires face-to-face communication, ECE programs have begun to provide links to these services with resources to support families in transitioning into or out of their care.

4. ADOPTING TECHNOLOGY

Among the early adopters and users of smartphones are college graduates who are seeking teaching positions in ECE programs. As college students graduate from their teacher preparation programs, they tend to be more skilled and comfortable than previous generations in using technology to engage families. Many families are now equipped with their own devices to benefit from this heightened level of engagement. However, the topic of establishing mechanisms for meaningful parent-family communication is often ignored during the preparation of future teachers (Merkley *et al.*, 2006).

Teachers have reported that they have received minimal technological assistance in their teacher preparation program with regard to effective implementation of mobile learning (Cushing, 2011; Foulger *et al.*, 2013; Baran, 2014). While situational complexity and pedagogical difficulties remain (Dawson and Dana, 2007). Luo *et al.* (2017) found that more exposure to technology during teacher preparation programs creates improved knowledge in its use and increased interest in adopting technology.

Practicing teachers with access are using technology in a variety of ways to connect with families through social media (N.A, 2013; Rudi *et al.*, 2014; Yost and Fan, 2014), text messaging (Ho *et al.*, 2013; Hurwitz *et al.*, 2015; Lazaros, 2016) email (Bacigalupa, 2015), and educational applications. While these efforts are ongoing and continue to evolve, there is a need to better understand how these technologies are being implemented for the purpose of family involvement and whether they are effectively targeting these areas (Reedy and McGrath, 2010). Teachers remain concerned that they don't feel adequately prepared to apply technology in their lessons and they are not receiving the technical support necessary to adequately impact student learning (NEA, 2008b).

To further investigate ECE programs' use of technology for family engagement, this study examined the following research question: In what ways are programs leveraging technology to target family engagement and how effective is it?

5. METHODS

This study employed a survey approach to examine family engagement strategies used, technology integration, and the successes and challenges regarding engagement. With a small sample size such as that used in this study, the survey offered a means of investigating interactions with the goal of illuminating meaning among the group (Flyvbjerg, 2006). Ten preschool programs were invited to participate with eight submitting completed surveys during the collection period. The programs varied in size, location, and type. One of the programs was considered "small" by child care licensing standards, serving less than 60 children and it was the only center with a religiously-based curriculum. The remaining seven programs were a mix of large programs, serving between 100-150 children, for-profit and non-profit private programs, and one public program operating out of an elementary school. Overall, the programs in this study represent a total size of approximately 950 children and their families living in the mid-Atlantic region of the United States.

Table-1. Sample characteristics.

	Approximate size(# of children enrolled)	Location	Type
Program A	50	Urban	For-profit private/religious
Program B	100	Urban	For-profit private
Program C	100	Rural	For-profit public
Program D	100	Urban	Non-profit private
Program E	150	Urban	For-profit private
Program F	150	Urban	For-profit private
Program G	150	Urban	For-profit private
Program H	150	Urban	For-profit private

Following IRB approvals, a link was emailed to each of the program directors requesting that they participate in the study and complete an electronic survey [Appendix 1](#). The survey was organized into seven sections: Demographics, Parenting, Communication, Volunteering, Learning at home, Decision-making, and Collaborating with the community. Section one, focused on demographics including the program's type, size, and services (ages, financial assistance, children with disabilities) using a multiple-choice format. The remaining six sections focused on one of Epstein's six types of family involvement including how technology was used to support each. Following a two-week data collection period, the survey responses were downloaded into a spreadsheet for descriptive frequency analysis.

6. RESULTS

Programs reported that they use a variety of strategies to target each type of family engagement although overall use of technology was inconsistent [Table 2](#). While the findings weren't linked to a program size, type, or location, all of the programs reported that they are currently using technology in some way. The least reported use of technology was for decision-making (n=3, 38%), which tends to be a practice exercised face-to-face, and the most reported use was communication (n=6, 75%). The fact that the use of technology for communication with families was highest is not surprising given the increase in mobile-device use over the last decade.

Table-2. Technology use survey results.

