Supporting Parent-Child Experiences with *PEG+CAT* Early Math Concepts:

Report to the CPB-PBS *Ready To Learn Initiative*

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Introduction

Deep inequalities in the learning trajectories of students have led to a growing interest in interventions meant for young children who are at higher risk for academic difficulties. Children living in communities where there are high concentrations of poverty, for example, often do not have access to the financial and social resources that promote school readiness but have just as much capacity to develop a broad range of skills as their better-resourced peers. In addressing persistent gaps in achievement, some federal programs have focused on children's formal educational experiences calling for greater investments in preschool while others have turned their attention to educational supports outside of school and early childcare settings.

For more than two decades, the U.S. Department of Education's *Ready To Learn Initiative* has devoted public resources to help improve conditions inside the place where children spend much of their time growing and learning: their homes. Families, including families with young children, spend considerable time engaging with digital media and technology tools at home (Rideout, 2014; Rideout, Vandewater, & Wartella, 2003), and children with less-educated parents tend to spend more time with TV and other screens than do children with more affluent, educated parents (Putnam, 2015). Although much of this engagement is with commercial entertainment, young children spend more time viewing and playing with educational and non-commercial programming than do other groups (Rideout, 2013), creating the potential to use their engagement with media to support learning. And, because media experiences are often social—young children and other family members watch and play alongside one another—there is even greater potential to create learning experiences that involve children and their parents. When parents are able to engage with well-designed transmedia resources, and when they have access to information about how they can use these resources to support children's understanding and engagement, the stage is set for early learning to take place. This is consistent with a growing body of research on the need for a two-generation strategy when trying to combat poverty and educational challenges that stem from economic stress (DeNevas & Proctor, 2015).

The study presented here addresses the question of how time spent viewing and playing with PBS KIDS educational, non-commercial media can benefit young children's learning, especially those growing up in lower-income communities, who typically have limited exposure to experiences that are oriented toward school-readiness. The pair of overarching goals of this CPB-PBS *Ready To Learn* research is to 1) explore how transmedia can support children's early mathematics learning, and 2) substantively address the central role that parents/caregivers play in children's learning lives. This report includes information about shifts in parent/caregiver perceptions of transmedia use, as well as how families engage with their children during transmedia viewing and play.

Using a randomized controlled trial design that gathered data on outcomes and implementation, researchers examined children's and families' home use of *PEG+CAT* a PBS KIDS transmedia program implemented over a 12-week period. Like previous generations of public media preschool programming, *PEG+CAT* resources are designed to give young children early experiences that support later success with academic tasks. As Peg and Cat, along with their friends and adversaries, "find a way to solve the math and save the day" in their animated fictional universe, their adventures introduce children to key mathematical skills and provide positive models of social and emotional behaviors, such as problem solving and persistence. Because *PEG+CAT* was designed as a first-generation transmedia property—the characters and storylines extend across multiple media platforms—study materials included *PEG+CAT* full episodes and video clips, online games, a tablet-based app, and print activities that allow children and families to engage with the same characters, settings, and narratives on multiple devices and with fewer time and location constraints.

The resources are intended to be fun, and purposefully focus on developmentally appropriate learning goals for young children. The study involved approximately 200 children and their families living in lower-income communities in the New York Metro and San Francisco Bay Area. Half of these children and families engaged with a curated set of *PEG+CAT* materials at home; the other half, in addition to serving as the business-as-usual comparison condition, also helped the research team gain insight into families' practices around media, including how children and parent/caregivers jointly used media. This report provides new evidence about how an informal experience with a transmedia property can influence children's mathematics learning, and parents' behaviors and attitudes.

This research is part of the summative evaluation of the CPB-PBS *Ready To Learn Initiative*, which is supported by the U.S. Department of Education and seeks to develop engaging, high-quality educational programming and supports for two- to eight-year-old children living in low-income households. During the 2010-2015 grant cycle, *Ready To Learn* aimed to deliver early mathematics resources on both established technologies (computers, video displays, and gaming consoles) and emerging digital platforms (tablet computers, interactive whiteboards, and smartphones) to create anytime-anywhere learning experiences that leverage the unique capabilities of transmedia for young children's learning. As the summative evaluation team for Ready To Learn, Education Development Center (EDC) and SRI Education (SRI) document and, whenever possible, measure the impact of PBS KIDS transmedia mathematics resources on children's school readiness.

Prior *Ready To Learn* evaluation research findings, including context studies and impact studies, focused on the role of transmedia in early learning classrooms, more directly with children in a learning lab study environment, and the home can be found at pbskids.org/lab/research.

PEG+CAT The Play Date Problem episode

The study resources are intended to be fun, and purposefully focus on developmentally appropriate learning goals for young children.
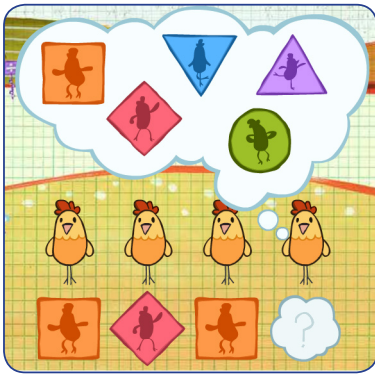
Research Design

The goal of this study was to understand the conditions within which public media resources deliver on their promise of fostering positive outcomes for children and parents/caregivers. As a result, the study design sought to identify and describe (1) how use of *PEG+CAT* resources influenced children's knowledge of target mathematics and social emotional skills;[1] (2) how use of these resources influenced parent/caregiver attitudes and beliefs; and (3) how children and families engaged with selected *PEG+CAT* resources in their homes.

Research Questions

The research team investigated the following research questions related to families' engagement with media and outcomes for parents/caregivers and children.

Child Learning Outcomes

- Did children who engaged with *PEG+CAT* resources at home improve in target mathematics skills, as measured by a researcher-designed assessment, compared to children in a comparison condition?

- Did children who engaged with *PEG+CAT* resources at home improve in target approaches to learning (ATL) skills, as measured by teacher and/or parent observation, compared to children in a comparison condition?

Parent/Caregiver Outcomes

- What role did parents/caregivers play in supporting children's engagement with *PEG+CAT* media and, by extension, their learning of target mathematics and ATL skills?

- In contrast to a comparison group, did parents or caregivers using the *PEG+CAT* resources change their attitudes, beliefs, or knowledge about (1) educational media- and technology-supported learning, (2) early mathematics, (3) children's approaches to learning, and (4) their role in supporting children's math learning?

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[1] *Also known as Approaches to Learning (ATL), social-emotional skills include skills such as problem solving, persistence, and cognitive flexibility.*

Study Conditions

The study employed a two-condition design in which participating families were randomly assigned either to (1) a PBS KIDS treatment group or (2) a non-treated business as usual comparison group. Families who were assigned to the PBS KIDS group were provided with technology resources (an Android tablet and a Chromebook laptop, a curated *PEG+CAT* experience, and supports for joint engagement. The curated *PEG+CAT* experience and the supports for joint engagement are described in the PBS KIDS *PEG+CAT* Intervention section, below. Participants in the business as usual group were asked to continue with their typical home behaviors with regard to children's technology and media use.

The two-group design offers a number of important benefits. First, it provides the strongest possible contrast between groups, so as to detect differences in adult and child outcomes between the two groups. Second, the inclusion of a business as usual comparison group allows researchers to make stronger claims about implementation and about parent and child outcomes. Finally, including a non-treated business as usual comparison group provides a unique opportunity to describe how contemporary families are engaging with media and technology. This closer examination is a powerful complement and extension of recent survey-based research conducted by Common Sense Media and the Joan Ganz Cooney Center (e.g., Rideout, 2014).

Study Sample

Researchers worked with local preschools to recruit eligible families to participate in the study. Recruitment teams on both coasts collected signed consent forms from families interested in participating. In total, researchers received 362 consent forms. Of this group, 301 children met study age requirements. Between the collection of consent forms and randomization, families of 17 children opted out, indicating they were too busy to participate in study meetings and other activities. Researchers randomly assigned the remaining 284 children to either the PBS KIDS (treatment) condition or the business as usual (comparison) condition.

The final study sample included 197 children from families who enrolled in the study by attending study kick-off meetings. These children attended 14 preschool centers (10 in the New York metropolitan area and 4 in the San Francisco Bay area) serving low-income communities. Table 1 provides information on children's ages.

Five families stopped participating during the course of the study (3 CA, 2 NY; 4 business as usual, 1 PBS KIDS). Two families withdrew in the first weeks of the study because they were not able to complete required study tasks such as completing media diaries; two families moved during the study; and one family dropped out because of parent health issues. There was no discernable pattern in attrition.

Table 1. Total Sample of Children and Descriptive Statistics for Age by Condition

Condition	N	Mean Age	SD	Minimum	Maximum
Overall	197	4 y 5 mo.	0.28	4 y 0 mo.	5 y 2 mo.
PBS KIDS	101	4 y 6 mo.	0.28	4 y 0 mo.	5 y 1 mo.
Business as usual	96	4 y 4 mo.	0.28	4 y 0 mo.	5 y 2 mo.

Study families were predominantly Latino, Asian American, and African American. The majority (53%) of families in the sample reported speaking more than one language at home (English/Spanish or English/Mandarin Chinese). The remaining 47% of families in the sample were monolingual, with home language of English (21%), Mandarin Chinese (10%), Spanish (12%), or Other (Vietnamese or French, 4%).

In terms of parental education, 33% of mothers had not graduated high school, while approximately 29% had earned a high school diploma or GED; 37% of fathers were not high-school graduates, while 28% had earned a high school diploma or GED. The total household income (in 2013) was consistent with the low-income sample sought: more than half (52%) of families reported an annual household income of less than $25,000, while a little over a third (36%) of families reported an annual household income of $25,000–$49,000. Four percent of the children in the sample had an Individualized Education Plan (IEP). Table A2. Sample Demographics and Descriptive Statistics by Condition provides additional detail about study demographics by condition.

Media and Technology Use in Participating Families

To describe the home media ecology of the sample, researchers relied on data gathered from a parent survey administered at the beginning of the study. In addition to gathering information about the technology in homes, the survey also collected information about how these devices typically were used by families.

Given a list of 13 devices and services, families reported owning or using an average of five to six items. Figure 1 shows the percentage of families that reported owning or using particular devices in their homes.
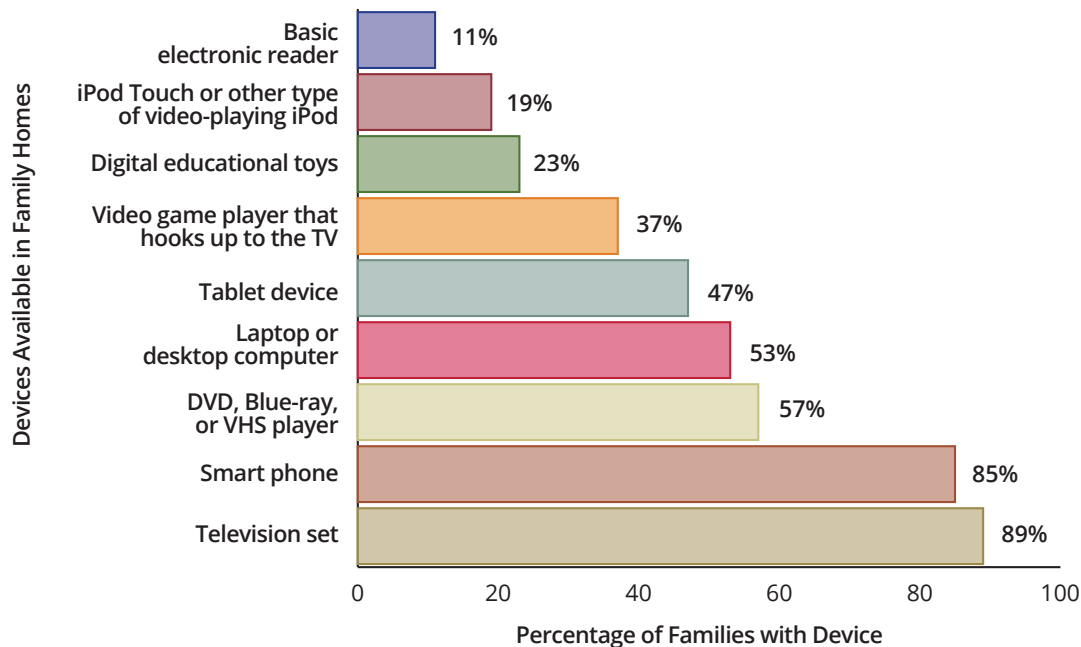
Figure 1. Media Devices Available in the Homes of Participating Families (*n*=197)

Television was the most dominant technology platform among participating families, but families engaged in a variety of media experiences. Eighty-nine percent of study families reported they had at least one TV set in the home; a similar number also reported having a smart phone (85%). Other popular technology devices available to families included home desktop or laptop computers, electronic tablets, and DVD, Blu-Ray, or VHS players. PBS KIDS families reported owning slightly more types of devices than did business as usual families (a statistically significant average of 5.77 devices, compared to 5.05 devices, *p*<.05). Approximately three-fourths of the sample reported subscribing to cable or satellite TV, while about a third of the sample reported using a paid video subscription such as Hulu, Netflix, or Amazon Prime.

At the start of the intervention, nearly half of all parents (40%) reported that their children watch TV, DVDs, online videos, or other types of videos every day at home, with 85% reporting that their child did so at least once per week. Close to half of the children (46%) read or looked at electronic books at home at least once per week. About one-third of the children played games on a video game player, computer, or mobile device (35%) and/or used apps or software programs (31%) one to two times per week. Often, children multi-tasked while engaging with media: at least once per week, 85% of all children used technology while doing another activity, such as playing with toys, riding in a car/bus/train, or eating a meal.

The majority of families (81%) reported having home Internet access, although high-speed broadband access was available to fewer than half. Forty-four percent of families reported high-speed broadband access, while the remaining families (37%) reported access only through a cell phone, dial-up, or were unsure of the type. Notably, more than half of the families in New York (55%) reported broadband access, but a much smaller proportion of families in California (35%) reported such access.

Parents reported that about a third of the children in the sample (34%) used technology for one hour or less per day, while a similar proportion (35%) used technology for one to two hours per day. Much smaller proportions of children used technology for two to three hours per day or for three or more hours per day. Figure 2 shows the amount of time children in participating families spent (per day) using media and technology.
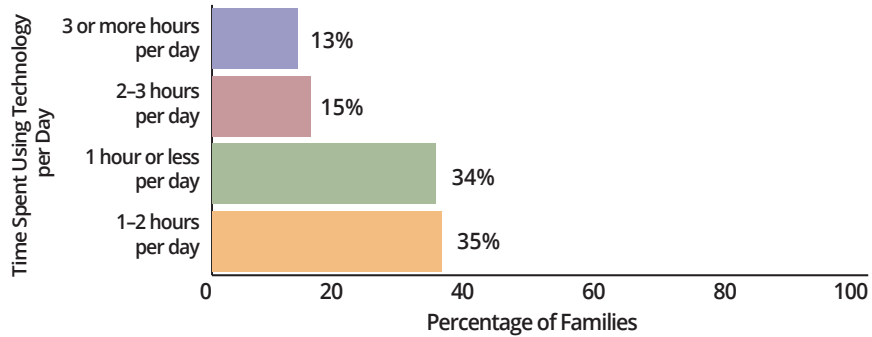
Figure 2. Children's Time Spent Using Technology per Day (*n* =197)

Attitudes Toward Mathematics Learning and Technology Among Participating Families

Prior to participating in the study, parents tended to agree or strongly agree that young children can learn math, that math learning can happen everywhere, and that parents can support math learning. The vast majority of parents also tended to agree or strongly agree that technology should be part of children's learning and that technology is a useful tool for teaching math skills to young children. Figure 3 shows the proportion of parent/caregivers who agreed or strongly agreed with different aspects of math learning and technology use for math learning.
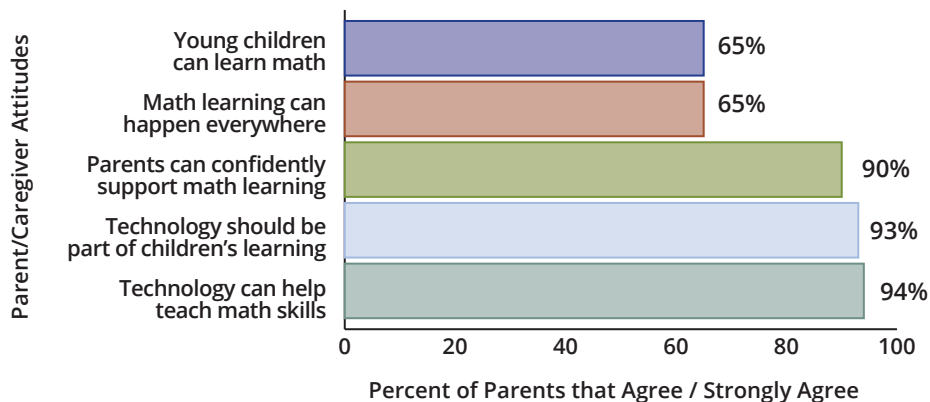
Figure 3. Parents'/Caregivers' Attitudes About Mathematics and Technology (*n*=197)

Most parents reported supporting math learning at home, especially for well understood mathematics skills like counting, recognizing or drawing shapes, and number identification. Fewer parents reported supporting less common skills at home, like recognizing/making patterns and addition.
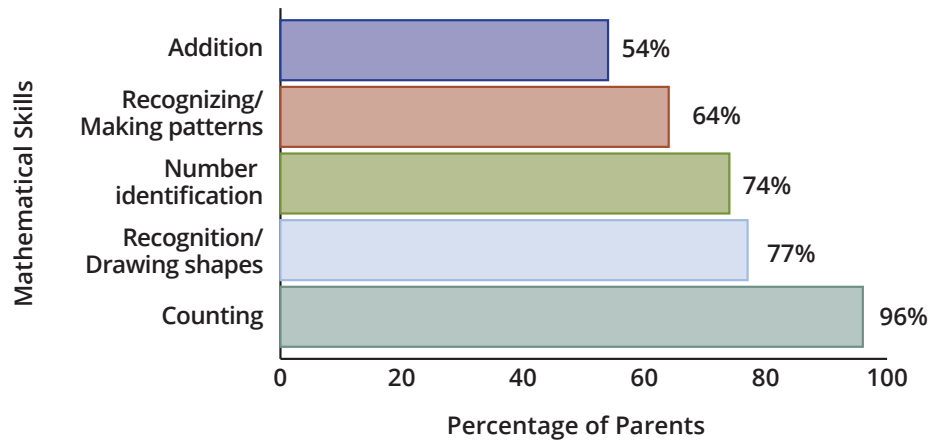
Figure 4. Mathematics Skills Supported by Parents at Home (*n* =197)

Parents in the study sample overwhelmingly believed that technology can and should be part of children's learning (90%). The majority of parents reported that technology can help young children learn skills they will need in the future, provide children with information they may not get at home or school, and encourage children's creativity. Additionally, most parents viewed technology as a helpful tool for teaching mathematics and reading skills to young children.
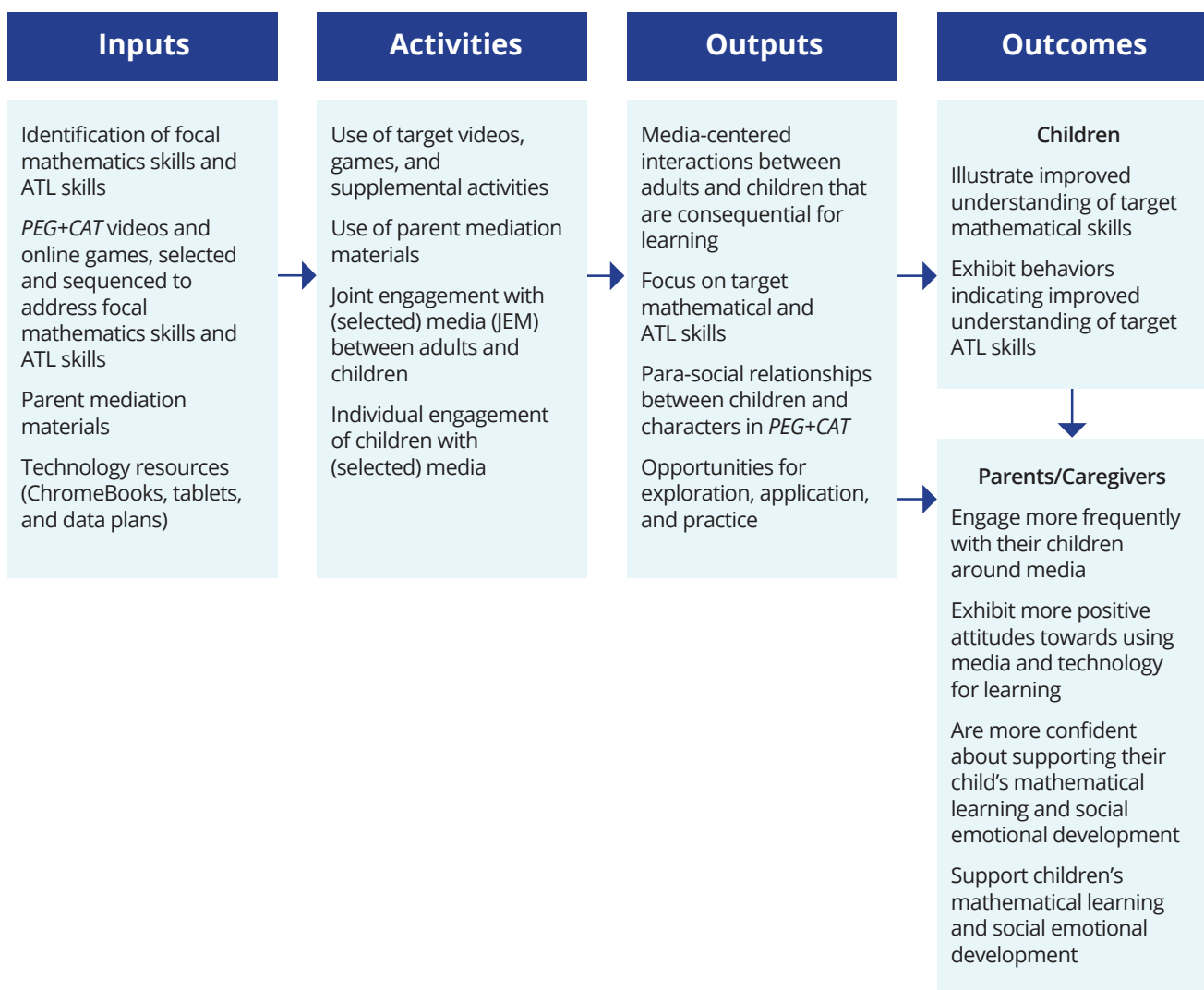
The majority of parents reported they limit the content their children access (57%), set limits on technology use based on their children's behavior (58%), and set limits by observing their child's use of technology (53%). Parents were divided on the issue of how much time children should spend using technology: More than half (54%) of parents felt that children, in general, spend too much time using technology, while 40% of parents did not consider this an issue. Close to one-third of parents surveyed (28%) considered technology to be a distraction from learning.
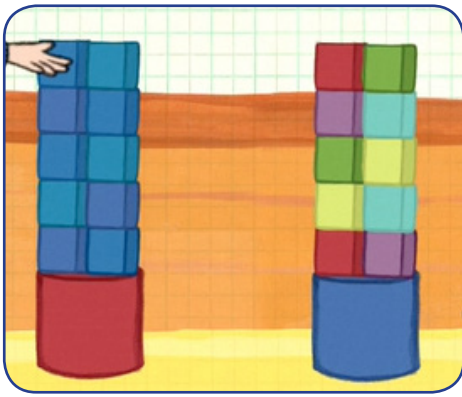
Theory of Change and Existing Research Base

This study, and the PBS KIDS *PEG+CAT* intervention that it examined, is grounded in the learning sciences literature on mathematics and approaches to learning (ATL), educational media and technology, and the affordances of engagement and joint engagement with media for supporting children's learning in various domains. Based on existing research, the study team developed a theory of action to inform the design of the intervention and data collection measures.

Inputs	Activities	Outputs	Outcomes
Identification of focal mathematics skills and ATL skills

PEG+CAT videos and online games, selected and sequenced to address focal mathematics skills and ATL skills

Parent mediation materials

Technology resources (ChromeBooks, tablets, and data plans) | Use of target videos, games, and supplemental activities

Use of parent mediation materials

Joint engagement with (selected) media (JEM) between adults and children

Individual engagement of children with (selected) media | Media-centered interactions between adults and children that are consequential for learning

Focus on target mathematical and ATL skills

Para-social relationships between children and characters in *PEG+CAT*

Opportunities for exploration, application, and practice | **Children**

Illustrate improved understanding of target mathematical skills

Exhibit behaviors indicating improved understanding of target ATL skills

Parents/Caregivers

Engage more frequently with their children around media

Exhibit more positive attitudes towards using media and technology for learning

Are more confident about supporting their child's mathematical learning and social emotional development

Support children's mathematical learning and social emotional development |

Mathematics and Approaches to Learning (ATL)

All children are able to learn foundational early math skills, and preschool interventions have been shown to positively influence early mathematics learning (Ginsburg, Lee, & Boyd, 2008). While there is growing consensus about the importance of early mathematics learning and how early mathematics learning predicts long-term outcomes, especially for children growing up in low-income communities (e.g., Duncan et al., 2007; National Association for the Education of Young Children, 2012; National Mathematics Advisory Panel, 2008), children who are the focus of the *Ready To Learn Initiative* often do not have the same opportunities to develop foundational mathematics skills compared to their more affluent peers (Lee & Burkham, 2002; National Mathematics Advisory Panel, 2008). While efforts to improve formal early learning environments (e.g., adopting new curricula, using new resources, expanding teacher preparation and professional development) are essential, supporting children in learning early mathematics through structured, supported engagements between parents and caregivers has shown promise as well (Starkey, Klein, & Wakeley, 2004).

Likewise, there is a growing body of evidence that indicates that ATL skills (sometimes called "non-cognitive" skills), such as persistence, productive collaboration, and flexible problem solving, are crucial to learning and development, and that early development and strengthening of these skills predicts positive long-term outcomes in school and beyond (George & Greenfield, 2005; Hyson, 2008; Jones, Greenberg, & Crowley, 2015; Kagan, Moore, & Bredekamp, 1995). ATL skills also have been shown to be malleable and amenable to intervention in preschool settings (e.g., Fantuzzo, Gadsden, & McDermott, 2011) and associated with particular instructional practices (Dominguez, Vitiello, Maier, & Greenfield, 2010; Rimm-Kaufman, La Paro, Downer, & Pianta, 2005; Stipek & Seal, 2001; Wigfield & Eccles, 2002; Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006). While there are no home-based ATL interventions documented in the literature, parent behaviors and the home environment are important to children's development of ATL skills and there are strategies that families can take up to support ATL (e.g., Hyson, 2008; Stipek & Seal, 2001).