Type of Involvement	Technology use		
	Yes	No	Examples
Parenting	4 (50%)	4	Email, sharing links, website
Communicating	6 (75%)	2	Text, email, surveys, tadpoles
Volunteering	5 (63%)	3	Email, facebook, surveys, online forms
Learning at home	4 (50%)	4	Links, email, website, online newsletter
Decision making	3 (38%)	3	Email, surveys
Collaborating with community	4 (50%)	4	Email, website

Source: Epstein (2005).

The most effective technology-based strategy reported was “real time” or in-the-moment technology, utilized most regularly by the programs to share pictures, updates, and notes with families during the day while their child was attending child care. The rationale for this form of technology use was to provide information to multiple family members in an efficient manner at the time it occurred. Ho *et al.* (2013) found similar success with text messaging with reduction of missed phone calls and overlooked alerts between families and teachers. These messages likely help parents feel more connected to their child while they are at work and reinforce that their child is thriving in the child care environment (Thompson *et al.*, 2015). It also builds a relationship between the family and the school (Rogers and Wright, 2008). Additionally, if the child’s family is separated or one family member is away, it eliminates the gap in information, avoiding possible confusion. While the programs referred to these examples as “real time” communication, they are all asynchronous tools that do not require both teachers and parents to be logged in or actively using an application at the same time. Examples included text messaging (reminders, pictures, links), online platforms (portfolio and assessment), email (to gather suggestions, share resources, send home paperwork, communicate with potential families who inquire about enrollment), social media posts (highlighting classroom activities), and online survey tools like Survey Monkey and SignUpGenius (program feedback). Additionally, two programs reported use of a classroom website to inform families about upcoming events and highlight classroom learning activities.

Large, for-profit private schools serving infants, toddlers, and preschoolers reported the least use of technology for family engagement practices, and there was a general consensus among all programs that integrating technology for family engagement is challenging. Two programs reported no use of technology for family engagement, and a third program reported that technology is used only for communication. One reason for this finding may be linked to high turnover rates among child care programs, which hover around 15%, and the difficulty of retaining newly trained staff (Institute of Medicine National Research Council, 2015). Additionally, teachers often have no paid planning time and receive low wages, on average \$10–15 per hour (Whitebook *et al.*, 2014). It is also possible that these programs do not have additional funding to purchase technology for staff use, and therefore teachers are relying on “old school” methods that do not require the use of computers, Internet, or mobile devices.

7. DISCUSSION

The data from this study were grouped into three findings. The first finding was that programs are using technology to encourage family involvement and the primary use was for communication. Communication is the cornerstone of building relationships between schools and families, and 75% of the programs reported that they use technology for this purpose. Technology, used for communication, may be preferred in this area because it can be a less time consuming method of sharing information, and it also provides documentation over time. Consistent with this finding, Ho *et al.* (2013) found that teachers’ perceptions of the ease and usefulness of mobile technology

influence their use in the school environment while parents indicated a preference for email due to its convenience (Thompson and Mazer, 2009). All of the directors reported that their programs use email, websites, and electronic newsletters to share information with families. While programs reported using technology for communication, half of the programs surveyed are still developing this practice, especially in the form of individualized communication and maintaining contact with families.

The second finding was that programs are using real-time or in-the-moment technology (75% in this study) in addition to more dated tools like email and electronic newsletters because it is more individualized and client-friendly. Previously, parents have preferred email due to its convenience but now report that they want the components of face-to-face communication (Thompson *et al.*, 2015). Computer mediated communication (CMC) has been used in various educational settings and offers the opportunity of active participation for parents. It has changed the nature of parent-teacher communication and offers multiple cues (video, audio, text), is immediate, and personalized (Thompson *et al.*, 2015). Examples included texting and platform applications like Tadpoles, Brightwheel, or Kinderlime, that allow teachers to post pictures, updates, and notes. CMC also includes email, which some families prefer because they can reply at their own pace. The directors in this study reported that they were also able to share information with all family members even in cases where children did not live with both parents or if a parent traveled for work and did not visit the program on a regular basis. These small efforts have large impacts on boosting family engagement, and parents appreciate real-time communication because it is instantaneous and more individualized (Olmstead, 2013).