Home Media and Technology Engagement

Young children and their families spend considerable time engaging with media and technology resources at home (e.g., Rideout, 2014; Rideout & Hamel, 2006; Rideout et al., 2003). While the majority of this engagement is with commercial entertainment, young children spend more time engaging with educational and non-commercial programming than do other groups (Rideout, 2014). Parent and caregiver attitudes and beliefs align with research that shows that educational media and educational technology can benefit children's learning and development (Gorges et al., 2014; Rideout, 2014,).

As media formats increase and become more readily available in the home environment, children are increasingly spending time with transmedia properties. The term transmedia describes digital games, videos, and hands-on materials involving a consistent set of characters, settings, and narrative themes across different media formats. A growing body of evidence shows that children, parents, and teachers become motivated by their knowledge of and familiarity with different characters—Peg and Cat behave in the same predictable ways whether in a streaming video or on the screen of a tablet-based game—and the relationships young learners form with these characters and the worlds they occupy create a backdrop for acquiring new knowledge and practicing skills (Jennings, Hunt, Altenau, & Linebarger, 2008;

Richert, Robb, & Smith, 2011; Schiappa, Allen, & Gregg, 2007). Transmedia can support learning because it provides a consistency and support, through engagement with the same characters and storylines over time and across various physical and social settings, and gives children and the adults who care for them rich opportunities to explore multiple and varied learning experiences from one medium to the next (Pasnik & Llorente, 2013).

Media and Technology for Early Mathematics and Approaches to Learning (ATL)

Interventions that feature engagement with public media videos and transmedia suites have been effective at supporting math, literacy, and science learning in lab, school, and home settings, and have been associated with gains in content domains like literacy, science, and math as well as ATL and school readiness skills like problem solving (Fisch, 2004; McCarthy, Li, & Tiu, 2012; Pasnik & Llorente, 2013; Penuel et al., 2012). Such resources often provide access to dynamic, multi-sensory representations of concepts, places, or people that otherwise would not be practical (or, sometimes, possible).

Specific components of these resources that have been positively associated with learning include the following.

- Children can be intrinsically interested in and motivated by media and technology experiences, and this increased motivation is associated with deeper engagement and processing (Renninger, 2000).

- The education potential of these resources has been shown to be more beneficial than media in general, with the strongest effects on academic and social outcomes associated with resources that are pedagogically designed (Anderson et al., 2000).

- Children tend to form positive parasocial relationships with characters in media that can make them powerful resources for learning (e.g., Jennings et al., 2008; Linebarger & Piotrowski, 2006; Richert, Robb, & Smith, 2011; Schiappa et al., 2007).

- Resources tend to represent essential concepts and content as integral to the advancement of narratives and story lines in ways that support attention and benefit learning (Fisch, 2004; Linebarger, Kosanic, Greenwood, & Doku, 2004).

- Resources contain models of behavior, including ways of thinking, talking, and cooperating, that can be powerful templates for children and adults (e.g., Troseth, Saylor, & Archer, 2006).

- Some resources, especially games, often provide feedback to children and invite their active response, while other resources, like video, especially when mediated by an adult, invite questioning, which can support engagement and learning. (Anderson et al., 2000; Crawley et al., 2002).

Joint Engagement with Media

Beyond the affordances for learning described above, joint engagement with media and technology has been shown to be a catalyst to children's learning (Fisch et al., 2008; Stevens & Penuel, 2010; Takeuchi & Stevens, 2012). Joint engagements with media include planned experiences in which adults and children interact with one another while simultaneously attending to a media artifact. Joint media engagement can occur in a variety of media and technology contexts, such as viewing a video, reading a digital book, or playing a game on a mobile device. Past research has described how joint media engagement can provide powerful affordances for learning, above and beyond what the media resources may support through solo engagement (Moorthy et al., 2013; Media and Learning Group at SRI Education, 2010; Stevens & Penuel, 2010; Takeuchi & Stevens, 2011). The literature on joint media engagement has mostly focused on parental mediation of television viewing (Austin, 2001; Fisch et al., 2008; Reiser, Tessmer, & Phelps, 1984; Valkenburg, Krcmar, Peeters, & Marseille, 1999; Warren, 2005). This study aims to advance this line of research by identifying the extent to which families use mediation strategies and promote interactions that increase the opportunity to learn in the moment.

PBS KIDS
PEG+CAT Intervention

The content included in the PBS KIDS *PEG+CAT* 12-week intervention provided children with repeated opportunities to engage with a set of early math experiences. Researchers organized the resources into a spiraling experience where children had the opportunity to explore new content and skills while also circling back to repeat familiar experiences and skills, giving them the opportunity to build on past successes while challenging them with new content.

After a detailed review of the available *PEG+CAT* resources (broadcast episodes and interstitials, and available games), the research team identified assets that had the greatest potential for promoting the development of particular mathematical concepts and skills. Those assets were organized according to their mathematical focus and strength to fit within the 12-week parameter of this study. The design process took into account only mathematics content, but following the selection and organization of the assets, researchers then noted any specific ATL skills that the selected assets addressed. (See Appendix I: *PEG+CAT* Resources Included in the Intervention for a list of the individual *PEG+CAT* resources included in the intervention.)

Focal Mathematical Skills

The PBS KIDS *PEG+CAT* intervention at the center of this study focused on patterns, geometry (e.g. 3-D and 2-D shapes, spatial relationships), measurable attributes, ordinal numbers, and, to a lesser degree, on the foundational skill of counting, which is present throughout all *PEG+CAT* materials. While all children are capable of learning skills and concepts in these four domains, these topics are typically less present in preschool curricula and are not as commonly supported by parents. As such, these target skills were especially suitable for this study, given that children are less likely to experience external support for developing knowledge of these concepts in the course of their day-to-day experiences.

1. **Patterns:** a focus on auditory patterns (e.g., Beethoven playing the first notes of his Fifth Symphony), physical patterns (e.g., the dinosaurs' step-step-jump), and visual patterns (e.g., the diagrams of short-short-short-long wursts).
2. **Geometry (2-D and 3-D Shapes):** some focus on 2-D shapes, such as squares, circles, and triangles, and a focus on 3-D shapes, such as spheres, cubes, and pyramids. These 3-D shapes may be less familiar to preschool children, but are appropriate content for their developmental level.
3. **Ordinal Numbers and Counting:** a strong focus on ordinal numbers, words like "first (1st)" and "third (3rd)" that indicate position as well as counting.
4. **Measurable Attributes and Spatial Relationships:** a focus on length, height, weight, balance, and relational concepts, like prepositions describing positions in space (e.g., below, in between).

Designed Engagement

The PBS KIDS treatment condition was a designed series of 12 approximately 30-minute opportunities for children and their families to engage and interact with *PEG+CAT* resources. It was not a curriculum supplement used in formal daycare settings like those used in past *Ready To Learn* efficacy studies (Pasnik & Llorente, 2013; Penuel et al., 2012). The time and intensity of each interaction was dependent on the child's interest and motivation, and the availability and motivation of parents. Each of these opportunities represented a chance for children to engage with mathematics and ATL skills, further explore and deepen existing understandings of these skills, and/or refine emerging skills through application and practice, as often as possible in collaboration with a knowledgeable adult or sibling.

Key Features

Families in the treatment condition received the PBS KIDS *PEG+CAT* intervention, which included the following elements.

- Each of the 12 weeks consisted of an average of 30 minutes of curated content, organized into a recommended sequence of activities, and 30 minutes of suggested additional material.

- The first four weeks of the 12-week experience focused on one skill each: ordinal numbers; patterns; shapes; and measurable attributes and spatial relations. The activities were selected to capitalize on the excitement and energy of the start of the study with the aim of establishing strong exposure to math content in the first month.

- The remaining eight weeks spiraled through the four target skills, within and across weeks.

- Each week was designed to be an "adventure," including one or more full episodes, short video clips, one or more games, interstitials and/or a hands-on activity. The first four adventures were designed to cover a single skill, with the remaining eight adventures covering two to three skills in a spiraling fashion.

- As much as possible, all adventures aligned to focal ATL skills—problem solving, self-regulation, and perseverance—that are common elements of the *PEG+CAT* narrative.

- In addition to video and app content, the research team integrated a range of PBS KIDS online and hands-on activities into the intervention to encourage families to extend *PEG+CAT* into their daily lives.

Mediation: Planned Joint Engagement

Parents/caregivers in the PBS KIDS *PEG+CAT* treatment condition were asked to engage with their children before, during, and after interaction with study resources. Specifically, researchers asked parents to: (1) be present with their children during media and technology interactions, as much as possible; (2) approach these interactions with the goals of helping children learn, share what they know, and learn something new together; (3) talk with children, asking questions and making observations to learn how they are understanding the experience, where their interests are focused, and difficulties or challenges they may be having; (4) help children make connections between media and other experiences at home, at school, and in the community; and (5) help children apply and extend their learning and further explore their interests by repeating activities and by engaging in new experiences with and without media and technology.

Support for Families

As with the curated resources themselves, only supports that could be delivered at scale by public media organizations were included as part of the intervention. At the start of the study, researchers provided families in the PBS KIDS *PEG+CAT* condition with an orientation to study materials and learning objectives (focal skills). Support materials for parents/caregivers were designed to provide modest guidance and support for engaging with study experiences on an ongoing basis through print and/or online video resources.

Rather than prescribe additional media and technology experiences for families, the study asked treatment condition families to change the focus of their viewing and play activities to *PEG+CAT* and the focal skills of the experience. Therefore, in addition to the designed adventures, suggested supplemental materials were provided to facilitate further and deeper engagement with the mathematical skills introduced in *PEG+CAT*, especially as dictated by the child's interests. The supplemental materials were drawn from *PEG+CAT* as well as from other PBS KIDS resources, and consisted of activities that use materials easily accessible to most families.

Parent mediation support materials were delivered to families through

- **Four short tip videos for parents,** available in English, Spanish, and Mandarin Chinese, that focused on co-viewing media with their child (two videos on Watching and Playing Together), engaging in and supporting their child's use of math talk (Math Talk), and developing and supporting their child's problem solving and persistence skills (Supporting Problem Solving); and

- **A printed Experience Guide** to help parents navigate the study experience. Included in the Experience Guide was information about the study and the digital resources, and the weekly adventure schedule. In addition, the guide provided parents with information about the basic math concepts their children encountered when engaging with *PEG+CAT* resources, including ordinal numbers and counting; patterns; 2-D and 3-D shapes; and measurement and positional skills. The guide also included printed versions of the tip videos, a calendar of important study dates, and technology troubleshooting information.
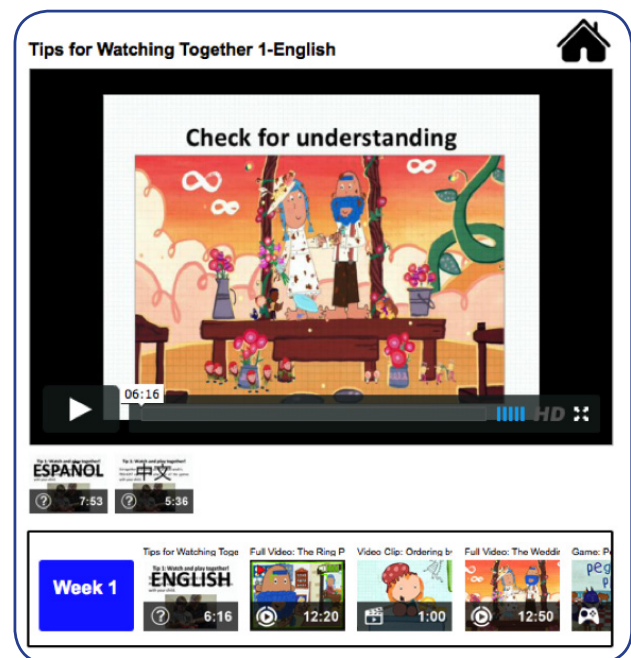
An example of a video tip for parents from the project website

Study Website

A study website, ReadyToLearn.edc.org, was created to provide families with a simple and convenient way to access the *PEG+CAT* resources included in the 12-week study experience. (See Appendix J for an image of the study website.) The website provided access to full video episodes that presented a challenge or problem that Peg and Cat

must resolve, video clips and interstitials that introduced a concept or activity in a short video segment, games that related to the chosen math content for that week, and related hands-on activities for children to complete with their caregiver. For each week, parents and children were provided several icons indicating that week's activities. While the icons and activity choices varied from week to week based on the sequence of that week's adventure, a consistent set of parent tip videos designed to support parents' engagement with digital media and young children were called out in Weeks 1–4 and remained available throughout the experience. Families also received a poster-sized Weekly Adventure Schedule (designed to be hung in an easily accessible location such as on a kitchen wall or refrigerator) that used child- and adult-friendly graphics to indicate the study activities for each week and visually corresponded to how each week of the study was presented on the study website. (See Appendix K for an image of the Weekly Adventure Schedule Poster.)

Technology

To support engagement with the media experience throughout the study period, the research team provided each family in the treatment condition with the following. (See Appendix L for an image of the tech set-up.)

- 1 Internet-enabled 14" Chromebook laptop, including charger and hard case
- 1 Internet-enabled 8" Android tablet, including charger and soft case
- 3GB of data per month on a 4G broadband network for each device
- Access to all of the PBS KIDS intervention resources via the study website
- A bag for transporting and storing all study materials

Researchers considered a number of factors when selecting study technology (e.g., screen size for co-viewing, device set-up, back-end data collection) and conducted testing of PEG+CAT content on multiple devices. To provide families with the necessary technology tools required for the transmedia-rich experience, which included multiple platforms (e.g., Flash, HTML5, tablet), and to ensure full and smooth implementation, the research team used a two-device approach so that all resources could be accessed by all participants. Participating families received the larger-screened laptop with the intention of supporting co-viewing, and the smaller-screened tablet with a standing case for hands-free viewing and engagement with the Big Gig app. Internet access was a critical piece of the study, as families needed a stable and strong connection to access the transmedia on the study webpage. The software configuration options of the two devices allowed researchers to limit access to certain applications and to track usage on the back end. Researchers took into consideration the lifespan of potential devices and productive usage after the study when making final decisions about devices to distribute to families, choosing devices that provided families with 200 MB of data for the life of the devices. Before the devices were redistributed at conclusion of the study, PBS KIDS and the study websites were bookmarked on each device, and all families were given access to the Big Gig app.

The tablets included an app usage tracker, which helped researchers collect data on the number of times the Big Gig app and other apps were accessed. The research team also locked the tablet into landscape mode to give families a better viewing experience. Certain apps on the tablet were switched off to limit distraction from the intervention, including the following: camera, Amazon, Connect Me, contacts, Dropbox, email, all Google apps (except Chrome browser), Kids Mode, text messages, Samsung apps, and YouTube.
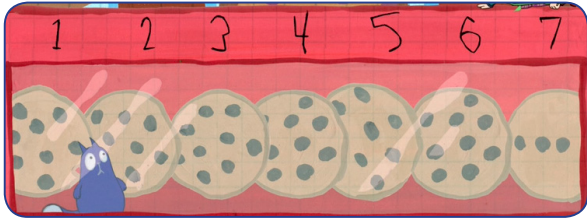
Implementation

The study took place over a 12-week period during the winter of the 2014–15 academic year, and was enacted principally in family homes. Components that took place outside the home included orientation meetings with parents, assessments with children, check-in meetings with parents, and a final wrap-up meeting with parents. Some families volunteered to participate in focus group conversations that also took place outside the home. The majority of these activities took place in the daycare or preschool settings where participant children attended early learning programs and from which families were recruited for the study; a few activities took place in nearby community-based centers and in researchers' offices.

Participant Experience

Researchers employed a series of strategies to ensure that families had access to the information they needed to participate fully in all study activities. Once enrolled, researchers communicated with families regularly in order to support study participation and data collection. Because PBS KIDS families received a math tip text message each week and technology support as needed, researchers communicated with PBS KIDS families slightly more than with business as usual families.

Parent Meetings

During the study, researchers held three meetings with families in both the business as usual and PBS KIDS treatment conditions, including an initial "kick-off" meeting to introduce parents to the study, a midpoint meeting to check in with parents and collect interim study data, and a final meeting to wrap up the study and data collection and provide families with cleaned technology to take home.

The initial kick-off meetings were held separately for business as usual and PBS KIDS families. At all family meetings, researchers introduced families to the researchers, the purpose of the study, the study timeline, and data collection procedures. Families also completed the parent pre-surveys during this time. Families assigned to the PBS KIDS condition were provided with a tablet and laptop and intervention materials, along with guidance about how to use the technology and the PBS KIDS intervention and study website. Additionally, meals and travel stipends were provided for families who attended the kick-off meetings. All families who attended the kick-off meetings enrolled in the study, with the exception of one parent who was not proficient in reading English, Spanish, or Mandarin Chinese (a requirement of participation in the study, as outlined in the study consent form).

Researchers held makeup meetings individually and in small groups with families who were unable to attend the kick-off meetings. The kick-off meetings were held at preschools with Bay Area families and at EDC's office with New York City families.

At approximately the midpoint of the study (between weeks 4 and 6), researchers organized a second meeting with families to check in and answer any questions that families might have about the study, collect weekly media diaries from weeks 1–6, if completed, and distribute media diaries for weeks 7–12. In addition, PBS KIDS families brought their tablets to the meetings so that researchers could download usage data. For those families who had not yet completed their media diaries, researchers made plans to retrieve completed media diaries, by having parents drop the diaries off with a teacher, bringing the diary to researchers, or mailing the diary to researchers. Researchers held both New York and Bay Area family meetings at preschool or community centers, where parents could meet one-on-one with researchers during 90– to 120–minute windows scheduled around the time that parents picked up their children from school.

Project staff held the final study meetings at preschool centers, with the exception of one Saturday meeting in New York that took place at a church community center (when preschools were closed). The goals of the final meeting were (1) to collect media diaries, (2) to collect parent post-surveys, (3) to collect, clean, and redistribute technology to families, and (4) to solicit feedback and thank families for their participation.

Weekly Text Messages

At the kick-off meetings, parents had the opportunity to opt-in to receive text messages during the study. The majority of the sample (167 families, including 73 in New York and 94 in San Francisco) opted to receive text messages. There were two types of weekly text messages that parents received: (a) content-related tips, which were sent to PBS KIDS parents, and were designed to encourage parents to incorporate math into their child's daily life, use the joint engagement tips provided as part of the study, and keep *PEG+CAT* fresh in their minds; and (b) media diary reminder texts, which were sent to both the PBS KIDS and business as usual group parents on the designated media diary entry day for that week to remind parents to complete their weekly media diary.

Other Contact with Families

Apart from scheduled text message reminders for media diary entries, researchers used phone calls, text/email messages, letters, and teacher communication as additional ways to stay in touch with families. Contacting families through these means enabled researchers to encourage family attendance at meetings, learn about families' experiences with study materials, and address questions or concerns. These four channels of outreach were intended to be convenient and respectful of families' busy schedules and access to resources. In general, researchers were able to reach families by phone and/or text, with very few exceptions.

Technology Set Up

All the devices were delivered to PBS KIDS families during the first kick-off family meeting. During the kick-off family meeting, researchers gave a walk-through to treatment families on how to use each device. This included showing families how to turn on/off both the laptop and tablet, charge each device, control volume, and log in to the laptop. (There was no log in required for the tablet.) Researchers also showed families how to navigate to and around the study website, including showing them how to access the different areas of the study experience—the videos, games, interstitials, and parent tip videos—on both the laptop and tablet. Additionally, researchers showed families how to navigate to the *Big Gig* app on the tablet.

All families in the treatment group received a study experience guide, which also included basic information about laptop and tablet use as well as tips for troubleshooting common technology challenges.

The research team provided families with their contact information should they have ongoing technical difficulties, and all families left the kick-off meeting with their devices, chargers, and cases in a single technology bag.

Methods

This section includes a description of measures, data collection, and analysis approaches associated with (1) child learning outcomes, (2) parent/caregiver outcomes, and (3) family engagement (i.e., how children and families took up the *PEG+CAT* media experiences).

Measures

Child Learning Outcomes: Mathematics and Approaches to Learning (ATL)

To assess children's mathematics outcomes, a team of researchers with experience in early learning and assessment developed and administered a set of assessment items aligned to the skills addressed in the *PEG+CAT* intervention, but not to the resources themselves, to avoid over-alignment and to ensure proper assessment of impact given the intervention focal skills. The decision to develop assessment items that aligned to the math skills to which children were exposed, as opposed to the intervention's specific and resource-based representation of these skills, allows for stronger claims to be made regarding children's performance on these tasks.

To assess children's ATL skills, the team administered the Preschool Learning Behavior Scale (PLBS; McDermott, Green, Francis, & Stott, 2000), a validated teacher measure of young children's classroom learning behaviors that was developed in partnership with preschool teachers for use in low-income samples. In addition, the research team developed and administered the Math Concepts and Problem Solving checklist (MCPS), a short teacher measure of children's understanding of the intervention's focal skills as well as their ability to apply mathematical skills in their everyday life and when solving problems.

Child Assessment of Target Mathematic Skills

As described above in the Intervention section, researchers curated and identified the media resources that made up the intervention, including full episodes, games, episode clips, interstitials, and at-home hands-on activities. Once these resources and the primary math skills they targeted had been identified, the assessment team conducted an empirical review of early mathematics (e.g., Clements & Sarama, 2004; U.S. Department of Health and Human Services, 2010) to determine what developmentally appropriate subskills fell within the intervention's targeted math foci. Based on this review and comparison, the assessment team created a conceptual map that listed the mathematical concepts addressed or promoted in the selected resources. This document listed focal skills (the targeted focal skills in each

asset), secondary skills (the secondary focal skills present in each asset), and subskills (the finer grained elements of each focal skill present in each asset). The focal skills identified included patterns, 2-D and 3-D shapes, measurable attributes and spatial reasoning, ordinal numbers, and counting.

After the above-mentioned analysis of the mathematical focal skills and subskills targeted by the intervention, the assessment team conducted a review of the existing standardized and validated early childhood math measures (for example, the REMA, TEMA, EMAS) to determine whether they aligned to the intervention's targeted skills. The results of this review indicated that the existing measures attend to math skills more broadly and are meant to be assessments of general math ability. Accordingly, they contain questions on a wide variety of skills, as opposed to including subscales that focus on more targeted areas of mathematical learning. Despite the fact that these early learning math skills are considered to be developmentally appropriate and fundamental, the existing measures do not include subtests that focus on specific skills such as ordinal numbers, patterns, and 2-D and 3-Ds shapes, and therefore were thought to be not sensitive enough to detect learning in these sub-domains of mathematical learning.

Concluding their review of existing measures, and with the conceptual map as a guide, assessment team members began the item creation process based on early mathematics literature (i.e., developing items that assessed the target skill in ways documented in the literature) and modeling the format used in the existing and validated early childhood mathematics assessments. Items involved game-like activities that require assessors to read a verbal prompt and children to provide a verbal response, point, or engage with manipulatives. Subgroups of team members created items for a given skill and brought them back to the larger assessment team for review, discussion, and iteration. This process aimed to ensure that the items (a) adequately assessed the target skills, (b) included a variety of developmentally appropriate item formats, (c) adhered to universal design principles, and (d) varied in terms of difficulty.

Once all the items had been reviewed and revised using the above criteria, the team worked with an expert graphic designer to find or generate developmentally appropriate images to create an assessment flipbook. The team ensured that the prompts were written in a developmentally appropriate manner, and a copy editor reviewed them to ensure they had stylistic uniformity. Finally, the team created or purchased developmentally appropriate math manipulatives for specific questions.

After the assessment flipbook and manipulatives were developed and curated, the team pilot-tested the items with approximately 10 children in a preschool classroom similar to those recruited for the study. During this pilot administration, team members noted any difficulties related to item administration as well as the children's engagement and responses, to determine if items were too hard or too easy and whether responses included expected outcomes.

Findings from this pilot administration informed further revisions. Revised items then were shared for review with early childhood and mathematics researchers outside of the immediate assessment team. Once feedback was obtained, additional edits were made and the assessment was prepared for use in the study.

Data collection: Child assessments. Trained assessors administered the mathematics assessment items to all children participating in the study prior to and after the intervention period. Training was conducted over two days, and assessors were trained on conducting assessments with young children (for example, the importance of establishing assent and rapport) as well as on the administration and scoring of the assessment specifically. At the end of the second day of training, all assessors attained reliability (90% or above) with one of the lead trainers and developers of the assessment.

Teacher Rating Scales of Learning and Behavior

In addition to collecting assessments from children, researchers also collected teacher reports of children's mathematics learning and ATL skills. Teacher reports hold a few advantages for assessing child behavioral outcomes in particular because teachers are able to observe their students' behavior and generalize over time, compared to a one-time researcher-administered assessment that may capture behavior relevant for only a specific situation.

Preschool Learning Behaviors Scale

To assess children's ATL skills, such as motivation, persistence, attention, and attitude toward learning, participating classroom teachers completed the Preschool Learning Behavior Scale (PLBS; McDermott et. al., 2000), a measure that was developed for use with low-income young children in collaboration with Head Start teachers. This instrument asks teachers to report the frequency (e.g., "most often applies," "never applies") with which children exhibit certain behaviors associated with ATL skills, such as the ability to cooperate in a group activity or evidence of determination in completing a task or activity. Items for each of the three factors in the PLBS are summed to create subscale scores, which are then aggregated into a total raw score. Total raw scores are then converted into T scores (M=50, SD=10) based on the national standardization sample. The Cronbach's alpha coefficient for the total score in the study's sample was 0.85, indicating adequate internal consistency. Convergent and divergent validity for the PLBS has been established with measures of receptive and expressive language (Dunn & Dunn, 1997; Gardner, 1990), social skills at school and home (Fantuzzo, Coolahan, Mendez, McDermott, & Sutton-Smith, 1998; Fantuzzo & Hampton, 2000), and self-regulation (Block & Block, 1980).

Math Concepts and Problem Solving Checklist

The research team developed the Math Concepts and Problem Solving checklist (MCPS), a short teacher measure of children's understanding of the focal skills within the intervention, as well as their ability to apply their understanding of these mathematical concepts in their everyday life and when solving problems. This measure contained eight items and was modeled after the PLBS in that teachers were asked to report the frequency (e.g., "most often applies," "never applies") with which children exhibited an understanding of these mathematical concepts and problem-solving skills. During a brief introductory meeting with the study team, teachers were provided basic instructions on how to complete the MCPS measure.