A third trend from this study emerged showing that ECE programs still find technology challenging to use and perhaps due to these difficulties, families and teachers are not taking full advantage of these new technologies to bridge the gap between school and home (Rogers and Wright, 2008). While there are obvious benefits to a more digitized environment for both for teachers and families, technology can be intimidating and program directors must consider the larger picture of training staff, the cost of adopting technology, and sustainability (security and longevity of the devices). Additionally, in some programs, teachers are not permitted to use their personal devices, which limits their ability to leverage technology unless the program has provided a device. They must also consider the issue of access and recognize that not all families have reliable access to the Internet and web-based services. This is further complicated by the high turnover many ECE programs experience, making it difficult to invest in staff that may leave in a short period of time (Cassidy *et al.*, 2011). The lack of awareness of new technologies may also contribute to this perspective.

These findings identify interesting trends in the use of technology for family engagement but also indicate that there is more research to be done. Future research should further investigate the special uses of technology to improve family engagement within specific populations such as low-income families to adequately examine the issue of access. Additionally, a clearer understanding of how the relationships between families and ECE teachers are impacted by the ability to more immediately connect, be “friends” on social media, and communicate more quickly will be helpful in addressing future technology training and developing existing content in teacher preparation programs. More information is also needed to understand what types of technology are available for ECE programs and how professional development systems are meeting the needs of ECE professionals that want to integrate technology in their programs. Finally, the field would benefit from a greater understanding of teacher and family perspectives to develop the most effective recommendations for improving family engagement in early childhood programs as this study used only director responses.

8. CONCLUSION

Even though there are still challenges to be addressed, there is no denying the positive impacts, both direct and indirect, that technology has had in ECE programs related to family engagement. Each of the six elements of Epstein's framework is influenced by these advancements, with communication being the most commonly effected. Further, more sophisticated technologies that offer immediate and in-the-moment interactions have been reported as meeting the individual needs of families. With intentional coordination between education preparation programs and ECE professional development systems, both pre-service and in-service teachers will become more confident and effective users that incorporate technology in their classrooms to successfully meet the needs of their families.

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Appendix-1. Survey.

Family Engagement - Director

Q1.1 Thank you for your interest in participating in this study. Please review the informed consent information below and click "next" to continue to the survey. The survey should take about 15 minutes.

Q1.2 Demographics: Please complete the following demographic information about your program. What type of program do you operate? Check all that apply.

- ☐ Public (1)
- ☐ Private (2)
- ☐ Multi-site (more than one location) (3)
- ☐ Single-site (4)
- ☐ Child care center (6)
- ☐ Family child care home (8)
- ☐ Head Start (9)
- ☐ ECAP (10)

Q1.3 How many children does your program currently serve?

- ☐ Less than 50 (1)
- ☐ 50-100 (2)
- ☐ More than 100 (3)

Q1.4 What ages of children do you serve? Select all that apply.

- ☐ Infants (6 weeks - 12 months) (1)
- ☐ Toddlers (13 - 35 months) (2)
- ☐ Preschoolers (3-6 years) (3)

Q1.5 Do you serve families receiving financial assistance for child care?

- ☐ Yes (1)
- ☐ No (2)
- ☐ Not Sure (3)

Q1.6 Do you serve children with special needs (who currently have an IFSP or IEP for a diagnosed disability)?

- ☐ Yes (1)
☐ No (2)
☐ Not Sure (3)

Q2.1 Do you currently use technology to support the 6 components of family engagement?

	Yes (1)	No (2)
Parenting (helping all families establish home environments to support their children as students) (1).	☐	☐
Communicating (effective forms of school-to-home and home-to-school communications about your program and the children's progress) (2).	☐	☐
Volunteering (recruiting and organizing parent help and support) (3).	☐	☐
Learning at home (how you provide information and ideas to families about how to help children at home with curriculum related activities and learning) (4).	☐	☐
Decision making (how you include families in program decisions and developing parent leaders) (5).	☐	☐
Collaborating with the community (identifying and integrating resources and services from the community to strengthen your program, family practices, and children's learning and development) (6).	☐	☐

Q8.2 If you answered yes to any in the previous question, please share how technology is used in your program to support family engagement in areas you identified. Please include the type of technology you use (text, websites, portals, social tools, translation services, online trainings, links, image sharing, etc.) and any innovative practices that have worked well for your program and families you serve.

Q9.1 Thank you for taking this survey and sharing your experiences related to family engagement strategies. Please add any additional comments below and submit your responses.

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