Data collection: Teacher scales. As part of their participation in the study, teachers of children in both conditions were asked to complete a PLBS and MCPS checklist before and after the study. Teachers were provided basic instructions on how to complete the PLBS form. For the MCPS measure, teachers were provided brief guidance on the included mathematical concepts and problem-solving skills, as well as examples of instances where children could exhibit evidence of these skills in their respective classrooms. Teachers completed the PLBS and MCPS at pre and post for most children. See Table 2 for a detailed breakdown.

Table 2. Study Data Sources

	Number of participants	Number of times administered/ reported	Timepoint administered/ reported
Outcome data			
Child assessment of target mathematic skills	Pre: 228 children Post: 190 children	2	Week 1 Week 12
Teacher rating scales • Preschool Learning Behavior Scale • Math Concepts and Problem Solving checklist	Pre: 234 children Post: 188 children Pre: 233 children Post: 188 children	2	Week 1 Week 12
Parent surveys	Pre: 196 parents Post: 188 parents	2	Week 1 Week 12
Engagement data			
Parent/caregiver media diaries	201 families	12	Weekly for 12 weeks
Home visits	20 families (10 PBS KIDS and 10 business as usual families)	2	Weeks 4–6 and Weeks 8–10
Parent/caregiver focus groups	20 parents/caregivers, across both PBS KIDS and business as usual families	1	Week 12
System log data • Google analytics • Tablet App tracker	100 PBS KIDS families 96 PBS KIDS families	2	Across study period

Parent/Caregiver Outcomes

Parent/Caregiver Survey

All parents/caregivers participating in the study completed surveys at the beginning and end of the study period. Researcher developed survey items that emphasized parents'/caregivers' attitudes, beliefs, and behaviors related to: (1) media and technology use at home, including the frequency, purposes for, and social arrangements in which families use media in the home; (2) early mathematics, including home math talk and the informal ways in which parents support children's mathematical skills through home-based activities; and (3) children's approaches to learning, including problem solving and persistence. Additionally, the survey that parents completed at the beginning of the study included questions related to parents' and family background, such as home language, ethnicity, parents' educational background, family income, etc.

Data Collection. Parents/primary caregivers from all participating families were asked to complete the survey during the kick-off and final family meetings. The surveys were administered in pencil-and-paper format (surveys were later scanned for analysis), and were available to families in English, Spanish, and Mandarin Chinese. Parents/caregivers completed the survey before and after the study for most children. See Table 2 for a detailed breakdown.

Family Engagement

The research team used four integrated data collection activities to document the enactment of the *PEG+CAT* experience among families in the PBS KIDS condition, and to describe the contrasts related to media use and early mathematics/ approaches to learning observed between families in the PBS KIDS and business as usual conditions respectively. These comprise analyses of weekly media diaries, home visits, focus groups, and system log back-end data.

Media Diaries

All parents/caregivers in the study sample, including both PBS KIDS *PEG+CAT* and business as usual conditions, were asked to complete weekly media diaries, which were logs of media and technology use for all 12 weeks of the study. The media diaries for the PBS KIDS condition asked about children's uptake of the *PEG+CAT* intervention, including the *PEG+CAT* resources accessed each week, children's reactions to the resources, the social configurations (e.g., individually, with parents, siblings, and other children) in which children accessed the resources, parents' activities while children were accessing the resources, and the approximate amount of time children spent with the resources. Additionally, parents/ caregivers also documented the extent to which they followed the recommended sequence of activity for each week, their use of the family support materials, and any challenges they encountered while enacting the intervention.

Media diaries for the business as usual families gathered comparable information about families' media use. Specifically, parents documented the extent to which business as usual children engaged with video and digital games at home, the purpose for using media, children's reactions to the media and technology to which they were exposed, the social arrangements for media and technology use, including the extent to which children and parents/caregivers participate in joint media use, and parents' activities at the time of children's media use.

Data collection. Families in both PBS KIDS *PEG+CAT* and business as usual groups were asked to complete media diaries once a week, for the duration of the study. The days on which families completed the diaries rotated across the 12 weeks of the intervention. During the kick-off meetings for both groups, researchers reviewed the media diaries to explain the prompts and provided directions for parents on how to complete the diaries. In order to facilitate data collection and enhance the response rate, questions included in the media diaries were simple and easy to complete. The research team provided weekly reminders through text messages to families to complete the diaries (for families who opted-in to receive text messages).

Because of recruitment challenges, West Coast and East Coast families participated in the study on a slightly different schedule from one another, with up to two weeks separating the schedule of implementation. This altered the approach to Media Diary collection across locations. Families in the New York City area were asked to return their weekly media diaries during the midpoint check-in meeting, even if they had not completed all six weeks of activities. If a family had only four weeks of their media diary completed, then researchers accepted the four completed weeks and gave families a set of diaries for the remaining number of weeks left in the study. Families were provided with addressed and stamped envelopes to return diaries as they were completed for later weeks. Families in the San Francisco Bay Area were encouraged to leave completed media diaries in bins provided in children's classrooms, and researchers collected these on a regular basis. Despite variations in the Media Diary collection strategy, the research team collected 97% of midpoint media diaries on the East Coast and 93% on the West Coast.

Home Visits

In order to gather qualitative information about patterns of media use, the research team conducted home visits with a subsample of families. The goal of home visits was to collect contextual information about when and for what purposes children and their families accessed media content, the social arrangements in which media was used, and what kinds of obstacles or supports were encountered when children and their families engaged with these media. Data gathered from the home visits also emphasized how families in the PBS KIDS condition engaged with the overall *PEG+CAT* intervention, as well as individual resources, and the extent to which the patterns of engagement and behavior observed among PBS KIDS families differed from those of business as usual families.

Data collection. The home visit sample comprised 20 families (10 each from the PBS KIDS and business as usual conditions, distributed across New York and California). Researchers identified families for the home visit sample based on their responses to specific items related to their technology and media use on the survey conducted at the beginning of the study. As such, the home visit sample included families who engaged frequently in a variety of media experiences as well as those who were, by their own report, not prolific users of media or technology. The families included in the study sample represented a diverse group (see Table A1. Race/Ethnicity of Home Visit Families in Appendix A).

Each family in the home visit sample received two visits. The purpose of the first visit was to speak with families about how they used technology and media, including the extent to which parents/caregivers participated in media use with their children and the types of interactions that occurred among families during media experiences. The first visit took place during weeks 4–6 of the study and lasted approximately 60-90 minutes. During the second visit, which took place about 4–6 weeks after the first visit, researchers gathered additional information about families' media use and observed children and families engage in media experiences. The second visit took place during weeks 8–10 and was about 45 minutes long. All but one of the 20 families participated in two home visits. Visits were conducted in English (14), Spanish (5) and Mandarin Chinese (1). Researchers' discussions with families were audio-recorded.

Focus Groups

Data collection also included a number of focus groups conducted at the end of study with a subsample of participating families. The goal of the focus group discussions was to gather opinions related to media and technology use, and how media can be used to foster children's development of mathematical and ATL skills. In addition, the focus group interviews also provided an opportunity to gather information from PBS KIDS parents regarding their views of the *PEG+CAT* resources and their experience of participating in the study.

Data collection. Family focus groups took place during the final family meetings. Researchers conducted a total of eight focus groups with 20 families, including four focus groups with PBS KIDS families and four with business as usual families. Researchers recruited participants based on their reported level of family media use on the preprogram survey, prioritizing families who reported high levels of technology access and use. Focus groups were conducted in English, Spanish, and Mandarin Chinese. During each focus group, one researcher facilitated the discussion (with the help of an interpreter, if required), while another researcher took notes to capture the discussion. Focus groups also were audio-recorded.

System Log Data

In order to track participant's access to the *PEG+CAT* content during the study, researchers configured the study's website and third-party applications installed on devices to log participant usage and engagement with the media and technology resources. Researchers, with the appropriate user account permissions, accessed data logs during the study and retrieved locally stored records during the midpoint and final parent meetings. Because the study's website was built on Drupal, an open-source content management system platform, it provided participants with access to the intervention sequence resources as well as to supplemental resources, publishing each resource with a unique URL, regardless of whether the media resource was listed more than once during the 12-week period. This enabled researchers to distinguish among content across the 12-week sequence.

Data collection. The Google Analytics Module 6.x-2.2 was enabled on the Drupal CMS, which added a Google Analytics JavaScript tracking code to all of the study's webpages. Data collected via Google Analytics includes the user identification number unique to each family, page title, URL accessed, the date and hour the page was accessed, and operating system used to access the page (i.e., the tablet Android operating system or laptop Chrome operation system) for each page visited on the *PEG+CAT* experience study website. In addition, by using the App Tracker app, which was installed on each tablet, researchers were able to track which apps families used. The application data for each tablet included the name of the tablet app used, date, hour, and minute when the app was opened, and duration of use, measured as the amount of time the app was in foreground on the tablet, from the time it was launched until it went into the background or the tablet was locked.

Data spanned the day after treatment families received their technology devices to the last day of the prescribed study period. Google analytics data were obtained for 100 (99%) families in the treatment group, and app data were obtained for 96 (95%) families in the treatment group. One family, who dropped from the study after enrolling, did not have either Google analytics or tablet app usage data. An additional four families were missing tablet app usage data either because they disabled the app usage tracker installed on the tablet or because the tracker failed to operate correctly.

Child Outcomes

Child Assessment Reliability

To analyze the child assessment data and examine item functioning, researchers conducted a one-parameter (1PL) Item Response Theory (IRT) analysis using IRTPRO 2.1(Paek & Han, 2012). Findings from this analysis indicated that a unidimensional model does not fit the data well. Unfortunately, given constraints due to sample size, the research team was unable to fit a multidimensional IRT model to the data. However, in order to further investigate the multidimensional structure of the data, researchers conducted a series of factor analyses using MPlus Version 7 (Muthén & Muthén, 2012). More specifically, the research team conducted Exploratory Factor Analysis (EFA) using the pretest assessment data and subsequently conducted Confirmatory Factor Analysis (CFA) using the posttest data. To examine item functioning, researchers examined factor loadings and discrimination values in conjunction with qualitative data regarding item performance, removing five items based on this information. For each of the resulting factors, researchers calculated a raw score and converted it into a T score (with a mean of 50 and standard deviation of 10) for ease of interpretation. The research team also calculated Cronbach's alpha coefficients to examine internal consistency and factor correlations to examine discriminant validity, both using SPSS 19 (IBM Corp., 2010).

Child Learning

To examine the promise of the PBS KIDS *PEG+CAT* intervention in improving young children's mathematics learning, the research team conducted a series of multilevel models using the Stata software environment (Version 13) and the mixed command using full maximum likelihood estimation. Even though randomization occurred at the child-level, multilevel analyses were fit to account for the nested structure of the data (children nested in classrooms and classrooms nested in centers) because children were recruited from and were enrolled in preschools during the duration of the study. Researchers started by running unconditional models for each of the three factors in order to partition the variance in the outcome (posttest assessment scores) at the child, classroom, and center levels. The research team then included pretest scores, demographic covariates, and the condition variable as predictors at the child level. The full specification of the multilevel models is in Figure 5. The coefficient b_1 is estimated in the score point metric of whatever assessment is being fit within the model.

$$Posttest_{ijk} = \beta_0 + \beta_1 Itreatment_{jk} + \beta_2 X_{ijk} + \beta_3 Pretest_{ijk}^{(GMC)} + \beta_4 Age_{ijk}^{(GMC)} + e_{ijk} + r_{jk} + u_k$$

Where

$Posttest_{ijk}$...........is the posttest score for student i within classroom j and center k

β_0.....................is the intercept and estimates the expected posttest score given a mean score on the pretest in the control condition

β_1........................is the estimate of the difference in expected posttest scores between the treatment and control conditions

$I\_treatment_{jk}$.........is an indicator for the treatment condition (1 = treatment, 0 = not treatment) of classroom j in center k

X_{ijk}....................are dichotomous covariates for student i within classroom j and center k

$Pretest_{ijk}$.............is the pretest score for student i within classroom j and center k, grand mean centered

Age_{ijk}.................is a covariate for student i within classroom j and center k, grand mean centered

e_{ijk}, r_{jk}, u_k............are random error terms at the student, classroom, and center levels, respectively

Figure 5. Model Specification for Main Impact Model

Finally to examine the potential moderation by pretest scores, researchers entered a moderator term (pretest x condition) into the model, at the child level. Findings from this model were examined to determine whether children with lower or higher pretest scores were more likely to benefit from the intervention. Analyses also incorporated parent survey and system log data as covariates in the models, including demographic characteristics and engagement with study resources.

Teacher Ratings of Child Learning

Teacher data about children's mathematics learning, gathered via the Math Concepts and Problem Solving scale were examined at the item level by conducting two-sample Wilcoxon rank-sum/Mann-Whitney tests (Wilcoxon, 1945). The Mann-Whitney hypothesizes the two independent samples (intervention and control groups) are from populations with the same distribution. The null hypothesis is that both distributions are the same. Each pair is assigned a numeric rank, 1 being the smallest and a rank equal to the midpoint for ties. The observation ranks are summed from one of the samples and compared to the second sample.

Child Approaches to Learning

To examine the promise of the PBS KIDS *PEG+CAT* intervention in promoting adaptive approaches to learning, researchers conducted multilevel models using PLBS data and followed the same process as for the child assessment data (described above).

Parent/Caregiver Outcomes and Family Engagement

Descriptive Analyses

To examine the quantitative data collected through media diaries, surveys, and system-log data regarding parent outcomes and families' engagement with technology, the research team conducted descriptive analyses by calculating frequencies and percentages for the binomial, categorical, and ordinal data, and means and standard deviations for the continuous data. To examine contrasts before and after the study and between the PBS KIDS and business as usual conditions, the research team conducted cross-tabulations and chi-square tests of independence. Researchers also conducted t-tests and one-way analyses of variance (ANOVA) analyses or Kruskal-Wallis tests to determine statistically significant relationships between technology use and family demographic characteristics. Researchers examined all open-ended questions to develop potential coding categories and then coded these questions to identify meaningful patterns that could inform findings.

Qualitative Analyses

Following each home visit and focus group, researchers completed a detailed data capture documenting information from interviews and observations (for home visits) and summarizing participants' responses to the questions (for the focus groups). The data capture forms were carefully analyzed by researchers to identify salient themes with regard to families' beliefs about and use of media and technology, patterns of joint engagement with the media, and families' reaction to the *PEG+CAT* intervention. With audio records, researchers were able to incorporate quotes from families relating to their media experiences in general and their experiences with the *PEG+CAT* intervention.

Child Learning Outcomes

- Children who participated in the PBS KIDS *PEG+CAT* intervention exhibited statistically significant improvements in the mathematics skill areas of ordinal numbers, spatial relationships, and 3-D shapes as compared to children in the business as usual condition.

- Results suggest no differences between children in the PBS KIDS *PEG+CAT* and business as usual conditions in teacher ratings of children's approaches to learning and math concepts and problem solving.

Parent/Caregiver Outcomes

- Parents and caregivers in the PBS KIDS condition reported a higher frequency of joint parent-child technology use, more joint gameplay, and more conversation connecting digital media and daily life than did business as usual parents and caregivers.

- PBS KIDS parents and caregivers also reported significant increases in their confidence to support math learning for their children, as compared to business as usual families.

- Twice as many PBS KIDS parents and caregivers agreed that technology and media were tools for math learning (though, importantly, not for other subject areas), at the end of the study, as compared to the beginning of the study period. Comparison condition families, on the other hand, were unchanged in these views.

- A higher proportion of parents and caregivers in the PBS KIDS condition reported engaging in problem-solving strategies with their children at the close of the study than did parents/caregivers in the business as usual condition.

Families' Engagement with the Intervention

- Children used the *PEG+CAT* intervention media resources most often with their parents/caregivers, and parents in the PBS KIDS condition engaged in more joint media use with their children when compared to parents in the business as usual group.

- The majority of PBS KIDS condition families accessed intervention resources frequently, and many did so repeatedly, although there was considerable variation within the PBS KIDS condition with respect to individual families.

- PBS KIDS children accessed *PEG+CAT* intervention resources that exposed them to all of the target mathematical skills and, with less frequency, to all of the target ATL skills. Again, there was variability in frequency of access and limited data on length or quality of engagement with the resources within the PBS KIDS condition.

- PBS KIDS families reported finding the majority of the *PEG+CAT* intervention resources to be fun and engaging. Additionally, some parents expressed their appreciation that the resources provided their children with opportunities to practice math skills, while others found that the games and videos complemented each other in a beneficial way that made the content more meaningful.

- Most PBS KIDS families progressed through the intervention experience over the 12-week study period, regularly accessing newly sequenced resources each week. The majority of families diverged from the suggested sequence, and overall use of the resources steadily declined over the course of the study.

- While PBS KIDS parents found value in the support materials they were provided as part of the *PEG+CAT* intervention, actual usage of these resources varied. The majority of families reported the text messages they received as a part of the intervention to be helpful, practical, and useful, showing promise for the use of text messaging as a convenient and effective way to connect with families.

Results in Detail

Child learning outcomes and outcomes for parents/caregivers resulting from the study experience are presented below, followed by findings highlighting how PBS KIDS families engaged with the *PEG+CAT* intervention resources.

Child Learning Outcomes

The child learning outcomes are based on the mathematics and approaches to learning assessments described in the Methods section.

Highlights

- Children who participated in the PBS KIDS *PEG+CAT* intervention exhibited statistically significant improvements in the mathematics skill areas of ordinal numbers, spatial relationships, and 3-D shapes compared to children in the business as usual condition.

- Results suggest no differences between children in the PBS KIDS *PEG+CAT* and business as usual conditions in teacher ratings of children's approaches to learning and math concepts and problem solving.

Child Assessment of Mathematical Skill

Factor analysis. The research team conducted Exploratory Factor Analysis (EFA) on the pretest data, which revealed that a three-factor solution provided the best fit to the pretest data. (See Appendix B for detailed information regarding model fit.) Results from the EFA indicate that the items largely demonstrate adequate pattern coefficient "loadings;" there is generally one dominant factor that each item loads on; and each factor has a logical, substantive meaning based on the family of items that load on them. Table 3 below describes the mathematics skills measured by each factor.

Based on the three-factor solution suggested by the EFA, the research team carried out a Confirmatory Factor Analysis (CFA) on the posttest data. Findings from the CFA suggest that with no modifications, the model displayed good fit and confirmed the three-factor structure. (Appendix A provides detailed information regarding model fit. Appendix C includes difficulty and discrimination values for all items by factor, and Appendix D and Appendix E include findings from the EFA and CFA, respectively). The results of the weak factor correlations in Appendix D suggest that there is

Table 3. Math Skills Measured by Each Factor

Factor 1 (17 items)	Factor 2 (6 items)	Factor 3 (12 items)
Ordinal Numbers, Spatial Relationships, 3D Shapes	**Measurable Attributes, Pattern Creation**	**Counting, 2D Shapes and Pattern Continuation**
Measured young children's ability to order ordinal numbers, match ordinal numbers to cardinal numbers, identify the position/location of an item and identify three-dimensional shapes using manipulatives.	Measured young children's ability to make comparisons based on measurable characteristics (e.g., shorter vs longer) and their ability to create patterns.	Measured young children's ability to count, identify two-dimensional shapes and their characteristics, and extend patterns.

evidence of discriminant validity among the three factors. The reliability estimates (Cronbach's Coefficient alpha) of the three subscales on both the pretest and posttest range from 0.65 to 0.84. (See Appendix F for Cronbach's alphas for each subscale at pre- and posttest). Appendix G includes descriptives for each factor by condition as well as for the full sample.

Multilevel models to examine evidence of promise. Across Factors 1, 2, and 3, a majority of the variance can be attributed to the child level, which is typical for preschool cognitive outcomes generally (Spybrook et al., 2011). Results from unconditional models indicate that approximately 89% of the variance in Factor 1 is attributable to child-level variation, while 3% and 8% is attributable to classroom- and center-level variation, respectively. Similarly, approximately 96% of the variance in Factor 2 is attributable to child-level variation, while 4% and 0% is attributable to classroom- and center-level variation, respectively. For Factor 3, approximately 98% of the variance is attributable to child-level variation, while classroom- and center-level variation each account for 1% of the variance.

Children who participated in the PBS KIDS *PEG+CAT* intervention exhibited statistically significant improvements in the mathematics skill areas of ordinal numbers, spatial relationships and 3-D shapes, compared to children in the business as usual condition.

Results from the main impact models indicate that children in the PBS KIDS condition improved significantly in the mathematical skills assessed by Factor 1—Ordinal Numbers, Spatial Relationships, and 3-D shapes—relative to children in the business as usual group (g (effect size) = .51, $p < .000$). For comparison, meta-analyses of education interventions find an average effect size of .44 SD on specialized focal mathematics tests such as the one used in this study (Hill, Bloom, Black & Lipsey, 2008), suggesting the intervention resulted in a substantive impact on learning, particularly given the brevity of the intervention. The condition variable accounted for 50% of the child-level variation (89%) in outcome (posttest assessment scores). No significant differences in learning between conditions were detected for Factor 2 (Measurable Attributes and Pattern Creation) or Factor 3 (Counting, 2-D Shapes, and Pattern Continuation; $p > .05$). Table 4 highlights the findings from the main impact models.

Table 4. Findings from Main Impact Models

Impact Contrast	N	Coefficient	Hedges g (Effect Size)	Std. Error	p
Factor 1: Ordinal Numbers, Spatial relationships and 3D Shapes	172	5.26	0.51	1.12	0.000
Factor 2: Measurable Attributes and Pattern Creation	180	-1.02	-0.10	1.06	0.336
Factor 3: Counting, 2D Shapes and Pattern Continuation	182	-0.40	-.038	1.00	0.689

Subsequent analysis into the back-end usage statistics of children and families who participated in the intervention indicated, as seen in Figure 6 below, that the resources targeting the mathematical skills contained within Factor 1 were accessed more frequently; specifically, they had more overall media views (which includes both games and videos) on average, compared to Factor 2 and Factor 3. Factor 1 also had, on average, more video views than Factor 2 and Factor 3. For games, however, Factor 3 had, on average, more views than either Factor 1 or 2. This indicates that the frequency with which specific resources were accessed may explain some of the differential findings observed for child outcomes. However, it is important to note that these usage statistics are limited in the information they provide, and therefore these findings should be interpreted with caution. For example, system log data indicate how often a member of a particular child's family visited a given webpage, but it does not indicate whether or not a video was viewed or a game was played and, if it was, for how long and under what circumstances and social arrangements or whether it was the child or someone else who viewed the video or played the game.
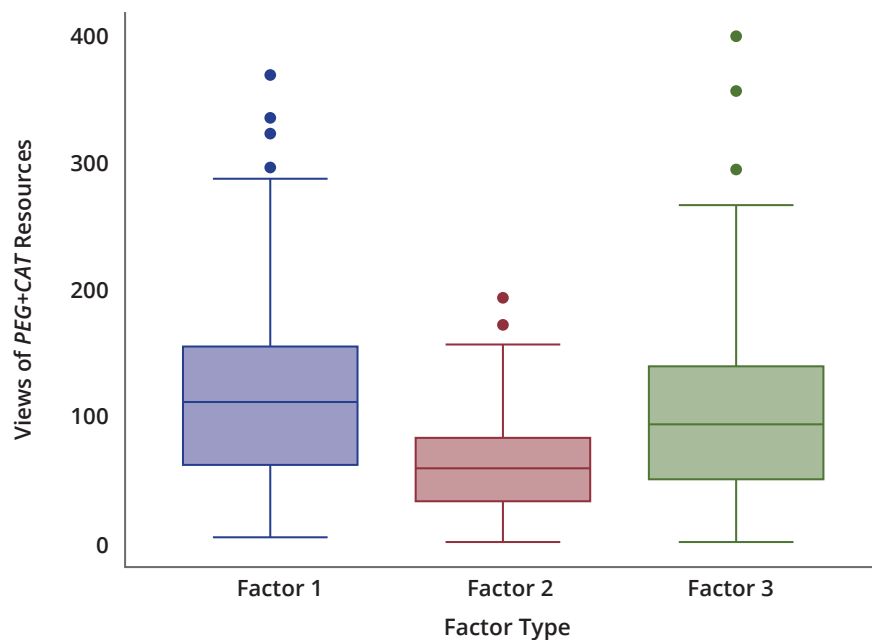
Figure 6. Family Number of Views of *PEG+CAT* Resources by Factor Type (*n*=100)

Teacher Scales

No significant differences were observed between PBS KIDS and business as usual conditions for either of the teacher scales—the Preschool Learning Behavior Scale (PLBS) or the Math Concepts and Problem Solving (MCPS) (see Tables 5 and 6 below). To a certain extent, this was not surprising. As the PLBS is a standardized measure, it was not directly aligned to the ATL skills within the study experience, which focused most frequently on self-regulation, persistence, and cognitive flexibility (i.e., strategies for calming down in order to maintain focus on a problem and trying a variety of problem solutions). Similarly, the MCPS was developed to align to the math content of the study but the ATL skills within it are largely generic; for example, highlighting working with others and applying knowledge in new situations. Furthermore, ATL skills are more dispositional than topical, meaning that they are ways of learning that apply across domains and situations, making them more difficult to change over a short intervention than a content skill such as knowledge of shapes. Moreover, the intervention focused primarily on mathematics skills and only secondarily on ATL skills, making the ATL portion of the intervention "light" and, therefore, making it more difficult to impact this set of dispositional skills. Finally, fewer resources with ATL content than resources targeting math skills were viewed during the study, further exacerbating the "lightness" of the ATL intervention.

Within each episode of PEG+CAT, Peg encounters a series of three problems, each requiring her to count backwards to calm down and to work with Cat or another friend to discover a new strategy. In retrospect, it would be reasonable to hypothesize that a child might pick up the strategy of counting backwards to alleviate the frustration of not being able to solve a problem, and it might also be reasonable to hypothesize that a child could adopt the strategy of asking a peer for help in solving a problem. However, these very specific strategies were not covered in either of the more general ATL measures used in this study. Encouragingly, though, these strategies were noted in the home visits and focus groups, supporting the idea that using a more targeted and aligned ATL measure might have captured some of the changes in children's behaviors.

Table 5. Preschool Learning Behaviors Survey Scale Descriptive Statistics for the PBS KIDS (*n* =98) and Business as Usual (*n* =89) Groups

Scales	Pre		Post	
	Mean	SD	Mean	SD
PBS KIDS				
Motive	48.36	10.85	49.97	9.71
Persistence	50.06	10.09	51.12	10.23
Attitude	50.03	9.58	50.16	9.38
Total Score	49.19	10.89	50.34	10.71
Business as Usual				
Motive	49.49	9.48	49.38	10.05
Persistence	49.33	11.15	50.99	10.39
Attitude	50.78	10.19	51.26	10.48
Total Score	49.65	11.11	50.29	11.1

Table 6. Math Concepts and Problem Solving Survey Results for the PBS KIDS (*n* =99), and Business as Usual (*n* =89) Groups

	PBS KIDS (*n* =99)		Business as Usual (*n*=89)	
	Pre (%)	Post (%)	Pre (%)	Post (%)
1. Displays an understanding of concepts related to patterns, through independent/group play activities or conversations with peers and/or teachers.				
Most often applies	36	63	34	67
Sometimes applies	39	33	44	29
Doesn't apply	24	4	22	3
2. Displays an understanding of concepts related to shape recognition and attributes, through independent/group play activities or conversations with peers and/or teachers.				
Most often applies	36	63	34	67
Sometimes applies	39	33	44	29
Doesn't apply	24	4	22	3
3. Displays an understanding of concepts related to ordinal numbers, through independent/group play activities or conversations with peers and/or teachers.				
Most often applies	24	53	18	55
Sometimes applies	54	42	58	34
Doesn't apply	22	5	24	11
4. Displays an understanding of concepts related to measureable attributes, through independent/group play activities or conversations with peers and/or teachers.				
Most often applies	31	51	24	52
Sometimes applies	47	40	56	44
Doesn't apply	21	9	19	4
5. Displays an understanding of concepts related to spatial skills, through independent/group play activities or conversations with peers and/or teachers.				
Most often applies	22	48	19	54
Sometimes applies	55	44	67	41
Doesn't apply	22	8	14	5
6. Displays an understanding of concepts related to counting and numeracy, through independent/group play activities or conversations with peers and/or teachers.				
Most often applies	45	67	40	72
Sometimes applies	43	31	49	28
Doesn't apply	12	1	10	0
7. Displays the ability to apply mathematical skills appropriately when solving problems.				
Most often applies	26	42	15	43
Sometimes applies	42	51	54	51
Doesn't apply	33	8	31	6
8. Displays the ability to recognize and use mathematics in their everyday life.				
Most often applies	28	55	22	53
Sometimes applies	54	39	54	45
Doesn't apply	18	6	24	2

Parent/Caregiver Outcomes

Parent/caregiver outcomes are based primarily on the pre- and post-surveys that researchers administered to participating families in PBS KIDS and business as usual groups. Where appropriate, findings from the parent surveys are augmented with data from other sources, such as the media diaries, home visits, or parent focus groups. These data sources are described in the Methods section.

In order to understand shifts in parent behavior and attitudes, this section focuses specifically on comparing differences between PBS KIDS and business as usual groups on the post-surveys at the end of the study. Because families were randomized into equivalent treatment and control groups and there were few systematic differences between conditions on the baseline survey, differences in responses across the two conditions at the end of the study can be attributed to the effect of the treatment. (In the case where the two groups differed at baseline, we report both pre- and post-survey differences between conditions.)

Highlights

- Parents and caregivers in the PBS KIDS condition reported a higher frequency of joint parent-child technology use, more joint gameplay, and more conversation connecting digital media and daily life than did business as usual parents and caregivers.

- PBS KIDS parents and caregivers also reported significant increases in their confidence to support math learning for their children, as compared to business as usual families.

- Twice as many PBS KIDS parents and caregivers agreed that technology and media were tools for math learning (though, importantly, not for other subject areas), at the end of the study, as compared to the beginning of the study period. Comparison condition families, on the other hand, were unchanged in these views.

- A higher proportion of parents and caregivers in the PBS KIDS condition reported engaging in problem-solving strategies with their children at the close of the study than did parents/caregivers in the business as usual condition.

Change in Behavior Related to the Use of Technology and Media

The proportion of PBS KIDS parents who used technology with their child on a weekly basis increased over the course of the study. At the beginning of the study, 84% of PBS KIDS parents noted that they used technology with their child at least once a week, as compared to 89% of business as usual parents (p<.05). By the end of the study, however, a greater proportion of PBS KIDS parents than business as usual parents reported joint parent-child technology use once a week (PBS KIDS: 94%; business as usual: 80%; p<.05).

The number of PBS KIDS parents reporting that they played digital games or used apps once a week with their child increased over the course of the study. By the end of the study, 79% of parents in the PBS KIDS group reported that they played digital games or used apps with their children at least once per week, compared to 54% of parents in the business as usual group ($p<.05$).

A larger percentage of PBS KIDS parents than business as usual parents reported making connections between media and daily life at least once per week at the close of the study. According to post-survey responses, an overwhelming majority of PBS KIDS parents (93%) noted that they connected the content of videos and games with children's daily lives. In contrast, only two thirds (67%) of business as usual parents reported doing so ($p<.05$). After the intervention, the majority of PBS KIDS parents (92%) also reported asking their children questions related to the media they were using, as well as answering questions their children asked about the media (96%), significantly more than business as usual families ($p<.05$).

Change in Behavior and Attitudes around Mathematics

PBS KIDS parents grew in their confidence to support children's mathematics learning. Over the 12 weeks of the intervention, the proportion of PBS KIDS parents feeling confident about supporting their children's mathematics learning increased. According to post-survey responses, the majority (96%) of PBS KIDS parents felt confident about their ability to support their child's mathematics learning, compared to 81% of parents in the business as usual condition ($p<.05$).

A greater proportion of PBS KIDS parents than business as usual parents reported helping their children with recognizing and drawing shapes, subtraction, and measurement. The majority of parents in the PBS KIDS group (90%) reported helping their child with recognizing or drawing shapes, compared to just under three quarters (74%) of business as usual parents who reported helping their children with this skill ($p<.05$). Similarly, by the end of the study, more PBS KIDS parents than business as usual parents reported helping their children with subtraction (66% compared to 48%; $p<.05$). These differences between PBS KIDS and business as usual parents suggests that the idea that the *PEG+CAT* intervention resources might have provided the context and tools to help parents engage with their child around recognizing and drawing shapes and performing subtraction.

Regarding measurement skills, on the pre-survey a larger proportion of PBS KIDS than business as usual parents reported that they helped children with this skill (60% of PBS KIDS parents vs. 18% of business as usual parents; $p<.01$). At the end of study, a larger proportion of PBS KIDS than business as usual parents continued to report helping their children with measurement (48% vs 29% respectively, $p<.05$). It is possible that the high level of support for measurement skills that PBS KIDS parents reported throughout the study provided little opportunity for the study resources to impact this skill.

A greater percentage of PBS KIDS parents than business as usual parents viewed technology and media as tools for mathematics learning at the conclusion of the study. Responses on the end-of-study survey indicate that about half (51%) of PBS KIDS parents opined that their children learned "a lot" about mathematics through the use of technology, as compared to a little over a quarter of business as usual parents (28%; $p<.05$). The

change in parents' views about technology as a tool for learning relates only to mathematics. In both PBS KIDS and business as usual conditions, parents' views about the extent to which technology supported children's learning of science, reading, or vocabulary, social skills, cognitive skills, and art/culture were stable over the course of the study, and there were no significant differences between conditions for any domain other than mathematics (p>.05).

Change in Behavior and Attitudes Related to Approaches to Learning (ATL)

At the completion of the study, a greater number of PBS KIDS parents than business as usual parents reported working on problem-solving approaches with their children. One of the goals of the *PEG+CAT* resources is to support the development of positive ATL behaviors (e.g., problem solving, self-regulation, self-efficacy). According to post-survey responses, 83% of PBS KIDS parents noted that they explored "what if" scenarios with their children (i.e., a problem-solving strategy that supports cognitive flexibility and generating new ideas). In contrast, 69% of business as usual parents reported engaging their children in "what if" scenarios on a weekly basis ($p<.05$). These differences may be reflective of PBS KIDS parents' uptake of the parent tip video that highlighted strategies for supporting children's ATL skills.

During the focus groups and home visits, PBS KIDS families spoke specifically about resources for ATL (and social skills) available in the *PEG+CAT* materials, and how children were taking these skills up in daily life. For example, parents who participated in focus groups noted that their children had begun to count to five when they needed to practice patience, a behavior that is modeled in the *PEG+CAT* materials. Such anecdotes indicate that children not only had exposure to the *PEG+CAT* resources, but also that those experiences hold promise for influencing children's behavior and supporting the development of self-regulatory strategies.

Families' Engagement with Intervention Resources

This section describes how families interacted with the intervention resources in general, and includes issues of access, support, and challenges that arose over the 12-week study period. In addition to the content emphasized in the *PEG+CAT* videos and games included in the intervention, patterns of families' engagement with these materials offer necessary and important context for understanding the child learning outcomes. For example, families' frequent use of videos and games addressing certain mathematical skills may have increased the likelihood for these resources to influence children's learning. At the same time, the variability in PBS KIDS families' use of the *PEG+CAT* intervention materials is notable, as is the fact that the majority of PBS KIDS families diverged from the recommended sequence of activities for any given week.

Highlights

- The majority of PBS KIDS condition families accessed intervention resources frequently, and many did so repeatedly, although there was considerable variation within the PBS KIDS condition with respect to individual families.

- PBS KIDS children accessed *PEG+CAT* intervention resources that exposed them to all of the target mathematical skills and, with less frequency, to all of the target ATL skills. Again, there was variability in frequency of access and limited data on length or quality of engagement with the resources within the PBS KIDS condition.

- PBS KIDS families reported finding the majority of the *PEG+CAT* intervention resources to be fun and engaging. Additionally, some parents expressed their appreciation that the resources provided their children with opportunities to practice math skills while others found that the games and videos complemented each other in a beneficial way that made the content more meaningful.

- Most PBS KIDS families progressed through the intervention experience over the 12-week study period, regularly accessing newly sequenced resources each week. The majority of families diverged from the suggested sequence, and overall use of the resources steadily declined over the course of the study.

- While PBS KIDS parents found value in the support materials they were provided as part of the *PEG+CAT* intervention, actual use of these resources varied. The majority of families reported the text messages they received as a part of the intervention to be helpful, practical, and useful, showing promise for the use of text messaging as a convenient and effective way to connect with families.

- Children used the *PEG+CAT* intervention media resources most often with their parents/caregivers, and parents in the PBS KIDS condition engaged in more joint media use with their children compared to parents in the business as usual group.

Families' Access of PEG+CAT Resources

PBS KIDS families viewed the majority of the *PEG+CAT* resources included as part of the intervention. On average, families accessed the majority (66%) of the 86 *PEG+CAT* intervention resources (including the weekly adventure and supplemental resources) at least once during the course of the study (Table 7). Families accessed a larger percentage (a mean of 78%) of the 65 core *PEG+CAT* resources (the weekly adventure videos, video clips, online games, and home activities—see Appendix I for a description) included in the recommended weekly sequence.

At the same time, there was substantial variation across the families in the PBS KIDS condition with respect to their use of both the core and supplemental resources, as the large standard deviations in Table 7 indicate. For example, the number of recommended *PEG+CAT* resources accessed by families ranged from a low of 6 to a high of 65 over the course of the study, with five families accessing all 65 resources.

Table 7. Percentage of PBS KIDS Families who Accessed the PEG+CAT Intervention Resources (*n*=100)

	Mean	SD	Minimum	Maximum
Percent of all resources accessed by treatment families	65.70%	20.41	6.98%	100%
Percent of core PEG+CAT resources accessed by treatment families	78.29%	21.41	9.23%	100%

(Source: System Log Data)

Analyses uncovered no relationships between family characteristics (region, gender, race/ethnicity, family income, and parents' education) and use/frequency of access of the intervention materials (p>.05).

On average, children in the PBS KIDS condition accessed more than half of the *PEG+CAT* resources related to all target mathematical skills at least once during the study period. As Figure 7 indicates, PBS KIDS children viewed a median of close to three-quarters of all *PEG+CAT* content related to patterns, ordinal numbers, and shapes, and a slightly smaller proportion—a median of approximately two-thirds—of content related to measurable attributes and counting.
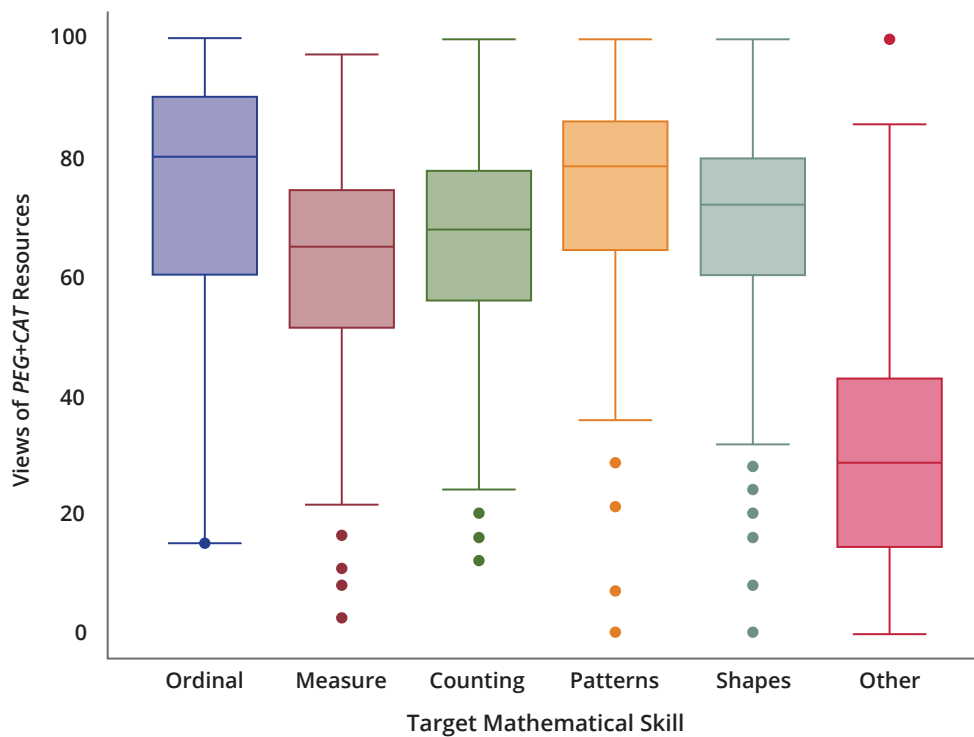
(Source: System Log Data)

Figure 7. Percentage of *PEG+CAT* Resources Accessed at Least Once by Target Mathematical Skill (*n*=100)

On average, children accessed almost half of all *PEG+CAT* resources related to the target ATL skills at least once during the study period. As Figure 8 indicates, PBS KIDS children accessed, on average, the majority of *PEG+CAT* resources focused on problem solving, positive mathematical attitudes, self-regulation, and self-efficacy, but only about half or less than half of the resources focused on cognitive flexibility and persistence. (The high medians for a few of the skills likely reflect, in part, the fact that only two unique resources addressed self-regulation, and three resources addressed problem solving.)
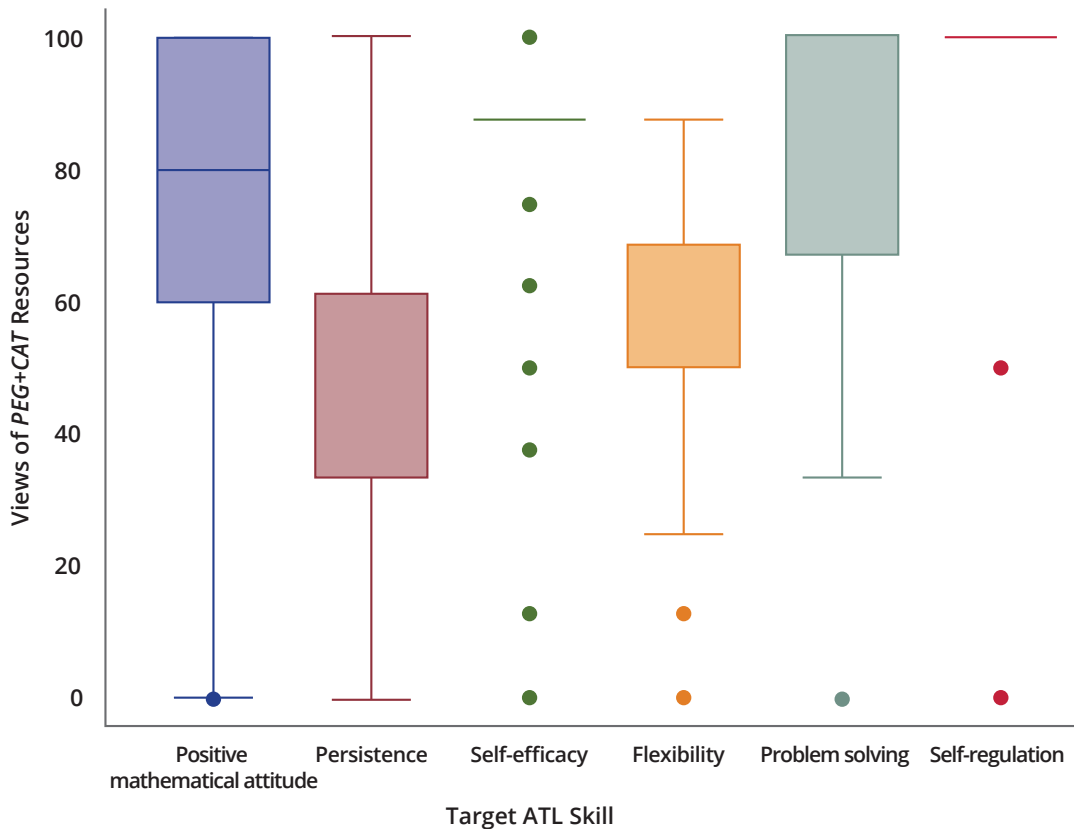
(Source: System Log Data)

Figure 8. Mean Percentage of *PEG+CAT* Resources Accessed at Least Once by Target ATL Skill (*n*=100)

Figure 8 above focuses on exposure to content by exploring the topics to which children were exposed to during the study at least once. In addition to the proportion of content accessed, we also examined the frequency of this exposure, as indicated by the total number of views of a resource across topic areas (Figure 9). In terms of overall exposure to target mathematics skills, children accessed *PEG+CAT* resources related to measurable attributes and counting content most frequently, followed by content related to shapes, ordinal numbers, and patterns. Compared to target mathematical skills, children had fewer views of the ATL content on average, likely due to the fact that these skills constituted a smaller portion of the resources overall. *PEG+CAT* video episodes including *The Big Dog Problem, The Dinosaur Problem*, *The Play Date Problem*, and *The Tree Problem* were the most popular videos, while *Chicken Blast Off*, *Chicken Dance*, and *Hungry Pirates* were the most popular *PEG+CAT* online games.
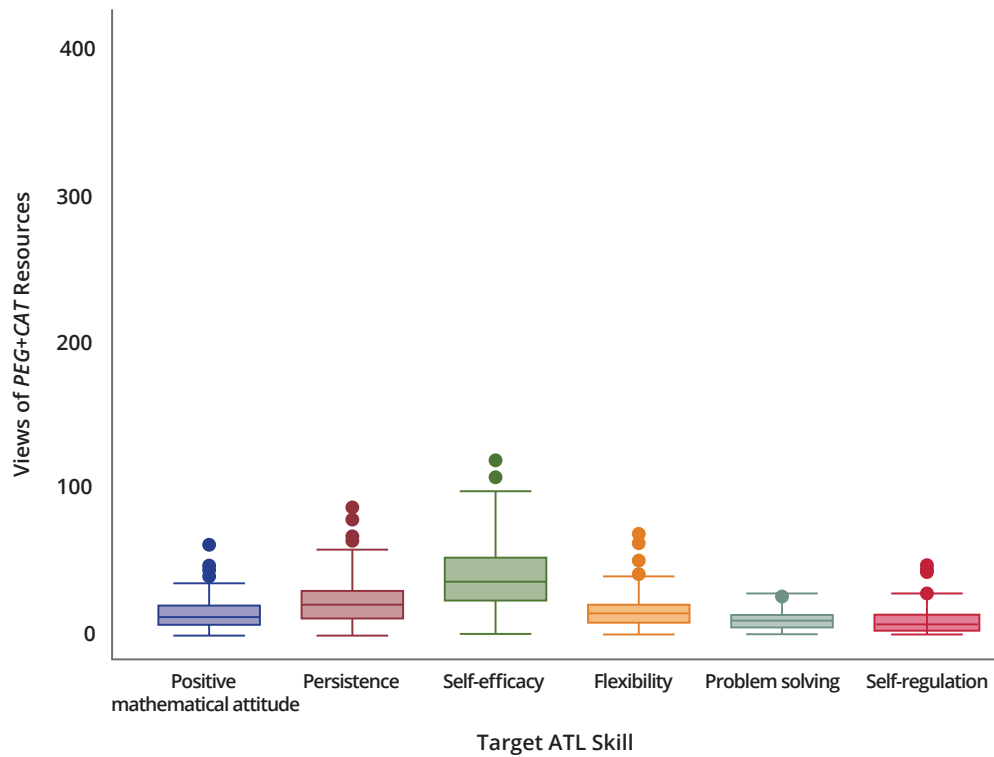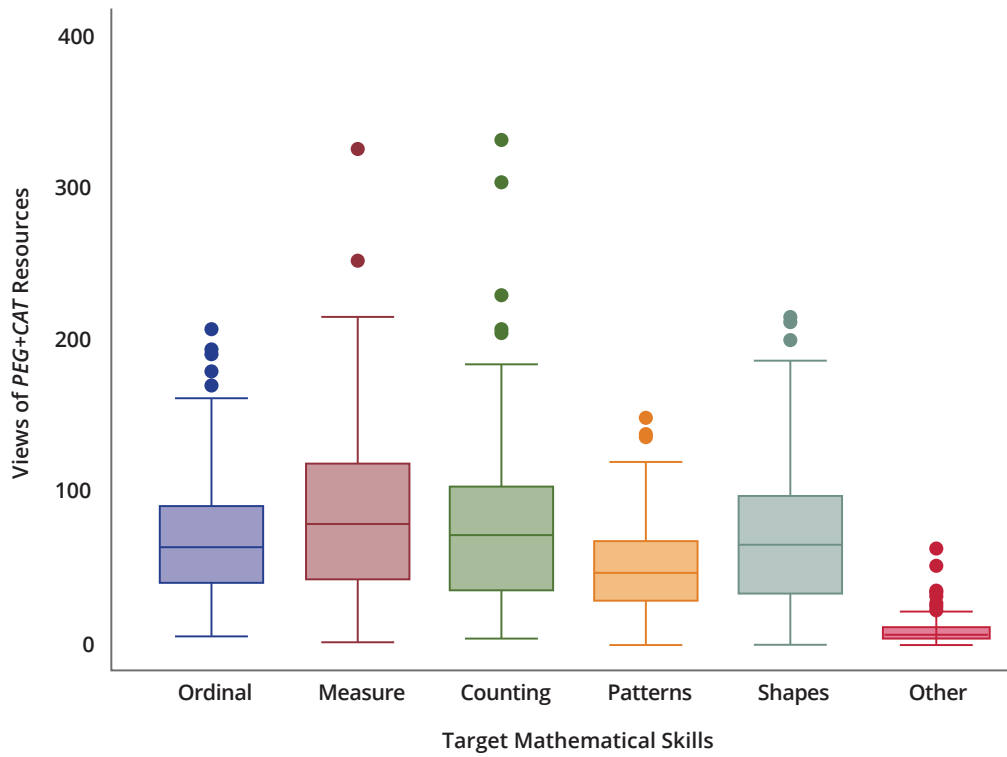
(Source: System Log Data)

Figure 9. Number of Times Families Accessed *PEG+CAT* Resources by Target Skill

Supporting Parent-Child Experiences with *PEG+CAT* Early Math Concepts

The variability within the PBS KIDS sample is a consistent theme in all study data related to children's exposure to target mathematics and ATL skills. As before, the information about children's average exposure to target mathematics and ATL skills must be understood in conjunction with the fact that individual families varied greatly with respect to their accessing of the relevant *PEG+CAT* materials.

Similarly, it is important to note that system log data provide information about the number of occasions that PBS KIDS families viewed pages on the study website and, as such, are only approximate estimates regarding exposure to *PEG+CAT* content. Notably, these data do not offer any insight into how children engaged with the materials, the kinds of interactions taking place among children and their family members around the media resources, or how children responded to those experiences.

Finally, analyses of system log data might overestimate children's exposure to *PEG+CAT* content, as children could have been viewing the pages without interacting with the material. For example, data indicate that the child or a family member visited the page containing a *PEG+CAT* resource, but not whether the child played the video, played the video fully or partially, or played the video while doing other activities and thus did not watch it. All such interactional patterns would be considered instances of "viewing" the resource described in the system log analyses above.

Children's and Parents' Reactions to PEG+CAT Resources

PBS KIDS families reacted positively to the *PEG+CAT* resources. As Figure 10 highlights, 84% of parents reported that children found the *PEG+CAT* videos and games fun and engaging, while 82% of parents noted this opinion for the video clips.
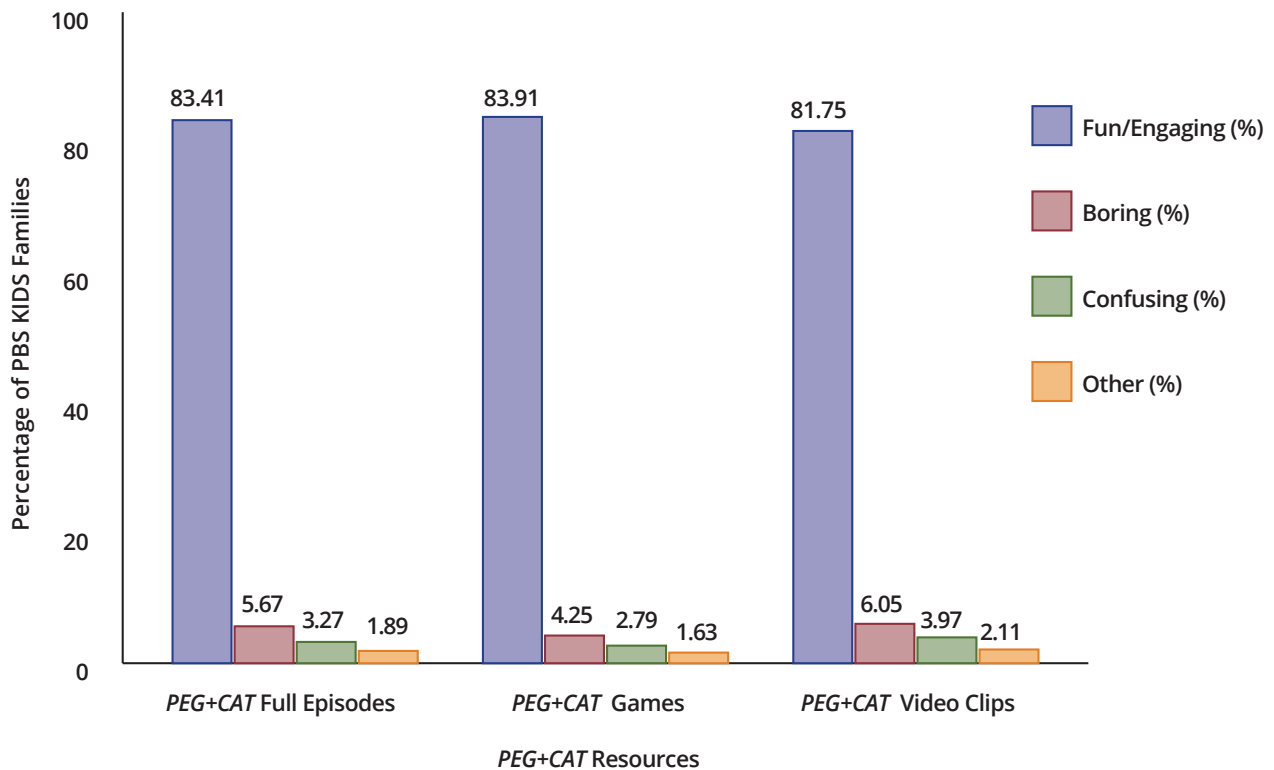
(Source: Media Diaries)

Figure 10. Reactions to the PEG+CAT Resources by PBS KIDS Families (*n*=100)

A greater number of PBS KIDS parents than business as usual parents reported that their children watched PBS programming at home at the conclusion of the study. Pre-survey data suggest that the majority of children across both conditions watched PBS (71%) and Disney (71%) television channels at home, with slightly fewer children (65%) watching Nickelodeon. Following the intervention, 81% of PBS KIDS parents indicated that their children watched PBS programming compared to 65% business as usual parents ($p<.05$). There was a slight decrease among the PBS KIDS parents reporting that their child watched the Disney channel, from 72% to 65% ($p<.05$), suggesting potential crowd-out effects as more families reported watching PBS.

After participating in the study, a larger number of parents in the PBS KIDS condition (64%) reported that their children watched *PEG+CAT* videos and played *PEG+CAT* games at least once a week, significantly more frequently than parents in the comparison condition (19%; $p<.01$). While it is to be expected that families in the intervention condition would report engaging with the *PEG+CAT* materials with greater frequency than would business as usual families (and as compared to the beginning of the study), the magnitude of the contrast between the groups is notable.

Generally positive reactions to *PEG+CAT* emerged as a consistent theme in parent focus groups and media diaries. Parents and caregivers noted how much children enjoyed watching the videos, playing the games, and talking about *PEG+CAT* with their families. Parents highlighted *PEG+CAT's* music as an appealing aspect, and remarked on how their children sang the *PEG+CAT* tune throughout the day, long after watching the videos and playing the games; one parent noted that she "was at work singing *Chicken Dance* or *Pizza Place* because he [her son] was on it all day."

In the focus groups conducted at the end of the study, PBS KIDS parents reported that the games and videos complemented each other. In particular, parents noted that the games offered a context where children could apply and practice the mathematical skills introduced by the video, thereby deepening their understanding of mathematical skills. As one parent reported, "I think when [my son] watches just the videos on his own, I don't think he's paying attention to the counting or the subtracting or measuring things they are doing, but when there is a game that goes along with it, then he's able to do it himself and understand it better." While children enjoyed both videos and games, a few parents/caregivers noted that the games engaged children to a greater extent and were requested more often by their children than were the videos. For example, one caregiver noted, "When [her son] got a new game every week, he didn't want to let it go and would focus on that" even though "it's not that he didn't like the videos." Finally, children did not respond to the full episodes and video clips equally; some parents reported that their children enjoyed the full episodes more than the short clips, as the latter were sometimes too brief and did not always make sense to children as standalone pieces.

Focus group discussions also elicited some critical opinions of the *PEG+CAT* resources. In addition to the positive views expressed by many parents, some parents indicated that their children did not like the videos. Other parents reported that the videos and games were too "babyish" for their children, and therefore not challenging enough to hold their attention for long. According to one parent, because the children "already knew everything [in the games], it's not necessary for the parent to sit next to them."

Adherence to the Recommended Intervention Sequence

Analyses explored the extent to which PBS KIDS families followed the recommended sequence within each week (that is, whether families followed the order of activities specified for any given week) and across all 12 weeks of the intervention (that is, whether families accessed the recommended *PEG+CAT* materials for each given week).

Families' use of recommended videos, clips, and games for each week from the study website was high initially and declined over the course of the study. The dashed line in Figure 11 displays the proportion of the recommended *PEG+CAT* resources families accessed from the study website within a week before and a week after when the resources were supposed to be accessed (i.e., within a three-week period). In general, families tended to access most of the videos, games, and video clips specified for the week at the beginning of the study. For example, during the first two weeks of the study, median family access of the content specified for each week was 100%. After the first few weeks, adherence tapered, declining over the course of the intervention, as families were less likely to access the full specified resources for the week. By weeks 10 and 11, PBS KIDS families were accessing a median of only about half or a little more of the recommended sequence of materials for the week.[2] Media diary reports mirror these back-end data findings.
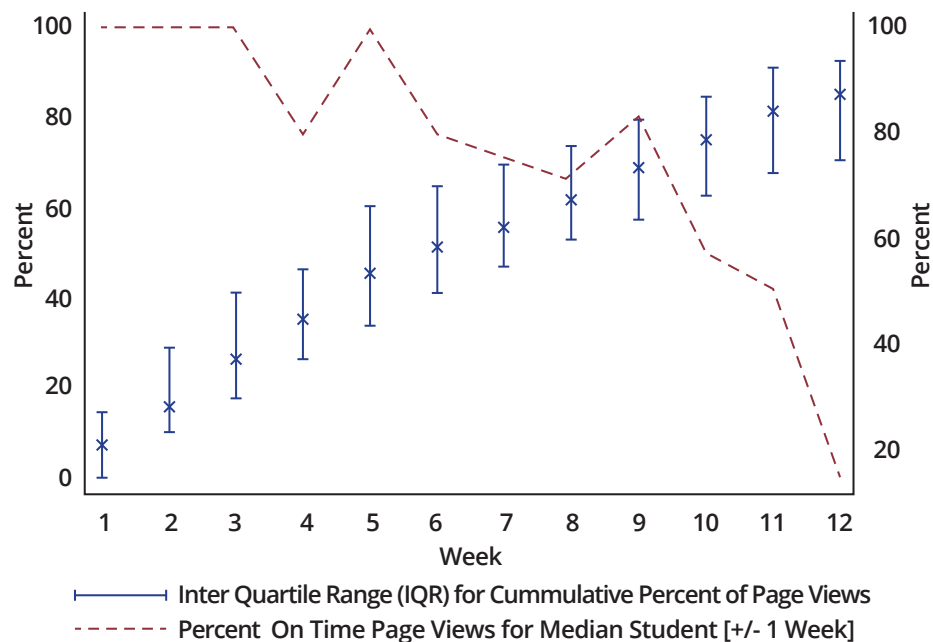
(Source: System Log Data)

Figure 11. Percentage of Each Week's Specified Sequence and Cumulative Percent of Entire Sequence Viewed by PBS KIDS Families (*n*=100)

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[2] As before, study results suggest wide variability across families in terms of the extent to which they viewed/played only the recommended videos and games for any given week.

Although they did not follow the sequence strictly, families generally progressed gradually through the intervention over the course of the 12-week study, regularly accessing new sequenced resources each week. The vertical bars in Figure 11 above indicate the proportion of cumulative sequenced content that families viewed over the course of the study (the percentages include only the core resources, and not the supplemental resources). There were a few exceptions to this pattern, however. A few families completed the intervention early, watching all of the *PEG+CAT* resources in a span of just a few weeks. For example, by the eighth week of the study, eight families had completed 90% or more of the sequence. In contrast, a few other families hardly progressed through the sequence. Specifically, by the end of the study, 10% of families had completed 50% or less of the sequence.

Following the *PEG+CAT* intervention sequence was not a priority for many PBS KIDS families. Although sequence—the arrangement of activities within and across weeks—was emphasized in the intervention's design, the results from the media diaries indicate that following the sequence was not important to many participating families. Some families adhered to the order of activities recommended in the *PEG+CAT* Experience Guide, and were appreciative of the structure it offered. For example, one parent noted that the recommended sequence helped identify the media focus for the week, moderated the child's media habits, and supported joint use of media. Other parents were more flexible, permitting children to access resources from prior or subsequent weeks, after completing the current week's sequence (during a home visit interview, one caregiver went so far as to refer to a week's recommended sequence as her child's "homework."). Not all families reported that they saw value in adhering to the sequence, however. During focus groups, parents said they allowed their children to choose the order with which they selected the resources on any given week, such as by playing the week's games before watching the videos, returning to favored resources from previous weeks, or selecting resources from any number of weeks.

Focus group data also offer some insight into why some families' might have diverged from the recommended sequence. In particular, some parents/caregivers expressed the view that the weekly sequence of *PEG+CAT* materials was not sufficient to occupy children for the entire week and that, upon completing the materials for a given week, children would often access materials intended for subsequent weeks. Another possible explanation for families' progressive divergence from the sequence is that children developed preferences for particular types of media (e.g., games or videos) or affinities for specific characters over the course of the study and, as a result, increasingly chose resources according to those preferences.

Families' Use of Support Materials

Parents/caregivers reported that the family support materials that were a part of the PBS KIDS intervention were valuable. The media diaries for Weeks 1–3 and for Week 5 asked parents/caregivers to comment on the perceived value of the family support materials. The results of this analysis, summarized in Table 8, indicate that the majority of families found the materials "very useful" in supporting the joint use of media and in encouraging children's problem-solving skills.

Table 8. Perceived Value of Parent Materials in Promoting Media Use and Problem-Solving Skills

Perceived value of family support materials	Week 1 (n=80)	Week 2 (n=80)	Week 3 (n=80)	Week 5 (n=84)
Very Useful	55	55	55	59
Somewhat Useful	24	23	25	21
Not Useful	0	1	0	0
Did not Use	1	1	0	4

(Source: Media Diaries)

PBS KIDS focus group parents reported that the tips that were incorporated into the Experience Guide helped them frame how to use math in daily life and how to moderate media consumption, echoing findings from the parent surveys. For example, one parent in the focus group reported that she had begun to stay in close proximity to her child during media use because the support materials emphasized the importance of supervising media use. Additionally, parents reported that the poster helped them know which content to emphasize during any given week, how to moderate their children's media habits, and how to actively engage in the media with their children.

PBS KIDS focus group participants reported that the weekly text messages were helpful, practical, and useful. For families that opted into receiving them, parents said they were helpful because they conveyed a quick, simple, and specific content area on which they could focus. Parents also suggested ways for improving the text messages. For example, some parents said they would have liked the ability to customize the content of the messages they received. While some parents stated that they helped them moderate device and media usage and follow the study's intervention timeline, other parents stated that they only appreciated the messages that related to specific themes, such as baking or bath-time activities. Additionally, some parents/caregivers said they would have liked to schedule text messages to arrive at a more convenient time, either a few days earlier to allow the parent to plan a suggested activity or at a particular time of day when the parent could most likely attend to it.

The use of support materials by PBS KIDS families (Experience Guide, parent videos, tip sheets, and text messages) varied. In general, families used the Experience Guide and the weekly text messages with greater frequency than they used the tip sheets or parent videos (Figure 12). Additionally, families reported increased use of the Experience Guide and weekly text messages over time, and decreased use of the parent videos over the course of the intervention, which is consistent with the design of the support materials. Specifically, parent videos were intended to introduce parents to the intervention, highlight strategies for jointly engaging with children around the *PEG+CAT* resources, and promote math talk and problem-solving skills. The parent videos were designed for more frequent use in the first five weeks of the intervention, and did not appear as part of the recommended sequence of materials in weeks 6–12.
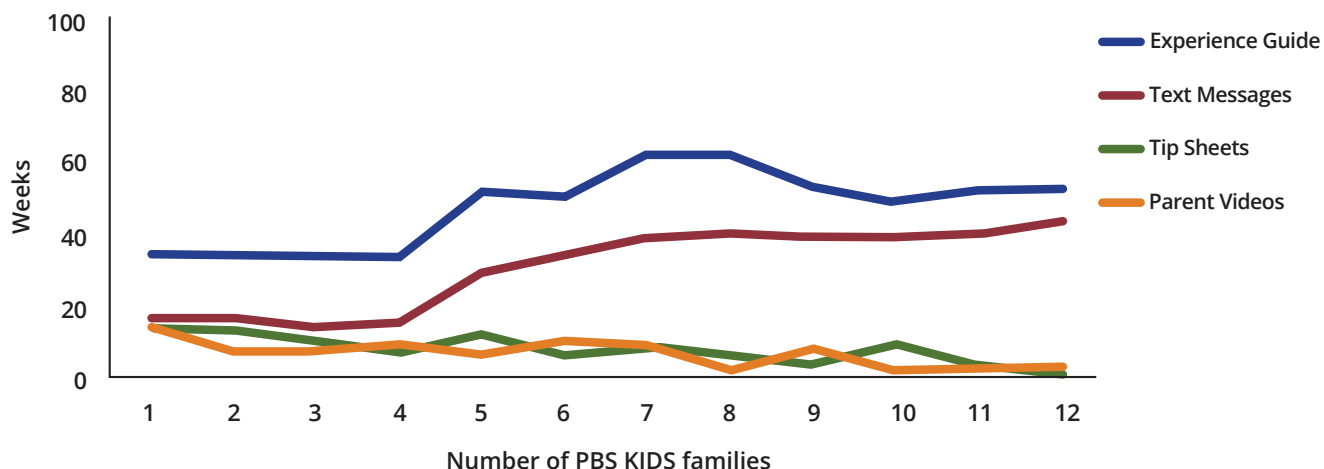
(Source: Media Diaries)

Figure 12. Use of Family Support Materials by PBS KIDS Families (*n*=101)

Children's Use of PEG+CAT Resources with and without Others

Children in the PBS KIDS condition were more likely to use media with parents/caregivers than with other people or on their own. Table 9 shows the social arrangements for media engagement reported among PBS KIDS families. Across all *PEG+CAT* resources comprising the intervention, parents/caregivers viewed videos or played games with children about half the time. After joint use with parents, solo use (children using media on their own) and joint use with siblings were the most commonly reported patterns of media use among the PBS KIDS families. Solo use was slightly more common across all resources and all weeks of the intervention. In general, children in the PBS KIDS condition tended not to use media with other children.

Table 9. Patterns of Media Engagement Among PBS KIDS Families[3] (*n*=101)

	With Caregiver Mean %	With Siblings Mean %	On Own Mean %	With Other Children Mean %
Videos	47.80%	24.21%	28.59%	4.85%
Games	50.67%	23.12%	30.99%	3.97%
Video clips	51.18%	23.32%	32.19%	6.03%

(Source: Media Diaries)

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[3] *Average percent across weeks where percent was only out of families who reported time spent on media activity.*

Parents/caregivers in the PBS KIDS condition were more likely to report engaging in media use with their child than were business as usual parents and children, who more typically engaged in separate activities. As Table 10 indicates, parents/caregivers in the business as usual condition were more likely, on average, to report that they were completing household chores, watching television/videos, or playing digital games separately while their child was using media and technology than were parents/caregivers in the PBS KIDS families.

Table 10. Activities Reported by Parents/Caregivers during Children's Media Use (*n*=197)

	PBS KIDS 12-week average (%)	Business as Usual 12-week average (%)
Completing household chores and tasks	32	47***
Caring for other children	10	13
Watching TV/videos or playing games/apps separately	4	15***
Child did not use technology without an adult	14	8*

*** p<.001; ** p <.01; * p <.05

(Source: Media Diaries)

These contrasts between the PBS KIDS and business as usual families support the inference that parents/caregivers in the PBS KIDS families were oriented toward more intentional joint use of media, as compared with parents/caregivers in the business as usual condition, who may have counted co-presence and monitoring of technology among instances of joint use.

Data from home visits illustrate two main types of parents' participation with children around the media. In the first type, the parent was present when the child viewed videos or played games, but tended to perform a supervisory role. While parents might set up the media experience (e.g., identifying the game or logging in) or troubleshoot problems (e.g., navigating), they did not engage with the media directly or discuss the media experience with children. Instead, they used the time for other activities, such as cooking, cleaning, or using their own devices. In the second type of participation, the joint media use was more intentional. In these instances, parents played a more active role, engaging directly with the media (e.g., participating in gameplay) and/or discussing the media experience with the child (e.g., asking children questions, answering questions the child asked, making connections between the media experience and the real world, and listening to/acknowledging the child's spontaneous comments). Researchers observed both kinds of participation across participating families, regardless of study condition. However, the results summarized in Table 10 suggest uptake among PBS KIDS families of some of the principles of deliberate joint engagement with media emphasized in the *PEG+CAT* intervention.

Challenges Enacting the PEG+CAT Intervention

Approximately half the PBS KIDS families reported challenges with enacting the intervention during any given week of the study. The most commonly reported challenges were using the laptops/tablets and finding time to fit the games and videos into the family schedule. Connectivity issues and not being able to access the digital resources emerged as a third challenge (Figure 13). Children's lack of interest or engagement was not a notable challenge across the 12 weeks of the intervention.
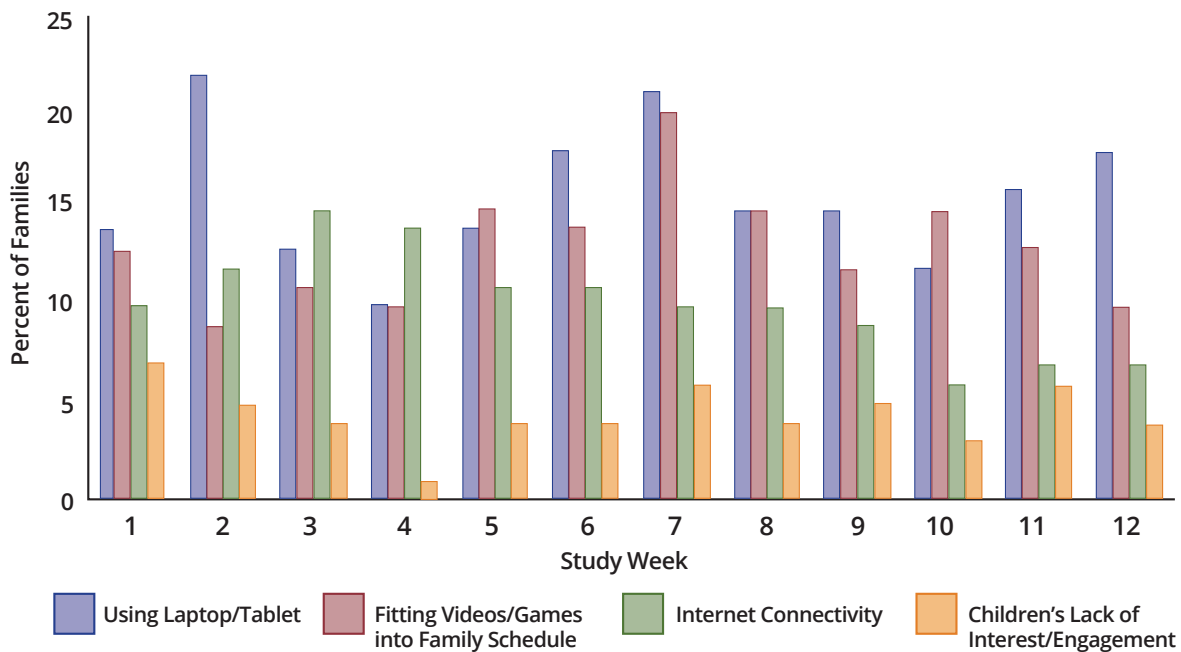
Figure 13. Challenges Reported by PBS KIDS Families while Enacting the PEG+CAT Experience by Week (*n* =101)

It is likely that the data in Figure 13 underrepresent the challenges encountered by families in the PBS KIDS condition, as the parents/caregivers who indicated a challenge for any given week did not always specify the type of challenge they faced.

PBS KIDS families encountered myriad technological challenges over the 12-week study period. In order to ensure that PBS KIDS families had continuous and reliable access to the digital resources included in the study, each study-related device came with 3GB of data per month. However, families still encountered challenges with the technology tied to the intervention. In an effort to reduce the impact these issues could have on study participation, researchers attempted to respond to technology difficulties immediately. Despite these efforts, families encountered difficulties with Internet connectivity limitations due to slow or throttled data speeds as well as limited broadband coverage in their neighborhoods, device malfunctions (7 of the 201 devices), difficulty signing in to devices and the study site, and devices reset to factory settings. Researchers walked families through processes to address Internet and sign-in problems over the phone, and met individually with families with lost, stolen and broken devices. Families did not go more than one week with an inoperable device.

Up Close:
Media Use in PBS KIDS Homes

Randomized controlled trials are designed to gather evidence that speaks to broad questions of concern, in this case, math learning among young children living in lower-income households. While a study such as this one must necessarily concern itself with analyzing a full data set collected by the research team, it is important to remember the very real families who made the study possible. Although it is not possible to represent the richness of PBS KIDS families' experiences with the *PEG+CAT* materials—much happened over 84 days in each of the 197 homes—the following vignettes are modest representations of what participation looked like in four different homes. Formally, these vignettes draw upon home visit data—systematic researcher accounts of two visits with 10 PBS KIDS families in each study condition conducted over the 12-week period—that complements the more comprehensive data from media diaries and system logs. Less formally, rather than being representative, these snapshots provide glimpses of particular families' use of study materials, concretely depicting specific moments of dual-generational media use and learning.

The vignettes, which use pseudonyms, highlight a range of behaviors from children and adults alike. From these stories, it is possible to see how parents supported children's use of the *PEG+CAT* materials, the types of interactions taking place between adults and children, how parents took up the guidance in the family support materials, and how children and parents reacted to the videos and games. In addition to depicting how families took up the mathematics skills, these vignettes also offer evidence of children's uptake of ATL strategies highlighted in the *PEG+CAT* resources.

- Carlo and Veronica is an example of the importance of mediation, and how co-play with a caring adult is critical for helping children progress through games, even the ones with which they are familiar.

- Jessica and Adrian's vignette emphasizes the value of transmedia. When games accompany videos, they open up opportunities for children to practice and appropriate the math skills at the center of the videos. Adrian's experience also exemplifies the sing-and-dance-along allure of *PEG+CAT*'s music as well as the developmental challenge of paying attention to an 11-minute video, which is common among four-year-olds.

- Ana and Sofia is an example of the rich interactions that can, and did, unfold among PBS KIDS children and parents around the *PEG+CAT* videos and games. It also highlights how parent-child interactions helped children make sense of the math, turning Peg's "big problems" into opportunities for thinking about mathematical questions in the context of everyday life.

- Liliana and Angela is a powerful reminder that media tend to be designed for solo use, rather than joint engagement; that adults are differently prepared to engage with children around media; and that, in some cases, resources such as tip sheets and experience guides might not be sufficient and that models, especially parent videos, might be necessary.

Carlo and Veronica:
Importance of Mediation

Four-year-old *Carlo* lives with his family in the New York City area. When researchers visited Carlo's home, they talked with Carlo, his mother, and his seven-year-old sister in the living room of their apartment. In addition to the PBS KIDS laptop and tablet provided as part of the study, other devices in sight included a large TV, a Wii gaming system, a DVD player, and a cable box.

At the first visit, researchers had the chance to speak with *Veronica*, Carlo's mother. Carlo was present in room for this conversation, playing with the PBS KIDS laptop and, at times, drawing pictures. Veronica mentioned that Carlo enjoys playing *Pizza Place*, a *PEG+CAT* online game in which Peg directs children to place a specific number of toppings on a pizza. ("Let's put some toppings on this pizza! Ramon wants seven peppers on his pizza.") Veronica recalled that Carlo had come to her a few weeks earlier after playing *Pizza Place* saying, "Mommy come! I want you to eat one of the slices of pizza!" This had opened up a dialogue between Veronica and Carlo about the game and how to play it.

The second visit to Carlo's home involved opportunities for researchers to observe Carlo and Veronica using the *PEG+CAT* videos and games. At first, Carlo sat on Veronica's lap at the dining table as they played a game together; later, she stood behind his chair, looking over his shoulder as he explored the media on his own. Carlo's older sister, Eva, was present too, but she sat at the far end of the room, watching videos and playing games on a tablet. Eva approached the table from time to time but Carlo discouraged her from joining them.

Together, Veronica and Carlo decided to play two *PEG+CAT* online games: *Chicken Blast Off*, focused on shapes, and *Star Swiper*, a counting game. Both were games that Carlo played often, according to Veronica, but during the visit, he needed her help on a number of occasions to progress through the games.

Veronica explained that since Carlo began watching *PEG+CAT*, he had begun to use Peg's strategies to deal with frustration. Each show begins with a problem Peg encounters, causing her to squeal, "I'm totally freaking out!" to which the insightful Cat responds by reminding Peg to count backwards from five to calm down. Veronica said that Carlo had begun to declare, "Mommy, I'm angry. I'm counting," and then count "1, 2, 3…" to relax. Veronica said Carlo learned this from *PEG+CAT* videos and, with her encouragement, had been using this strategy at home and at school.

A still from the online video game *Star Swiper*.
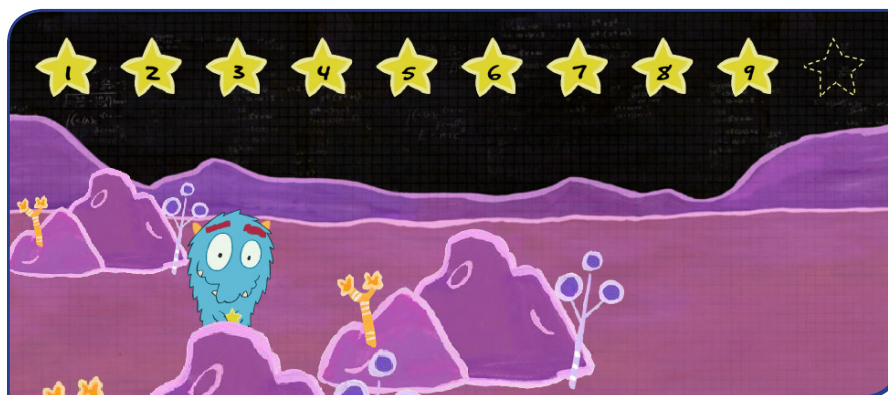
Adrian and Jessica:
Value of Transmedia

Four-year-old *Adrian* and his mother, *Jessica*, live in the San Francisco Bay Area. During the home visits, researchers spoke with Adrian and Jessica in their living room, equipped with a long, L-shaped sofa and a single sofa chair along the edge of wall. On the other side of the room were the front door, which was left open, and a play area with toys. The TV was positioned on a wall at the front of the room, and was paused on what appeared to be an animated children's movie.

At the second visit, Adrian initially played with an iPad, lying on the chair, his legs over the arm. Later, when Adrian started to play with the Chromebook laptop, he moved to the larger sofa so that his mother could sit beside him. Jessica brought over a small round table so the Chromebook could be in front of them. During the activity, Adrian sat next to his mother on the couch, stood up and danced, or knelt on the carpet to use the laptop and trackpad.

Jessica asked Adrian if he wanted to play a game. "The Chicky!" he responded gleefully, and Jessica navigated to the *Chicken Dance Game,* a *PEG+CAT* game in which players help chickens complete their "really cool dance" pattern by choosing the dance step for the last chicken in the group. As they played, Adrian's mother consistently attempted to direct the conversation and support Adrian's game play by asking questions like "What comes next?" and "Is that the right one?" Adrian retained control over the game, choosing "Free Play" instead of "Replay" and selecting patterns he wanted to make, even when Jessica encouraged him to try other ones. Music and other game sounds seemed to catch Adrian's attention, keeping him engaged with the game. As the game progressed, he danced along with the game and mimicked the "cheep, cheep" sound the game produced to indicate incorrect answers.

Next up was the *PEG+CAT* episode, *The Beethoven Problem*. Like with the *Chicken Dance Game*, Adrian seemed to enjoy the music, nodding his head in time to the beat and humming and singing along at some places. At the start of the video, Adrian stood up and began to dance along. Sometimes, he counted along with the video or made comments about what he saw happening on screen to his mother; at other times, he sat quietly beside Jessica, intently watching the video. While he seemed to enjoy the video, particularly the music, watching it fully seemed to be a challenge for Adrian, and he moved around from one spot to the other while it played.

Jessica reported that Adrian learned from the *PEG+CAT* games and videos, but she worried that when he watched videos on his own, he did not pay attention to the counting, subtracting, or measuring that is taking place on-screen. When games accompanied the video and Adrian was able to do the activities himself, Jessica felt that he understood more of the math. Jessica also said that Adrian was learning about patience from *PEG+CAT*. Even though Jessica did not believe that Adrian knew how to apply Peg's strategy to his own life—and count backwards from five to calm down when he became frustrated—he often noticed Peg's frustration while watching the show and would point out that Peg "needs to calm down."

A still from the *PEG+CAT* episode *The Beethoven Problem.*
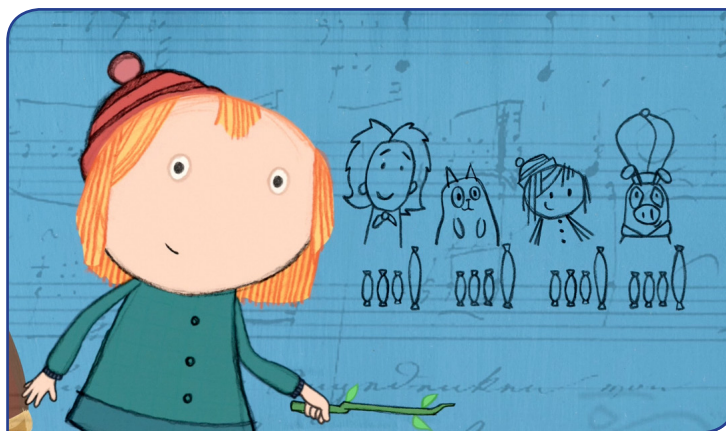
Ana and Sonia:
Bringing Math and Problem-Solving to Life

Sonia and her four-year-old daughter, *Ana*, live in the San Francisco Bay Area. During one of the research visits to their home, which was conducted in Spanish in the family's living room, Ana sat in a child-sized folding chair next to a low table in the middle of the room, and Sonia sat next to her in her own chair, a little farther back. Sonia reported that she and Ana would typically watch or play together once or twice a day. Other times, Ana would play or watch independently in the same room.

During the second visit, Ana chose to watch *The Big Dog Problem*, reportedly one of her favorite *PEG+CAT* episodes from the suggested media. In this episode, Peg and Cat need to mail some important letters for Peg's mom, but they find a very big dog blocking the mailbox. Although they are scared at first, Peg and Cat eventually make friends with the dog who helps them "become tall enough" to reach the mailbox and mail the letters.

As they began watching, Sonia initially guided Ana, telling her where to click to play the video on the Chromebook laptop. The two of them watched the show together quietly for the first few minutes until Sonia asked Ana to pause the show, saying "Can you explain to me what was going on, because I didn't understand?" This happened several times—Sonia asked Ana to pause the show so she could raise questions that prompted Ana to explain what was happening in the video—until Ana's infant sister started to cry in the other room and Sonia left to attend to her. After a few minutes, Sonia returned with the baby and stood behind Ana, rocking the child, watching the video, and continued to ask Ana questions.

Ana seemed to enjoy talking about the video and she responded to most of her mother's questions although she ignored a few when she was completely engrossed in the video. When the video ended, Sonia turned the conversation to real life and how they could reach something that was up high and out of reach—the problem encountered by Peg and Cat in this episode. Ana told her mother they could bring a ladder and climb, or they could jump, "be big and reach," or bring a chair or table to be bigger. When Sonia asked Ana if she learned anything, Ana said that "Peg measures Cat's height," which happens at the end of the episode.

Sonia reported that since watching *PEG+CAT*, Ana had begun to copy Peg's language and antics. At times, Ana would say, "I have to think," and "I have to find a way," putting her finger to her forehead, and when she saw a mess she wanted to clean up, she would say that she was going to think of a solution. Her mother also said that Ana liked to count, and often counted along with Peg. Ana also liked to play the *PEG+CAT* game, *Pizza Place*, and when they ordered pizza in real life, Ana had started requesting a specific number of her favorite toppings, just like the game.

**A still from the *PEG+CAT* episode
*The Big Dog Problem.***
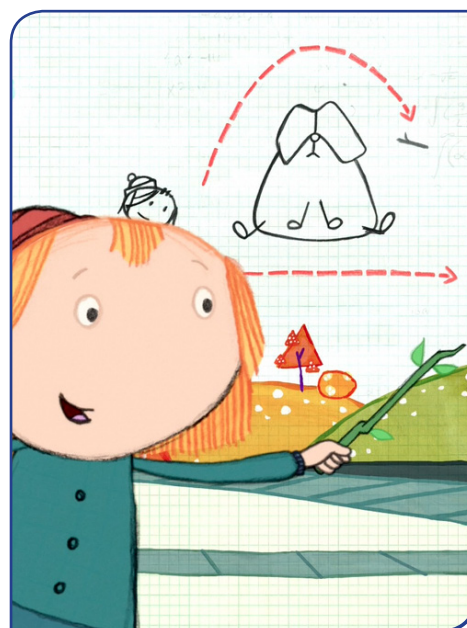
Liliana and Angela:
Opportunity for Additional Modeling

Liliana is four years old and lives in the San Francisco Bay area with her mother, *Angela*, her father, and two siblings. The home visits took place in the living room and, although everyone was home, only Liliana remained in the room during the visit; her mother came and went, and her siblings and father remained in other rooms of the home.

Angela said her daughter enjoyed the *PEG+CAT* videos, watching them over and over again. During the visit, Liliana selected and watched *The Penguin Problem* on the tablet as she sat and ate a hot dog. Her mother stood beside her and explained, "I stand here because the worksheet said that an adult is supposed to be here to supervise the media." Her mother was referring to a Parent Tip Sheet the study team had provided, which offered suggestions for how parents could interact with their children as they watched and played media together. Her mother remained quiet as her daughter watched the video, and then left to go into the kitchen. Liliana remained at the table and when the video ended, she replayed *The Penguin Problem* episode again, bouncing her legs to the music, eating her hot dog, and watching intently.

Angela returned a little later and helped Liliana find the *PEG+CAT* game *Chicken Blast Off*. Liliana began to play alone as her mother stood beside her and watched silently. At one point, Liliana had to choose the appropriate shape from a series of options. She pointed to one, turned to her mother, and asked, "Este?" wanting to know if the shape she wanted to choose was the correct one. Her mother continued to watch but did not respond. Liliana made her selection, continued to play through several levels, and expressed delight when the game's narrator told her she had done something "totally awesome!"

Angela expressed preferences for some videos and games over others, favoring *Pizza Place* because "it teaches [Liliana] how to count," and *Chicken Blast Off*, because it "helps teach shapes" and "where to put things." Angela also mentioned that she disliked *The Penguin Problem* because she found that there was less for Liliana to do while she watched it.

A still from the online game *Chicken Blast Off.*
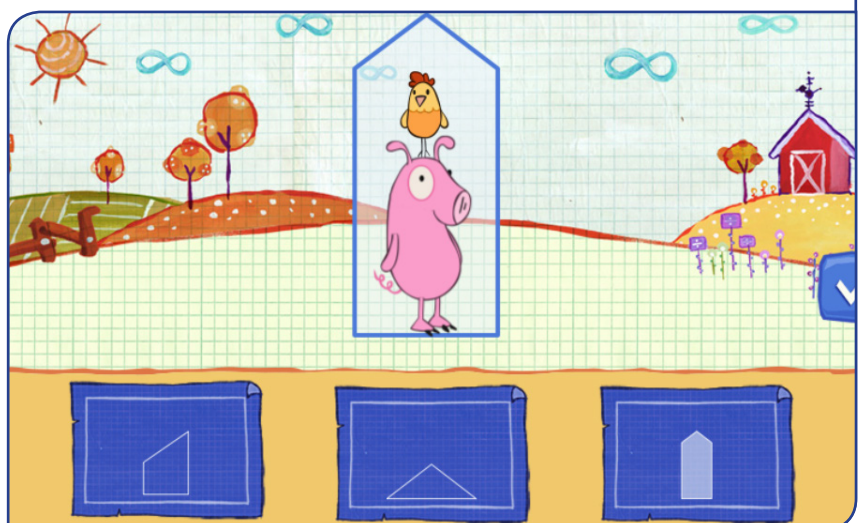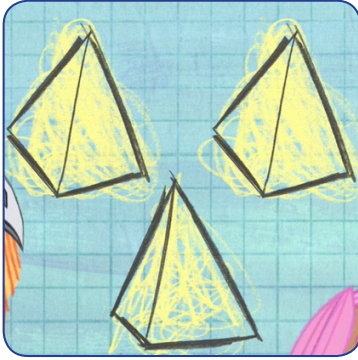
Limitations and Constraints

The study has the following limitations and constraints.

- While this sample is appropriate to the goals of the *PEG+CAT* Study and broadly representative of the audience served by the *Ready To Learn Initiative*, the sample is not nationally representative of the population of preschool children and their families. The study sample included children and families living in urban neighborhoods where there is a higher concentration of low-income households and of children who speak a language other than English at home.

- The study sample may be biased, as families volunteered to participate in the study; thus selection bias (i.e., the participation of families where parents are favorably disposed toward media-rich forms of learning) cannot be ruled out. Because the study families are motivated and more likely than the population as a whole to use the media intervention, it suggests that our findings may overestimate the effect across the population of pre-K families (or of a more representative sample of pre-K families). Given these limitations, the findings apply specifically to the children and families who participated in this study, and do not support inferences about children in general.

- A customized approach to assessment was required because few validated early mathematics assessments exist. Currently, there are no standardized preschool mathematics measures with valid subtests for the particular skills (counting, patterns, shapes, measurable attributes, ordinal numbers, and spatial relationships) targeted by the study experience. Although these skills are central to the development of mathematical reasoning and knowledge, assessments are only just beginning to attend to these skills and none has sufficient detailed subtests to measure them. Additionally, the scope and depth of the intervention itself were very limited, requiring an assessment that was similarly focused.

- The mathematics assessment used by the research team to measure child outcomes has not been fully validated. Although the research team followed guidance on assessment development (including Evidence Centered Design (ECD) principles and guidelines for assessment development for young children, and conducted pilot testing) and conducted psychometric analyses to evaluate item performance and evaluate factor structure (Exploratory Factor Analysis (EFA)/Confirmatory Factor Analysis (CFA), Cronbach's alpha coefficients, etc.), researchers

have not conducted studies to comprehensively examine the validity of the measure (for instance, examined associations with other measures of similar or related abilities nor examine item performance in various samples).

- Because the intervention was 12 weeks in duration, long-term changes to parent/caregiver attitudes and impacts on children's skills and knowledge are not known.

- Parent/caregiver findings are based primarily on self-report data. Aside from surveys parents completed at the beginning and the end of the study, researchers did not directly measure parents' and caregivers' attitudes and beliefs.

- Although researchers employed a variety of data sources to capture and describe families' use of the *PEG+CAT* resources, estimates of engagement with the intervention resources are, at best, close approximations. For example, the system log data indicate that the child or a family member visited the page containing a *PEG+CAT* resource, but not the length of time spent viewing, whether the child or another individual was viewing the resources, or the extent to which the viewer was fully engaged in the resource or not attending at all. The media diaries relied on self-report data on a number of items that were not fine-grained by design (in order to reduce burden on respondents and ensure a high response rate). The home visit and focus group data involved only a sub-sample of study participants.

- Given the limited sample size, it is possible that the study did not have sufficient power to detect smaller effects.

Discussion and Future Research

Findings from this CPB-PBS *Ready To Learn* study will be of particular interest to parents, educators, media producers, researchers, decision makers at funding agencies, and policy makers who hold twin interests in children's early learning and caregiver supports. Increasingly, these stakeholders recognize that if an intervention is to be successful among families living in poverty then it must have a dual focus on both children and the adults who care for them (DeNavas-Walt & Proctor, 2015). Specifically, this study documented how engagement with *PEG+CAT*, a first-generation public transmedia property, had measurable positive effects for children as well as their caregivers living in underserved communities. The study examined how *PEG+CAT* videos, video clips, and online games were taken up by families in home environments, and how the use of these media supported positive mathematics learning outcomes among children and positive attitudes among parents/caregivers towards mathematics learning and technology, both in general and as a tool for promoting mathematics learning.

This study builds on research from Common Sense Media and the Joan Ganz Cooney Center documenting the extent to which technology and media, including educational media, are now a regular part of American childhood (Rideout, 2013; Rideout, 2014). It also extends the work of researchers who are creating an evidence base emphasizing how home use of educational media can support children's learning of skills and practices that are valued in school (McCarthy et al., 2012; Starkey, Klein, & Wakeley 2004). Given that a significant proportion of children's waking lives unfold outside of school, "in the multiple contexts and valued practices of everyday life" (Banks, et al., 2007, p.12), the ubiquity of digital media in the lives of families, especially in their homes, has the promise to advance children's learning by offering "a breadth of experiences, guides, and locations" (Banks et al, 2007, p.12).

Another useful frame for the findings of this study comes from Kearney and Levine's (2015) recent work examining the benefits of Sesame Street to preschoolers in low-income families and neighborhoods. While the majority of preschool-aged children in the United States do not yet have access to high quality early childhood programs where they might learn the skills they need to succeed in school, public media programs are available to nearly all children. In this context, two questions taken up by the public media system are: Can young children living in low-income communities be reached through digital media in ways that are beneficial to them and their caregivers? If so, can public media resources foster the learning of early mathematical skills likely to improve children's learning experiences and outcomes in kindergarten and beyond? The findings from the current study offer some evidence addressing these questions. More importantly, they open the door to future studies that continue to push the boundaries of how and when such learning can take place for all children, and particularly for children in families with limited financial resources, who might also be underserved by public preschools.

Children's Math Learning

Young children who demonstrate age- and grade-appropriate math skills at an early age are on track for later success in school, whereas failure to achieve early math learning milestones is associated with later poor performance in school. EDC/SRI's analysis of the child assessment data in this study indicates that the PBS KIDS *PEG+CAT* intervention had a significant positive influence on some of the mathematics skills promoted by the program. This finding builds on Starkey, Klein, and Wakeley (2004) who found that home experiences with educational media and technology could support early mathematics learning. In particular, EDC/SRI analyses identified positive outcomes for math skills that are less commonly taught and practiced in formal and informal early childhood settings, such as ordinal numbers, spatial relationships, and 3-D shapes even though researchers found no effects of the intervention for commonly-taught skills, such as measurable attributes, pattern creation, counting, 2-D shapes, and pattern continuation. This suggests that through the *PEG+CAT* experience, children in the PBS KIDS group were likely to have been introduced to, and provided with opportunities to explore and practice mathematics skills beyond those that children are typically likely to encounter at home and school.

The findings also lead to new areas worthy of exploration. For example, one reason why children are not typically exposed to mathematical learning experiences involving ordinal numbers, spatial relationships, and 3-D shapes could be because parents/caregivers may believe that young children are not equipped to understand these concepts. Other reasons might be that parents and caregivers are unaware that these are mathematical skills valued in school, and unacquainted with developmentally appropriate opportunities and strategies to incorporate these ideas into their interactions with children. While prior research by Ginsburg, Lee, & Boyd (2008) indicates that young children are capable of learning mathematical content in these areas and that adult-child interactions can advance children's learning of sophisticated ideas valued in formal learning environments, few studies have examined how best to help parents and other caregivers introduce these concepts to their children. Further study examining adult uptake of information about early math learning for young children, and also about adult-child interactions around math activities as a way to support skill development, can take these findings to the next level and can support continued development of resources that support developmentally appropriate content-area learning for all children.

Parent/Caregiver Behavior and Attitude Changes

Engaging parents in their children's school-based early learning experiences is a goal of most contemporary early education programs, yet finding ways to engage parents in a sustained way that can address families' needs and respond to their circumstances can be very difficult. Study data show that PBS KIDS families took up the curated resources included in the *PEG+CAT* intervention despite the typical obstacles of home life, such as contending with limited time to engage in a new activity. Parents and families were motivated to engage with the materials and concepts introduced in the study, and their expanded view of technology as a tool to support their children's mathematics learning holds real promise for their children's later academic experiences. *PEG+CAT* resources helped parents recognize new areas of math to talk about and the family engagement materials provided families with support when engaging with their child. While parents already may have recognized activities such as counting, making patterns, and identifying 2-D shapes as math, families in the intervention condition had access to information about additional math skills that encouraged them to extend children's mathematical exploration beyond these basics.

Parents in the PBS KIDS group reported that they were more likely to watch videos and play games together with their children, and connect educational media with lived experience; they also reported increased confidence in supporting mathematics learning. All of these are positive signs for leveraging public media in support of early learning. These differences in behavior may have resulted from exposure to the study resources, which included specific information for parents about target math concepts, using technology to support learning, and engaging in media viewing and playing with children. By providing this information in short and relatively accessible formats (video and print information), parents were supported with enough information to engage fully with their child with the media and interact around target math skills. In addition, the study sought to maintain parent engagement through text and phone call reminders about study activities, adding to a small body of work demonstrating positive effects of communicating regularly with parents, and sharing easy-to-receive, useful strategies for parents to engage with their children's learning (York & Loeb, 2014).

The study intervention was premised on the assumption that mediation of transmedia content is essential to maximize the educational potential of these resources. In the design of this study, mediation took the form of (a) selecting, curating, and sequencing developmentally appropriate *PEG+CAT* content aligned to valued early mathematical skills, and (b) providing resources to enable an adult to jointly engage with media with children and through that joint engagement, provide focus and make explicit the target learning goals for children. How to engage adults and help them to guide their children is a challenge that developers of transmedia must address, and further research targeting effective approaches to providing this support, such as modeling parenting strategies, will benefit children, their parents, and the overarching goal of connecting home and formal learning environments.

Family Engagement with *PEG+CAT*

Families' positive responses to and consistent engagement with media experiences, as well as the lack of a relationship between demographic characteristics and engagement, suggest that *PEG+CAT* appealed broadly to children and families in our sample, regardless of language or ethnic group. Parents and families were motivated to engage with study experiences and did so in high numbers. However, as one might expect in home environments, which are casual and varied, families engaged with the materials in highly idiosyncratic ways (in terms of frequency and sequence of experiences) that challenged the traditional ways that researchers typically consider fidelity and adherence to an intervention.

Results also suggest some implications for the design of the media experience. In particular, the degree of variation among treatment families—how much and in what order they chose to engage with the *PEG+CAT* media—is noteworthy because it brings into focus the question of how much the sequencing or ordering of particular resources matters when it comes to the acquisition of particular skills, like knowledge of 3-D shapes.

The research team was exacting in the selection of *PEG+CAT* videos and games that focused on target skills and used strategies known to make educational media most effective. Researchers organized these resources into an adventure, during which concepts were introduced and then reinforced over the duration of the study. While most families did not follow the recommended sequence, children in the PBS KIDS group improved in their understanding of certain mathematical skills, in contrast to children in a business as usual comparison group. Moreover, the *PEG+CAT*

resources that received the most views included videos and games that emphasized the mathematical skill areas in which children improved the most. These two findings suggest that the specific order of a media experience may be less important than one that provides children with repeated opportunities to engage with multiple videos and games as they practice and master a focused set of skills.

Timing may be a consideration for curation and sequencing as well. It may be the case that in shorter-term studies such as this one, sequencing is less important because the focus on particular skills is more constrained. Over longer stretches of time, when children's learning extends across a broader number of content and skill domains, efforts to curate resources would benefit from close attention to how media is taken up in homes and the opportunities for learning that currently exist, as well as the order in which a child or family engages with particular resources so that children reinforce a particular skill in increasingly sophisticated ways over time, and transfer their learning to other contexts.

Findings in the domain of families' uptake of materials point to the need for media producers, educators, and researchers to (a) improve their understanding of families' current practices around media and the learning purposes served by media, (b) design for the conditions under which media can promote different kinds of learning, and (c) develop and disseminate resources to help families use media in a manner that fosters different kinds of learning for children.

Future Research

Consistent with the overarching research goal of the *Ready To Learn Initiative*—collecting evidence on how best to use finite resources to support children and families living in poverty experience success in learning—this study suggests a number of areas that call for investment in further research.

- **Research on intergenerational engagement and conditions supportive of collaborative experiences.** There is much more to learn about how parents, siblings and other family members support children's learning with media and technology resources. In particular, the field needs increasingly detailed data on the social conditions that influence family routines involving public and commercial resources, and how these routines may catalyze and support learning.

- **Research on gateways between informal and formal learning environments.** Early mathematics learning, as with science and learning in other disciplines, requires young children to have multiple experiences with skills and concepts in different settings over time. There is much more to understand about how children can move between home and preschool (as well as among car/train rides and grocery store/laundromat visits) and how the adults in their lives can use these as connected, rather than isolated, opportunities for children's engagement and learning.

- **Research on family engagement and strategies that support caregivers' understanding of young children's learning.** Video, texting, and audio clips all are potential pathways for reaching the adults in young children's lives with tools and resources for promoting children's learning. Programs that target early learning

will benefit from a better understanding of how to use digital and social media to reach adults and help them understand the specific learning goals and challenges that young children face.

- **Research on the efficacy of various supports to help parents and families engage with resources.** Uses of text messaging, video modeling, and socially networked environments are emerging and are little understood. Formative studies, as well as rapid-cycle evaluation research, will help identify how to leverage particular tools for parent/caregiver learning.

- **Continued development of early mathematics assessments.** Given the inexact match between the requirements of studies such as this one that focus on intensive, brief interventions emphasizing a specific set of early mathematics skills and current standardized assessments that assume development of a broader set of skills over the course of a school year, the creation and validation of new assessments that include subscales for individual skills (like pattern creation and pattern continuation) continues to be an important priority.

- **Research on content design.** While this study expended considerable effort to select and sequence specific content in a particular way, further study about how children engage with resources and how they experience concept introduction and practice opportunities will help guide continuing development efforts that lead to best learning outcomes for children.

- **Research on the role of media and social and emotional learning.** In designing the intervention and in measuring impact, this study focused primarily on mathematics learning and only secondarily on social and emotional learning skills. Future research should examine more closely how targeted strategies for social and emotional learning translate into dispositional changes in persistence, problem solving, and self-regulation, and the role of media to support these skills. There is much to discover about how young children's learning is influenced by narrative structures that unfold over time and across platforms, relationships children form with individual characters, and emerging interactive feature sets available via new technology devices.
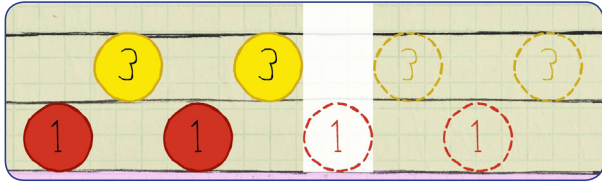
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Appendices

Appendix A. Sample Characteristics

Table A1. Race/Ethnicity of Home Visit Families

Race/Ethnicity	All		PBS KIDS		Business as Usual	
	n	%	*n*	%	*n*	%
Hispanic/Latino	8	40	3	30	5	50
Black/African American	5	25	3	30	2	20
Asian	1	5	1	10	0	0
Multi-racial	5	25	2	20	3	30
Missing	1	5	1	10	0	0

Table A2. Sample Demographics and Descriptive Statistics by Condition

	Demographic Information	All		PBS		Business as Usual	
		n	%	n	%	n	%
Maternal Education	Less than HS Diploma/GED	65	32.99	32	31.68	33	34.38
	HS Diploma/GED	58	29.44	29	28.71	29	30.21
	More than HS Diploma	70	35.53	38	37.62	32	33.33
Paternal Education	Less than HS Diploma/GED	73	37.06	36	35.64	37	38.54
	HS Diploma/GED	56	28.43	29	28.71	27	28.13
	More than HS Diploma	44	22.34	25	24.75	19	19.79
Total Household Income (2013)	Less than $25,000	101	51.79	52	52.00	49	51.58
	$25,000–$49,000	71	36.41	40	40.00	31	32.63
	$50,000–$74,000	9	4.62	3	3.00	6	6.32
	$100,000 or more	2	1.03	1	1.00	1	1.05
IEP or 504 Plan	Yes	8	4.06	6	5.94	2	2.08
	No	130	65.99	61	60.40	69	71.88
Number of Languages at Home	1	92	46.70	43	42.57	49	51.04
	2	101	51.27	55	54.46	46	47.92
	3	2	1.02	2	1.98	0	0.00
Languages	English Only	42	21.32	24	23.76	18	18.75
	Spanish Only	24	12.18	10	9.90	14	14.58
	Mandarin Chinese Only	20	10.15	8	7.92	12	12.50
	Other Only	7	3.55	1	.99	6	6.25
	English and Spanish	90	45.69	50	49.50	40	41.67
	English and Mandarin Chinese	6	3.05	4	3.96	2	2.08
	English and Other	4	2.03	1	.99	3	3.13
	Mandarin Chinese and Other	1	.51	0	0	1	1.04
Race/Ethnicity	Non-Hispanic White/Caucasian	4	2.03	2	1.98	2	2.08
	Hispanic/Latino	112	56.85	59	58.42	53	55.21
	Black/African American	25	12.69	15	14.85	10	10.42
	Asian	37	18.78	18	17.82	19	19.79

Appendix B. Model Fit

Table B1. EFA and CFA model fit

	Value	
Model Fit Information	**EFA**	**CFA**
Chi-Square Test		
Value	987.001	1386.112
Degrees of Freedom	817	899
p-value	< 0.001	< 0.001
RMSEA		
Estimate	0.031	0.053
90% C.I.	0.023, 0.037	0.048, 0.059
Probability RMSEA <= 0.05	1.000	0.155
CFI/TLI		
CFI	0.891	0.779
TLI	0.874	0.768
SRMR/WRMR	0.120	1.351

Appendix C. Classical Item Analysis Results

Table C1. Item Characteristics for Factor 1

Item No.	Item Stem	Pretest		Posttest	
		Difficulty	Discrimination	Difficulty	Discrimination
Ordinal Numbers					
1	Point to the pig first in line, the cow second in line, and the chicken third in line.	0.40	0.23	0.49	0.38
6a	Point to the child who is first in line.	0.65	0.29	0.79	0.24
6b	Point to the child who is third in line.	0.11	0.37	0.19	0.57
6c	Point to the child who is fifth in line.	0.16	0.19	0.25	0.45
13a	Point to the dinosaur that is fourth in line.	0.10	0.34	0.21	0.46
13b	Now, point to the dinosaur that is second in line.	0.49	0.16	0.43	0.30
18a	I want to go to the fifth floor. What button should I press?	0.11	0.37	0.25	0.48
18b	Next, I want to go to the third floor. What button should I press?	0.16	0.29	0.27	0.53
18c	Then, I want to go to the seventh floor. What button should I press?	0.37	0.37	0.53	0.46
18d	Next, I want to go to the second floor. What button should I press?	0.17	0.20	0.22	0.44
3D Shapes					
8a	Point to the object that looks like a sphere.	0.13	0.08	0.19	0.32
8b	Point to the object that looks like a cone.	0.38	0.35	0.45	0.43
8c	Point to the object that looks like a cube.	0.23	0.35	0.39	0.46
8d	Point to the object that looks like a cylinder.	0.40	029	0.51	0.38
22a	Find the sphere.	0.22	0.02	0.23	0.24
22b	Find the pyramid.	0.31	0.28	0.48	0.39
22c	Find the cube.	0.30	0.30	0.45	0.42
22d	Find the rectangular prism.	0.37	0.35	0.51	0.40
Spatial Relationships					
23a	Point to the child standing in front of the table.	0.42	0.30	0.49	0.17
23b	Point to the child standing behind the table.	0.37	0.31	0.43	0.29
23c	Point to the child standing next to the table.	0.55	0.42	0.62	0.40

Table C2. Item Characteristics for Factor 2

Item No.	Item Stem	Pretest		Posttest	
		Difficulty	Discrimination	Difficulty	Discrimination
Measurable Attributes					
2	Point to the person who is holding the heaviest bag.	0.76	0.33	0.91	0.29
4	Point to the building that is the tallest.	0.75	0.45	0.87	0.37
9	Point to the monkey that is the highest	0.84	0.38	0.93	0.29
11	Find the pair of shoes that best fits each person's feet.	0.95	0.12	0.98	0.20
Pattern Creation					
15	Use these bears to make a pattern here.	0.41	0.45	0.61	0.33
16	Make a pattern here using these stars.	0.28	0.27	0.43	0.34
17a	Show me what comes next to finish the pattern.	0.71	0.38	0.83	0.32
17b	Now you keep going with the pattern.	0.56	0.48	0.73	0.35

Table C3. Item Characteristics for Factor 3

Item No.	Item Stem	Pretest		Posttest	
		Difficulty	Discrimination	Difficulty	Discrimination
2-D Shapes					
3a	(Point to the cone.) What is this shape?	0.10	0.17	0.13	0.25
3b	(Point to the cube.) What is this shape?	0.02	0.34	0.06	0.34
3c	(Point to the cylinder.) What is this shape?	0.06	0.48	0.16	0.42
12a	(Point to the triangle.) What is this shape?	0.47	0.30	0.62	0.32
12b	(Point to the rectangle.) What is this shape?	0.74	0.50	0.82	0.23
12c	(Point to the square.) What is this shape?	0.62	0.20	0.74	0.45
20a	Point to all the sides. (Shows three sides.)	0.44	0.24	0.56	0.30
20b	Point to all the sides. (Shows four sides.)	0.48	0.12	0.57	0.37
Counting					
5	Use your finger to count how many frogs I have.	0.61	0.39	0.77	0.28
14	Count all of the bananas.	0.52	0.45	0.68	0.40
Pattern Continuation					
7	Place the fruit that is missing here.	0.61	0.36	0.79	0.25
10a	Now, make the same pattern using your hands.	0.18	0.28	0.26	0.35
10b	Keep going (with the pattern).	0.14	0.24	0.21	0.34
21	Help me add cubes to continue this pattern.	0.54	0.46	0.68	0.40
19	Find the cube tower that is as tall as the block.	0.29	0.13	0.37	0.21

Appendix D. Exploratory Factor Analysis

Table D1. Geomin Rotated Exploratory Factor Correlations

	Factor 1	Factor 2	Factor 3
Factor 1	1.000		
Factor 2	0.146	1.000	
Factor 3	0.461	0.403	1.000

The correlations of the Geomin rotated factors listed in Table 1C range from 0.146 to 0.461. These results provide some discriminant validity for the utility of a three-factor solution.

Appendix E. Confirmatory Factor Analysis

Table E1. Confirmatory Factor Correlations

	Factor 1	Factor 2	Factor 3
Factor 1	1.000		
Factor 2	0.2556	1.000	
Factor 3	0.181	0.175	1.000

The results of the factor correlations from the confirmatory factor analysis further support the results from the Geomin rotated correlations in the exploratory factor analysis. The correlations listed in Table 1C range from 0.175 to 0.255. These correlations are smaller/weaker, which, again, provide discriminant validity for the proposed factors.

Table E2. Factor 1 Loadings

Item	Estimate	S.E.
3a	0.508	0.114
3b	0.823	0.066
3c	0.838	0.073
5	0.461	0.098
7	0.433	0.093
10a	0.493	0.086
10b	0.550	0.143
12a	0.494	0.086
12b	0.413	0.096
12c	0.724	0.085
14	0.617	0.077
19	0.312	0.095
20a	0.378	0.096
20b	0.489	0.085
21	0.622	0.084

Table F3. Factor 2 Loadings

Item	Estimate	S.E.
2	0.619	0.103
4	0.774	0.093
9	0.681	0.159
11	0.595	0.164
15	0.613	0.083
16	0.663	0.084
17a	0.593	0.102
17b	0.453	0.069

Table E4. Factor 3 Loadings

Item	Estimate	S.E.
1	0.495	0.073
6a	0.392	0.086
6b	0.908	0.042
6c	0.712	0.062
8a	0.511	0.107
8b	0.648	0.067
8c	0.660	0.066
8d	0.577	0.067
13a	0.759	0.070
13b	0.468	0.073
18a	0.757	0.061
18b	0.813	0.049
18c	0.676	0.056
18d	0.728	0.064
22a	0.409	0.097
22b	0.581	0.067
22c	0.610	0.066
22d	0.575	0.069
23a	0.504	0.066
23b	0.639	0.062
23c	0.573	0.072

Appendix F. Reliability

Table F1. Internal Consistent for Factors

Subscale	No. of Items	Cronbach's Coefficient Alpha	
		Pretest	Posttest
Geometry and Counting	15	0.75	0.65
Comparisons and Mathematical Patterns	8	0.70	0.65
Cardinality and Shape	21	0.74	0.84

Appendix G. Descriptives for Child Assessment

Table G1. Descriptive statistics using T-scores for the Math Assessment Scale Scores

Variable	PBS KIDS *PEG+CAT* Study Experience			Comparison			Full Sample		
	N	Mean	Std. Dev	N	Mean	Std. Dev	N	Mean	Std. Dev
Factor 1: Ordinal Numbers, Spatial relationships and 3D Shapes									
Pretest	91	48.43	7.23	84	49.03	10.31	175	48.72	8.82
Posttest*	91	54.77	10.63	84	49.30	10.24	175	52.14	10.77
Factor 2: Measurable Attributes and Pattern Creation									
Pretest	94	49.69	9.95	89	46.33	11.27	183	48.05	10.72
Posttest	94	53.29	7.97	89	52.56	8.93	183	52.94	8.44
Factor 3: Counting, 2D Shapes and Pattern Continuation									
Pretest	98	48.60	9.77	87	48.85	10.01	185	48.71	9.86
Posttest	98	52.91	8.78	87	53.04	9.46	185	52.97	9.08

* p < 0.000

Appendix H. Results for Main Impact Models

Table H1. Findings from Main Impact Models

Impact Contrast	N	Coefficient	Hedges g (Effect Size)	Std. Error	p
Factor 1: Ordinal Numbers, Spatial relationships and 3D Shapes	172	5.26	0.51	1.12	0.000
Factor 2: Measurable Attributes and Pattern Creation	180	-1.02	-0.10	1.06	0.336
Factor 3: Counting, 2D Shapes and Pattern Continuation	182	-0.40	-.038	1.00	0.689

Table H2. Findings from Factor 1(Ordinal Numbers, Spatial relationships and 3D Shapes) Impact Model

Impact Contrast	Coefficient	Std. Error	Z ratio	p
Intercept	50.38	1.87	26.90	0.000
Condition – PBS KIDS vs. Business As Usual	5.26	1.12	4.68	0.000
Pretest	0.72	0.07	10.79	0.000
Home language – Other Only	-2.12	1.88	-1.13	0.260
Home language – Mixed Only	-3.21	1.56	-2.06	0.040
Mother – high school diploma	0.58	1.42	0.41	0.683
Mother – more than high school diploma	2.20	1.48	1.49	0.137
Child age	3.64	2.08	1.75	0.081
Child gender	0.30	1.14	0.26	0.792

Appendix I. PEG+CAT Resources Included in the Intervention

Table I1. PEG+CAT Resources Included in the Intervention

Week	Focal Skills	Weekly Adventure Schedule	Supplemental Resources
1	Primary: Ordinal Numbers; Counting Secondary: Measurable Attributes/Spatial Relations	1. Full episode: *The Ring Problem* (124A) 2. Video Clip: Interstitial 124, "Ordering by Size" 3. Full episode: *The Wedding Problem* (124B) 4. Online game: *Peg's Pizza Place* 5. PBS KIDS Lab Activity: PEG+CAT Honey Cake	1. Full episode: *The Circus Problem* (105A) 2. Full episode: *The Clown Problem* (121A) 3. Online game: *Costume Box*
2	Primary: Patterns Secondary: Ordinal Numbers; 2D Shapes	1. Full episode: *The Play Date Problem* (122A) 2. Full episode: *The Beethoven Problem* (108B) 3. Online game: *Chicken Dance* 4. PBS KIDS Lab Activity: Home Collections	1. Full episode: *The Baby Problem* (112A) 2. Full episode: *The Messy Room Problem* (102A) 3. Online game: *Paint-a-Long*
3	Primary: 3D Shapes Secondary: 2D Shapes; Counting	1. Full episode: *The Sparkling Sphere Problem* (112B) 2. Online game: *Magical Shape Hunt* 3. Video Clip: Interstitial 102, " Cylinders and Retangles Prisms" 4. Full episode: *The Golden Pyramid Problem* (102B) 5. PBS KIDS Lab Activity: PEG+CAT Stick Puppets	1. Full episode: *The Parade Problem* (113A) 2. Full episode: *The Halloween Problem* (113B) 3. Online game: *Costume Box*
4	Primary: Measurable Attributes/Spatial Relations Secondary: Counting	1. Full episode: *The Big Dog Problem* (119A) 2. Video Clip: Interstitial 119 , "Peg Measures Cat's Height" 3. Full episode: *The Buried Treasure Problem* (105B) 4. Online game: *Rock Art* 5. PBS KIDS Lab Activity: Super PEG+CAT Guy Activity Page	1. Full episode: *The Ring Problem* (124A) 2. Full episode: *The Wedding Problem* (124B) 3. Online game: *321 Snack*
5	Primary: Measurable Attributes/Spatial Relations; Ordinal Numbers Secondary: Counting	1. Full episode: *The Tree Problem* (107A) 2. Video Clip: Interstitial 107, "Ordering Spheres" 3. Full episode: *Another Tree Problem* (107B) 4. Video clip: *"The Long Line Problem"* (117B) 5. Online game: *Hungry Pirates*	1. Full episode: *The Birthday Present Problem* (111B) 2. Full episode: *The Election Problem* (123B) 3. Online games: *Chicken Dance and Magical Shape Hunt*
6	Primary: Patterns; 2D Shapes and 3D Shapes Secondary: Counting	1. Full episode: *The Doohicky Problem* (106B) 2. Online game: *Chicken Blast Off* 3. Video clips: *The Baby Problem* (112A) 4. Video Clip: "The Messy Room Problem 1" (102A) 5. Video Clip: "The Messy Room Problem 2" (102A) 6. *Big Gig* app – *Patterns* 7. *Big Gig* app - Magic Cylinder song	1. Full episode: *The Three Bears Problem* (104A) 2. Full episode: *The Big Gig Problem* (110B) 3. *Big Gig* app

Table I1. PEG+CAT Resources Included in the Intervention (Continued)

Week	Focal Skills	Weekly Adventure Schedule	Supplemental Resources
7	Primary: Patterns; Measurable Attributes/ Spatial Relations Secondary: Counting	1. Full episode: *The Dinosaur Problem* (108A) 2. Online game: *Chicken Dance* 3. Full episode: *The Penguin Problem* (109B) 4. Parents Play and Learn app: Toy Hunt	1. Full episode: *The Arch Villain Problem* (120A) 2. Full episode: *The Straight & Narrow Problem* (120B) 3. Online game: *Chicken Blast Off*
8	Primary and Secondary: Ordinal Numbers; Counting; 2D Shapes and 3D Shapes	1. Full episode: *The Big Gig Problem* (110B) 2. *Big Gig* app - Cat Dance 3. Video Clip: Interstitial 124, "Ordinal Numbers" 4. Video clip: *The Beethoven Problem* 1 (108B) 5. Video Clip: *The Straight & Narrow Problem* (120B) 6. Video Clip: *The Golden Pyramid Problem* (102B) 7. Online game: *Star Swiper* 8. PBS KIDS Lab Activity: Chicken Coop Activity Page	1. Full episode: *The Race Car Problem* (110A) 2. Full episode: *The Birthday Cake Problem* (106A) 3. Online game: *Peg's Pizza Place* 4. *Big Gig* app
9	Primary: Measurable Attributes/Spatial Relations Secondary: Patterns; 2D and 3D Shapes	1. Full Episode: *The Honey Problem* (109A) 2. Video clip: *The Penguin Problem* (109B) 3. Full episode: *The Cleopatra Problem* (115B) 4. Video Clip: Interstitial 109 , "Weight" 5. Online game: *Happy Camel* 6. Parents Play and Learn app: How Heavy?	1. Full episode: The Chicken Problem (101A) 2. Full episode: The Slop Problem (111A) 3. Online game: Scrub-a-Dub 4. Online game: Bubble Bath
10	Primary and Secondary: Patterns; 3D Shapes and 2D shapes	1. Full episode: *The Blabberwocky Problem* (122B) 2. Online game: *Chicken Dance* 3. Video clip: *The Beethoven Problem* 2 (108B) 4. Video Clip: *The Birthday Cake Problem* (106A) 5. Video Clip: The Dinosaur Problem (108A) 6. PBS KIDS Lab Activity: PEG+CAT Pirates' Great Banana Fruit Salad 7. Parents Play and Learn app: Shapely Treats	1. Full episode: Yet *Another Tree Problem* (116A) 2. Full episode: *Romeo & Juliet* (116B) 3. PBS KIDS Lab Activity: Up, Down, All Around Location Words
11	Primary: Ordinal Numbers; Counting; 2D Shapes Secondary: Measurable Attributes/Spatial Relations	1. Full episode: *The Giant Problem* (104B) 2. Video clip: *The Ring Problem* 1 (124A) 3. Video Clip: *The Ring Problem* 2 (124A) 4. Video Clip: *The Wedding Problem* 1 (124B) 5. Video Clip: *The Wedding Problem* 2 (124B) 6. Online game: *321 Snack* 7. Online game: *Paint-a-Long* 8. PBS KIDS Lab Activity: The PEG+CAT Doodle It Yourself Flipbook	1. Full episode: *The Space Creature Problem* (101B) 2. Full episode: *The Doohicky Problem* (106B) Online game: *Star Swiper*
12	Primary: Patterns; Counting; Measurable Attributes/Spatial Relations Secondary: 3-D Shapes; Ordinal Numbers	1. Full episode: *The Ninja Problem* (121B) 2. Online game: *The Hungry Pirates* 3. Video clip: Interstitial 107, "*Ordering Spheres 2*" 4. Video clip: *The Play Date Problem* 1 (122A) 5. Video clip: *The Play Date Problem* 2 (122A) 6. Online game: *Scrub-a-Dub* 7. *Parents Play and Learn* app: Bath Time is Math Time	1. Full episode: *The Pirate Problem* (103A) 2. Full episode: *The Buried Treasure Problem* (105B) 3. Online game: *The Hungry Pirates*

Appendix J. Study Website

Appendix K. Weekly Adventure Schedule Poster

PBS KIDS Home Study - Weekly Adventure Schedule

Appendix L. Technology Set-up

Appendix M. Child Pre-Assessment

Region   Center   Class   Child

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Important: Use a BLACK pen. When asked to select an answer, mark the correct box with an "X" like this. ☒ Choose only one answer for each question. If you want to change your answer, just mark the correct one and CIRCLE it so we know which answer you mean. Please print text answers.

Child First Name:

Child Last Name:

Classroom Name:

Center Name:

Assessor Name:

Assessment Date (mmddyyyy):

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Item	Prompt	Correct Response	Response Code	Incorrect Response Code	"How do you know" and Incorrect child responses
1	Put the pig *first* in the line, *the cow second* in the line and the chicken *third* in the line.	A line with pig first; cow second; chicken third	☐0 ☐1 ☐9	☐a ☐b	
2	Point to the person who is holding the heaviest bag.	C	☐0 ☐1 ☐9	☐a ☐b	
3a	(Point to the *cone*) What is this shape?	Cone	☐0 ☐1 ☐9		
3b	(Point to the *cube*) What is this shape?	Cube	☐0 ☐1 ☐9		
3c	(Point to the *cylinder*) What is this *shape?*	Cylinder	☐0 ☐1 ☐9		
4	Point to the building that is the tallest.	B	☐0 ☐1 ☐9	☐a ☐c ☐d ☐e	
5	Use your finger to count how many frogs I have.	12	☐0 ☐1 ☐9	☐a ☐b ☐c ☐d	
6a	Point to the child who is *first* in line.	Child with 1 on shirt	☐0 ☐1 ☐9		
6b	Point to the child who is *third* in line.	Child with 3 on shirt	☐0 ☐1 ☐9		
6c	Point to the child who is *fifth* in line.	Child with 5 on shirt	☐0 ☐1 ☐9		
7	Place the fruit that is missing here.	Strawberry	☐0 ☐1 ☐9		
8a	Point to the object that looks like a *sphere*. How do you know?	Soccer Ball	☐0 ☐1 ☐9	☐b ☐c ☐d ☐e	
8b	Point to the object that looks like a *cone*. How do you know?	Birthday Hat	☐0 ☐1 ☐9	☐a ☐c ☐d ☐e	
8c	Point to the object that looks like a *cube*. How do you know?	Present	☐0 ☐1 ☐9	☐a ☐b ☐d ☐e	
8d	Point to the object that looks like a *cylinder*. How do you know?	Glass of juice or Cake	☐0 ☐1 ☐9	☐a ☐b ☐c ☐e	

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Item	Prompt	Correct Response	Response Code	Incorrect Response Code	"How do you know" and Incorrect child responses
9	Point to the monkey that is the highest.	B	☐ 0 ☐ 1 ☐ 9	☐ a ☐ c	
10a	Now make the same pattern using *your* hands.	AAAB repeated twice	☐ 0 ☐ 1 ☐ 9		
10b	Keep going! (Skip this item if 10a is incorrect)	AAAB at least once	☐ 0 ☐ 1 ☐ 9		
11	Find the pair of shoes that *best* fits *each person's feet.*	small/small ; medium/medium; large/large	☐ 0 ☐ 1 ☐ 9	☐ a ☐ b	
12a	What is this shape?	Rectangle	☐ 0 ☐ 1 ☐ 9		
12b	What is this shape?	Triangle	☐ 0 ☐ 1 ☐ 9		
12c	What is this shape?	Square	☐ 0 ☐ 1 ☐ 9		
13a	Point to the dinosaur that is *fourth* in line.	4th dinosaur	☐ 0 ☐ 1 ☐ 9	☐ a ☐ b ☐ c ☐ d	
13b	Now, point to the dinosaur that is *second* in line.	2nd dinosaur	☐ 0 ☐ 1 ☐ 9	☐ a ☐ b ☐ c ☐ d	
14	Count all of the bananas.	10	☐ 0 ☐ 1 ☐ 9	☐ a ☐ b ☐ c ☐ d	
15	Use these bears to make a pattern here.	Any repeating pattern	☐ 0 ☐ 1 ☐ 9		
16	Make a pattern here using these stars.	Any repeating pattern	☐ 0 ☐ 1 ☐ 9		
17a	Show me what comes next to finish the pattern.	One orange block	☐ 0 ☐ 1 ☐ 9		
17b	Now you keep going with the pattern. (Skip this item if 17a is incorrect)	At least one purple, orange pattern unit	☐ 0 ☐ 1 ☐ 9		

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Item	Prompt	Correct Response	Response Code	Incorrect Response Code	"How do you know" and Incorrect child responses
18a	I want to go to the *fifth* floor. *What button should I press?*	Child points to or says "5"	☐ 0 ☐ 1 ☐ 9		
18b	Next, I want to go to the *third* floor. *What button should I press?*	Child points to or says "3"	☐ 0 ☐ 1 ☐ 9		
18c	Then, I want to go to the *seventh* floor. *What button should I press?*	Child points to or says "7"	☐ 0 ☐ 1 ☐ 9		
18d	Next, I want to go to the *second* floor. *What button should I press?*	Child points to or says "2"	☐ 0 ☐ 1 ☐ 9		
19	Find the cube tower that is as tall as the block.	B	☐ 0 ☐ 1 ☐ 9	☐ a ☐ c	
20a	Point to all the sides.	Shows 3 sides	☐ 0 ☐ 1 ☐ 9		
20b	Point to all the sides.	Shows 4 sides	☐ 0 ☐ 1 ☐ 9		
21	Help me add cubes to continue this pattern.	One whole unit (AB) blue, red	☐ 0 ☐ 1 ☐ 9	☐ a ☐ b ☐ c ☐ d	
22a	Find the sphere.	Sphere	☐ 0 ☐ 1 ☐ 9	☐ a ☐ b ☐ c ☐ d ☐ e	
22b	Find the pyramid.	Pyramid	☐ 0 ☐ 1 ☐ 9	☐ a ☐ b ☐ c ☐ d ☐ e	
22c	Find the cube.	Cube	☐ 0 ☐ 1 ☐ 9	☐ a ☐ b ☐ c ☐ d ☐ e	
22d	Find the rectangular prism.	Rectangular Prism	☐ 0 ☐ 1 ☐ 9	☐ a ☐ b ☐ c ☐ d ☐ e	
23a	Point to the child standing *in front* of the table.	Child in front of table	☐ 0 ☐ 1 ☐ 9	☐ b ☐ c	
23b	Point to the child standing *behind* the table.	Child behind table	☐ 0 ☐ 1 ☐ 9	☐ a ☐ c	
23c	Point to the child standing *next to* the table.	Child next to table	☐ 0 ☐ 1 ☐ 9	☐ a ☐ b	

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Appendix N. Child Post-Assessment

Appendix N. Child Post-Assessment

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Region   Center   Class   Child

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Child First Name:

Child Last Name:

Classroom Name:

Center Name:

Assessor Name:

Assessment Date (mmddyyyy):

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Item	Prompt	Correct Response	Response Code	Incorrect Response Code	"How do you know" and Incorrect child responses
1	Put the pig *first* in the line, the cow *second* in the line and the chicken *third* in the line.	A line with pig first; cow second; chicken third	☐0 ☐1 ☐9	☐a ☐b	
2	Point to the person who is holding the heaviest bag.	C	☐0 ☐1 ☐9	☐a ☐b	
3a	(Point to the *cone*) What is this shape?	Cone	☐0 ☐1 ☐9		
3b	(Point to the *cube*) What is this shape?	Cube	☐0 ☐1 ☐9		
3c	(Point to the *cylinder*) What is this shape?	Cylinder	☐0 ☐1 ☐9		
4	Point to the building that is the tallest.	B	☐0 ☐1 ☐9	☐a ☐c ☐d ☐e	
5	Use your finger to count how many frogs I have.	12	☐0 ☐1 ☐9	☐a ☐b ☐c ☐d	
6a	Point to the child who is *first* in line.	Child with 1 on shirt	☐0 ☐1 ☐9		
6b	Point to the child who is *third* in line.	Child with 3 on shirt	☐0 ☐1 ☐9		
6c	Point to the child who is *fifth* in line.	Child with 5 on shirt	☐0 ☐1 ☐9		
7	Place the fruit that is missing here.	Strawberry	☐0 ☐1 ☐9		
8a	Point to the object that looks like a *sphere*. How do you know?	Soccer Ball	☐0 ☐1 ☐9	☐b ☐c ☐d ☐e	
8b	Point to the object that looks like a *cone*. How do you know?	Birthday Hat	☐0 ☐1 ☐9	☐a ☐c ☐d ☐e	
8c	Point to the object that looks like a *cube*. How do you know?	Present	☐0 ☐1 ☐9	☐a ☐b ☐d ☐e	
8d	Point to the object that looks like a *cylinder*. How do you know?	Glass of juice or Cake	☐0 ☐1 ☐9	☐a ☐b ☐c ☐e	
9	Point to the monkey that is the highest.	B	☐0 ☐1 ☐9	☐a ☐c	
10a	Now make the same pattern using *your* hands.	AAAB repeated twice	☐0 ☐1 ☐9		
10b	Keep going! (Skip this item if 10a is incorrect)	AAAB at least once	☐0 ☐1 ☐9		

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Item	Prompt	Correct Response	Response Code	Incorrect Response Code	"How do you know" and Incorrect child responses
11	Find the pair of shoes that *best* fits each person's feet.	small/small ; medium/medium; large/large	☐0 ☐1 ☐9	☐a ☐b	
12a	What is this shape?	Rectangle	☐0 ☐1 ☐9		
12b	What is this shape?	Triangle	☐0 ☐1 ☐9		
12c	What is this shape?	Square	☐0 ☐1 ☐9		
13a	Point to the dinosaur that is *fourth* in line.	4th dinosaur	☐0 ☐1 ☐9	☐a ☐b ☐c ☐d	
13b	Now, point to the dinosaur that is *second* in line.	2nd dinosaur	☐0 ☐1 ☐9	☐a ☐b ☐c ☐d	
14	Count all of the bananas.	10	☐0 ☐1 ☐9	☐a ☐b ☐c ☐d	
15	Use these bears to make a pattern here.	Any repeating pattern	☐0 ☐1 ☐9		
16	Make a pattern here using these stars.	Any repeating pattern	☐0 ☐1 ☐9		
17a	Show me what comes next to finish the pattern.	One orange block	☐0 ☐1 ☐9		
17b	Now you keep going with the pattern. (Skip this item if 17a is incorrect)	At least one purple, orange pattern unit	☐0 ☐1 ☐9		
18a	I want to go to the *fifth* floor. What button should I press?	Child points to or says "5"	☐0 ☐1 ☐9		
18b	Next, I want to go to the *third* floor. What button should I press?	Child points to or says "3"	☐0 ☐1 ☐9		
18c	Then, I want to go to the *seventh* floor. What button should I presss?	Child points to or says "7"	☐0 ☐1 ☐9		
18d	Next, I want to go to the *second* floor. What button should I presss?	Child points to or says "2"	☐0 ☐1 ☐9		
19	Find the cube tower that is as tall as the block.	B	☐0 ☐1 ☐9	☐a ☐c	

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Item	Prompt	Correct Response	Response Code	Incorrect Response Code	"How do you know" and Incorrect child responses
20a	Point to all the sides.	Shows 3 sides	☐0 ☐1 ☐9		
20b	Point to all the sides.	Shows 4 sides	☐0 ☐1 ☐9		
21	Help me add cubes to continue this pattern.	One whole unit (AB) blue, red	☐0 ☐1 ☐9	☐a ☐b ☐c ☐d	
22a	Find the sphere.	Sphere	☐0 ☐1 ☐9	☐a ☐b ☐c ☐d ☐e	
22b	Find the pyramid.	Pyramid	☐0 ☐1 ☐9	☐a ☐b ☐c ☐d ☐e	
22c	Find the cube.	Cube	☐0 ☐1 ☐9	☐a ☐b ☐c ☐d ☐e	
22d	Find the rectangular prism.	Rectangular Prism	☐0 ☐1 ☐9	☐a ☐b ☐c ☐d ☐e	
23a	Point to the child standing *in front* of the table.	Child in front of table	☐0 ☐1 ☐9	☐b ☐c	
23b	Point to the child standing *behind* the table.	Child behind table	☐0 ☐1 ☐9	☐a ☐c	
23c	Point to the child standing *next to* the table.	Child next to table	☐0 ☐1 ☐9	☐a ☐b	

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Region		Center		Class			Child		

Preschool Learning Behaviors Scale

Important: Use a BLACK pen. When asked to select an answer, mark the correct box with an "X" like this. ☒ Choose only one answer for each question. If you want to change your answer, just mark the correct one and CIRCLE it so we know which answer you mean. Please print text answers.

Child First Name:

Child Last Name:

Classroom Name:

Center Name:

Teacher Name:

Date:

☐☐ / ☐☐ / 2 0 1 5

Month   Day   Year

48626

Mark the appropriate box for each of the following statements, taking into consideration the child's age. *(Mark [X] ONE per row.)*

	Most often applies	Sometimes applies	Doesn't apply
1. Pays attention to what you say.	☐	☐	☐
2. Says task is too hard without making much effort to attempt it.	☐	☐	☐
3. Is reluctant to tackle a new activity.	☐	☐	☐
4. Sticks to an activity for as long as can be expected for a child of this age.	☐	☐	☐
5. Adopts a don't-care attitude to success or failure.	☐	☐	☐
6. Seems to take refuge in helplessness.	☐	☐	☐
7. Follows peculiar and inflexible procedures in tackling activities.	☐	☐	☐
8. Shows little desire to please you.	☐	☐	☐
9. Is unwilling to accept help even when an activity proves too difficult.	☐	☐	☐
10. Acts without taking sufficient time to look at the problem or work out a solution.	☐	☐	☐
11. Cooperates in group activities.	☐	☐	☐
12. Bursts into tears when faced with a difficulty.	☐	☐	☐
13. Has enterprising ideas which often don't work out.	☐	☐	☐
14. Is distracted too easily by what is going on in the room, or seeks distractions.	☐	☐	☐
15. Cannot settle into an activity.	☐	☐	☐

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	Most often applies	Sometimes applies	Doesn't apply
16. Gets aggressive or hostile when frustrated.	☐	☐	☐
17. Is very hesitant in talking about his or her activity.	☐	☐	☐
18. Shows little determination to complete an activity, gives up easily.	☐	☐	☐
19. Uses headaches or other pains as a means of avoiding participation.	☐	☐	☐
20. Is willing to be helped.	☐	☐	☐
21. Is too lacking in energy to be interested in anything or to make much effort.	☐	☐	☐
22. Relies on personal charm to get others to find solutions to the problems he or she meets.	☐	☐	☐
23. Invents silly ways of doing things.	☐	☐	☐
24. Doesn't achieve anything constructive when in a mopey or sulky mood.	☐	☐	☐
25. Shows a lively interest in the activities.	☐	☐	☐
26. Tries hard but concentration soon fades and performance deteriorates.	☐	☐	☐
27. Carries out tasks according to own ideas rather than in the accepted way.	☐	☐	☐
28. Accepts new activities without fear or resistance.	☐	☐	☐
29. Is dependent on adults for what to do, and takes few initiatives.	☐	☐	☐

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Appendix P. Math Concepts and Problem Solving

RTL Home Study Math Concepts and Problem Solving

Important: Use a BLACK pen. When asked to select an answer, mark the correct box with an "X" like this. ☒ Choose only one answer for each question. If you want to change your answer, just mark the correct one and CIRCLE it so we know which answer you mean. Please print text answers.

Child First Name:

Child Last Name:

Classroom Name:

Center Name:

Teacher Name:

Date:

☐☐ / ☐☐ / 2 0 1 5

Month   Day   Year

Mark the appropriate box for each of the following statements, taking into consideration the child's age. *(Mark [X] ONE per row.)*

	Most often applies	Sometimes applies	Doesn't apply
1. Displays an understanding of concepts related to **Patterns**, through independent/group play activities or conversations with peers and/or teachers.	☐	☐	☐
2. Displays an understanding of concepts related to **Shape Recognition and Attributes**, through independent/group play activities or conversations with peers and/or teachers.	☐	☐	☐
3. Displays an understanding of concepts related to **Ordinal Numbers**, through independent/group play activities or conversations with peers and/or teachers.	☐	☐	☐
4. Displays an understanding of concepts related to **Measureable Attributes**, through independent/group play activities or conversations with peers and/or teachers.	☐	☐	☐
5. Displays an understanding of concepts related to **Spatial Skills**, through independent/group play activities or conversations with peers and/or teachers.	☐	☐	☐
6. Displays an understanding of concepts related to **Counting and Numeracy**, through independent/group play activities or conversations with peers and/or teachers.	☐	☐	☐
7. Displays the ability to apply mathematical skills appropriately when solving problems.	☐	☐	☐
8. Displays the ability to recognize and use mathematics in their everyday life.	☐	☐	☐

Appendix Q. Parent Pre-Survey

9	-	9	9	-	9	9	-	9	9	9

Region   Center   Class   Child

PBS KIDS Parent Survey
Family Technology at Home

> **IMPORTANT**: Please use a **BLACK** pen. Mark response boxes with an ☒.
> Use block printing for any text or numeric responses.

Please complete **ONE** survey, either in English, Spanish, or Chinese.
If you need a survey in Spanish or Chinese but do not have a copy, please ask your child's teacher for assistance.
Si usted necesita una encuesta en español pero no tiene copia, por favor pida al maestro de su hijo que lo ayude.
如果您需要中文調查問卷，但是手邊卻沒有，請向您孩子的老師尋求幫助。

Parent/Guardian

First name:

Last name:

Child Participating in the Study

First name:

Last name:

Center Name:

This survey includes questions about your use of technology, your child's use of technology and some background questions about your family. If you have more than one child, please answer the questions thinking about the *child who is participating in this study.*

If you are attending the study kickoff meeting, please return this survey to the researchers at the conclusion of the meeting. If you are unable to attend the kickoff meeting, please return this survey to your child's teacher in the attached envelope by **Monday, November 10**.

Participating in this survey is voluntary. By completing this survey, you are agreeing to participate. The information you provide will be kept private and will not be shared with anyone at the preschool. Your name, your child's name, the name of your child's teacher, and the name of the preschool will **not** appear in any reports. If you do not want to participate, no further action is needed. There are no negative consequences if you do not want to participate. Once you agree, you can always change your mind and decide that you do not want to participate. There is no known risk for being a part of this study. By participating, you will be helping to identify new ways to support the development of young children's math skills.

The study is led by Education Development Center, Inc. and SRI International, non-profit research organizations that have been active in education and community development for decades. If you have questions about this study, you may contact Carlin Llorente at 650-859-2381 or by email at carlin.llorente@sri.com. For questions about your rights as a participant in this study, please contact SRI's Human Subjects Committee at 650-859-2686. This study is funded by the Corporation for Public Broadcasting and the U.S. Department of Education.

Thank you for helping us to learn more about how families with young children use technology.

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RTL Parent Survey 2014
English - Pre - White

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Technology at Home

1. Please look over the list of devices or services in the left hand column. Which, if any, do you have in your home? *(Mark all that apply.)*

	I have this device in my household
a. Television set	☐
b. Cable or satellite TV	☐
c. Paid video subscription (such as Hulu, Netflix, Amazon Prime)	☐
d. DVD, Blu-ray or VHS player	☐
e. Laptop or desktop computer	☐
f. Smart phone (a phone that you can also use to send email, watch videos, or access the Internet)	☐
g. Tablet device (such as an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)	☐
h. Basic electronic reader (such as a Kindle or Nook)	☐
i. Digital educational toys (such as LeapPad or VTech tablet)	☐
j. iPod Touch or other type of video-playing iPod	☐
k. Video game player that hooks up to your TV (such as an Xbox, PlayStation or Wii)	☐
l. Handheld video game player (such as a GameBoy, Nintendo DS or PSP)	☐
m. Other (Please Specify):	☐

2. Please tell us what kind of Internet access you have at home (if any). *(Mark only one.)*

☐ I don't know if I have Internet access at home
☐ I don't have Internet access at home
☐ I have Internet access at home, but I don't know what kind
☐ I have Internet access at home, but only on a cell phone
☐ Dial-up telephone access (through a modem)
☐ High-speed Internet access (such as broadband, cable modem, or DSL)

Your Use of Technology

3. Thinking just about last week, about how often did <u>you</u>...
(Mark one for <u>each</u> row.)

	Never	1 to 2 times	3 to 4 times	Every day
a. Watch non-children's shows on TV	☐	☐	☐	☐
b. Watch video on a cell phone, iPod, iPad, or similar device	☐	☐	☐	☐
c. Watch video on a laptop or desktop computer	☐	☐	☐	☐
d. Play video games on any device	☐	☐	☐	☐
e. Use a computer for something other than watching video or playing video games	☐	☐	☐	☐
f. Read books, magazines, or newspapers for pleasure, including electronically	☐	☐	☐	☐

Your Child's Use of Technology

4. Thinking just about last week, about how often did your child do each of the following activities at home?
(Mark one for <u>each</u> row.)

	Never	1 to 2 times	3 to 4 times	Every day
a. Watch TV, DVDs, online videos, or other types of videos	☐	☐	☐	☐
b. Play games on a video game player, computer, or mobile device (like a cell phone)	☐	☐	☐	☐
c. Use apps or software programs other than games/videos (like a photo app or drawing program)	☐	☐	☐	☐
d. Read or look at electronic books	☐	☐	☐	☐

5. **Thinking just about last week, about how often did your child do each of the following activities? Think of educational programs as those that try to teach reading, math, or other skills.** *(Mark one for each row.)*

	Never	*1 to 2 times*	*3 to 4 times*	*Every day*
a. Watch **educational** TV, DVDs, online videos, or other types of videos	☐	☐	☐	☐
b. Play **educational** games on a video game player, computer, or mobile device (like a cell phone)	☐	☐	☐	☐

6. **Thinking just about last week, about how much time does your child spend using technology (watching TV, using the computer, playing video games, etc.) each day?** *(Mark only one.)*

☐ Less than half an hour a day
☐ Half an hour to 1 hour a day
☐ 1-2 hours a day
☐ 2-3 hours a day
☐ 3-4 hours a day
☐ More than 4 hours a day

7. **Does your child watch any of the following television channels at home?** *(Mark all that apply.)*

☐ a. **PBS (Channel 13 or WLIW21 in NYC, KQED in Bay Area, or Sprout channel)**
For example: Sesame Street, The Cat in the Hat, Sid the Science Kid, Curious George, Super Why!, Dinosaur Train

☐ b. **Nickelodeon or Nick Jr.**
For example: Dora the Explorer, Bubble Guppies, Team Umizoomi, SpongeBob SquarePants, The Backyardigans, Yo Gabba Gabba!

☐ c. **Disney or Disney Jr.**
For example: Mickey Mouse Clubhouse, Jake and the Never Land Pirates, Doc McStuffins, Winnie the Pooh, Phineas and Ferb, Chuggington, Jessie

☐ d. **Other** *(please list):*

☐ e. **None of the above**

Time and Place for Technology Use

8. Thinking just about last week, who did your child use technology with at home?
(For example, watched TV, used the computer, played video games, etc.)
(Mark one for each row.)

	Never	1 to 2 times	3 to 4 times	Every day
a. On his/her own	☐	☐	☐	☐
b. With me or another parent or guardian	☐	☐	☐	☐
c. With brothers or sisters	☐	☐	☐	☐
d. With other children (for example, friends or cousins)	☐	☐	☐	☐
e. With grandparents	☐	☐	☐	☐
f. With other adult relatives (for example, aunts or uncles)	☐	☐	☐	☐
g. With someone else (for example, afterschool program or summer camp coordinator, neighbor, librarian, babysitter) *Please specify:*	☐	☐	☐	☐

9. While your child uses technology at home (watching TV, using the computer, playing video games, etc.), what are you typically doing? *(Mark all that apply.)*

☐ Doing household chores or tasks (like cooking, cleaning, or paying bills)
☐ Caring for other children
☐ Working
☐ Talking with friends or other adults
☐ Talking with my child about what he or she is watching or playing
☐ Watching or playing together with my child
☐ Watching or playing separately from my child (on another device)
☐ Sleeping or napping
☐ Other *(please specify):*

10. **Thinking just about last week, did you use technology with your child in any of the following ways?**
(Mark one for each row.)

	Never	1 to 2 times	3 to 4 times	Every day
a. Watched shows, movies, or videos with my child	☐	☐	☐	☐
b. Played digital games or apps with my child	☐	☐	☐	☐
c. Helped setting up the technology or fixing technology problems for my child (for example, if the game "freezes" or the computer needs to be restarted)	☐	☐	☐	☐
d. Asked questions about the show/game my child was watching/playing	☐	☐	☐	☐
e. Answered questions my child asked me about the show/game he or she was watching/playing	☐	☐	☐	☐
f. Made connections between the shows/games my child was watching/playing and things we do in our daily life (for example, talked about how we made pancakes for breakfast, just like Curious George made pancakes on the show your child watched)	☐	☐	☐	☐

11. **Thinking just about last week, about how often did your child use technology (watched TV, used the computer, etc.) while doing another activity at the same time, like playing with toys, riding in a car/bus/train, or eating a meal?** *(Mark only one.)*

☐ Never
☐ 1 to 2 times
☐ 3 to 4 times
☐ Every day

Beliefs about Technology for Learning

12. Please indicate whether you agree or disagree with the following statements. *(Mark one for each row.)*

	Strongly agree	Agree	Disagree	Strongly disagree
a. Technology should be part of young children's learning.	☐	☐	☐	☐
b. Young children spend too much time with technology.	☐	☐	☐	☐
c. Technology encourages young children's creativity.	☐	☐	☐	☐
d. Technology distracts young children from learning.	☐	☐	☐	☐
e. Technology provides young children with information that they might not get at home or school.	☐	☐	☐	☐
f. Using technology helps young children learn skills they will need the future.	☐	☐	☐	☐
g. Technology is helpful for teaching math skills to young children.	☐	☐	☐	☐
h. Technology is helpful for teaching reading skills to young children.	☐	☐	☐	☐

13. How much has your child learned about each of the following areas from using technology? (For example, watching TV, using a computer, etc.)? *(Mark one for each row.)*

	A lot	Some	Only a little	Nothing	N/A
a. Math	☐	☐	☐	☐	☐
b. Science	☐	☐	☐	☐	☐
c. Reading or vocabulary	☐	☐	☐	☐	☐
d. Cooperation, manners, sharing or other social skills	☐	☐	☐	☐	☐
e. Memory, problem solving, or other cognitive skills	☐	☐	☐	☐	☐
f. Art or culture	☐	☐	☐	☐	☐
g. Healthy habits, like eating healthy foods or getting exercise	☐	☐	☐	☐	☐

14. If you monitor or limit your child's use of technology, please tell us HOW you do it.
(Mark all that apply.)

☐ I limit my child's **total time** with technology.
☐ I schedule **particular times of day** my child can or cannot watch/play.
☐ I limit the **content** (particular shows/games) my child can watch/play.
☐ I limit which **devices** my child can use.
☐ I set limits by **observing** my child's use of technology.
☐ I set limits based on my child's **behavior** (e.g., allow technology use for good behavior).
☐ I do not monitor or limit my child's use of technology.
☐ Other *(please specify):*

_____

15. If you monitor or limit your child's use of technology, please tell us WHY you do it.
(Mark all that apply.)

☐ I'm concerned about **inappropriate** content.
☐ I'm concerned about **non-educational** content.
☐ I want my child to have time for other activities, like outdoor play or time with friends.
☐ I'm concerned about overuse of technology.
☐ I'm concerned about technology "addiction" and my child depending on technology too much.
☐ I'm concerned about my child getting enough physical activity.
☐ I do not monitor or limit my child's use of technology.
☐ Other *(please specify):*

_____

Math Learning at Home

16. Which of the following math skills, if any, do you help your child learn or practice at home or outside of school? *(Mark all that apply.)*

☐ **Counting** *(for example, counting out loud by saying "1, 2, 3" or counting objects such as cookies or the fingers on their hands)*

☐ **Using ordinal numbers** -- like first, second, third, fourth, fifth (for example, when walking up stairs or looking at the order of people standing in a line)

☐ **Identifying written numbers** (for example, the number "1" on the page of a book, or on a sign at the store)

☐ **Recognizing or drawing shapes** (for example, recognizing or drawing circles, triangles, or squares)

☐ **Recognizing or creating patterns** (for example, laying out snacks--cracker, grape, cracker, grape-- or colored blocks-- red, red, blue, red, red, blue-- in a pattern)

☐ **Addition** (for example, knowing how many crackers you have when you add one to the pile)

☐ **Subtraction** (for example, knowing how many berries are left after eating some)

☐ **Measurement** (for example, measuring size with hands or rulers, measuring water with cups, or measuring ingredients for a recipe)

☐ **Positional language**, like above, below, near, far (for example, "Can you put your bear under the table?")

☐ Other *(please specify):*

_____

17. Please indicate whether you agree or disagree with the following statements. *(Mark one for <u>each</u> row.)*

	Strongly Agree	Agree	Disagree	Strongly disagree
a. Young children (ages 3-5) learn math mainly at school, not at home.	☐	☐	☐	☐
b. I can help my child learn math and other skills like reading and writing.	☐	☐	☐	☐
c. I am confident in my ability to help my child learn and talk about math.	☐	☐	☐	☐
d. Young children (age 3-5) generally like math and are interested in it.	☐	☐	☐	☐
e. Math is too difficult for young children (ages 3-5) to understand.	☐	☐	☐	☐
f. I like helping my child learn about math.	☐	☐	☐	☐
g. Math can be taught any time throughout the day.	☐	☐	☐	☐
h. Part of my role as a parent is to teach math to my children.	☐	☐	☐	☐

Approaches to Learning

18. Thinking just about last week, how often did your child...
(Mark one for <u>each</u> row.)

	Never	Once or twice	Three or four times	Five or more times
a. Complete a task or activity that took 10 minutes or longer (for example, completing a puzzle or putting away toys)?	☐	☐	☐	☐
b. Calm him/herself down when frustrated?	☐	☐	☐	☐
c. Ask for help when he or she was having trouble with solving a problem?	☐	☐	☐	☐

19. Thinking just about last week, how often did you...
(Mark one for <u>each</u> row.)

	Never	Once or twice	Three or four times	Five or more times
a. Ask your child to follow more than one direction (for example, "Take off your coat, hang it on the hook, and pick out a game to play")?	☐	☐	☐	☐
b. Help your child to solve a problem?	☐	☐	☐	☐
c. Help your child to think of a different way to solve a problem?	☐	☐	☐	☐
d. Help your child explore "what if..." scenarios? (for example, "What if we leave the ice sitting in the sun?"	☐	☐	☐	☐
e. Help your child to calm him/herself down when frustrated?	☐	☐	☐	☐
f. Offer encouragement on something your child was doing? (for example, "You worked really hard to find a way to put those puzzle pieces together."	☐	☐	☐	☐
g. Help your child to see mistakes as a natural part of learning?	☐	☐	☐	☐

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PEG+CAT QUESTIONS

20. In the past two weeks, how often has your child watched these PBS KIDS shows?
(Mark one for each row.)

	Don't Know	0 times	1-2 times	3-4 times	5-6 times	More than 6 times
a. Super Why!	☐	☐	☐	☐	☐	☐
b. PEG+CAT	☐	☐	☐	☐	☐	☐
c. Sid the Science Kid	☐	☐	☐	☐	☐	☐

21. In the past two weeks, how often has your child played digital games based on these PBS KIDS shows? *(Mark one for each row.)*

	Don't Know	0 times	1-2 times	3-4 times	5-6 times	More than 6 times
a. Super Why!	☐	☐	☐	☐	☐	☐
b. PEG+CAT	☐	☐	☐	☐	☐	☐
c. Sid the Science Kid	☐	☐	☐	☐	☐	☐

BACKGROUND INFORMATION

We want our materials to be useful to a wide range of children and families, so it helps us to know a little bit more about you and your child. Please answer the following questions. Everything you tell us is confidential.

22. Please indicate the highest level of education the child's <u>mother</u> completed? *(Mark only <u>one</u>.)*

- [ ] No formal schooling
- [ ] 8th grade or less
- [ ] 9th grade
- [ ] 10th grade
- [ ] 11th grade
- [ ] High School Diploma or GED
- [ ] Some college or technical school classes *(no diploma)*
- [ ] Associate's Degree (AA, AS) or Technical Degree
- [ ] Bachelor's Degree (BA, BS)
- [ ] Graduate or Professional Degree
- [ ] Don't know

23. Please indicate the highest level of education the child's <u>father</u> completed? *(Mark only <u>one</u>.)*

- [ ] No formal schooling
- [ ] 8th grade or less
- [ ] 9th grade
- [ ] 10th grade
- [ ] 11th grade
- [ ] High School Diploma or GED
- [ ] Some college or technical school classes *(no diploma)*
- [ ] Associate's Degree (AA, AS) or Technical Degree
- [ ] Bachelor's Degree (BA, BS)
- [ ] Graduate or Professional Degree
- [ ] Don't know

24. What was the total combined income of all members of this household in 2013? *(Mark only <u>one</u>.)*

- [ ] Less than $25,000
- [ ] $25,000-$49,000
- [ ] $50,000-$74,000
- [ ] $75,000-$99,000
- [ ] $100,000 or more

25. Does the child listed on this survey have an IEP (individualized education program) or a 504 Plan? *(Mark only <u>one</u>.)*

- [ ] Yes
- [ ] No
- [ ] I don't know

26. What languages does your child speak, understand, or hear at home? *(Mark <u>all</u> that apply.)*

- [ ] English
- [ ] Spanish
- [ ] Chinese *(Mandarin, Cantonese, or other)*
- [ ] French
- [ ] Vietnamese
- [ ] Other *(please describe):*

27. Please indicate your child's race or ethnicity. *(Mark <u>all</u> that apply.)*

- [ ] White (Non-Hispanic)
- [ ] Hispanic or Latino
- [ ] Black or African-American
- [ ] Asian
- [ ] Native Hawaiian or Other Pacific Islander
- [ ] American Indian or Alaska Native
- [ ] Other *(please specify):*

28. Please indicate your child's gender *(Mark only <u>one</u>.)*

- [ ] Male
- [ ] Female

29. What is your relationship to the child listed on this survey? *(Mark only <u>one</u>.)*

- [ ] Mother
- [ ] Father
- [ ] Grandmother
- [ ] Grandfather
- [ ] Guardian
- [ ] Other *(please specify):*

PBS KIDS Parent Survey
Family Technology at Home

IMPORTANT: Please use a **BLACK** pen. Mark response boxes with an ☒.
Use block printing for any text or numeric responses.

Region   Center   Class   Child

Please complete **ONE** survey, either in English, Spanish, or Chinese.
If you need a survey in Spanish or Chinese but do not have a copy, please ask your child's teacher for assistance.
Si usted necesita una encuesta en español pero no tiene copia, por favor pida al maestro de su hijo que lo ayude.
如果您需要中文調查問卷，但是手邊卻沒有，請向您孩子的老師尋求幫助。

Parent/Guardian

First name:

Last name:

Child Participating in the Study

First name:

Last name:

Center Name:

This survey includes questions about your use of technology, your child's use of technology and some background questions about your family. If you have more than one child, please answer the questions thinking about the *child who is participating in this study*.

Please return this survey to the researchers at the conclusion of the meeting.

Participating in this survey is voluntary. By completing this survey, you are agreeing to participate. The information you provide will be kept private and will not be shared with anyone at the preschool. Your name, your child's name, the name of your child's teacher, and the name of the preschool will **not** appear in any reports. If you do not want to participate, no further action is needed. There are no negative consequences if you do not want to participate. Once you agree, you can always change your mind and decide that you do not want to participate. There is no known risk for being a part of this study. By participating, you will be helping to identify new ways to support the development of young children's math skills.

The study is led by Education Development Center, Inc. and SRI International, non-profit research organizations that have been active in education and community development for decades. If you have questions about this study, you may contact Yelee Jo at 212-807-4209 or by email at YJo@edc.org. For questions about your rights as a participant in this study, please contact EDC's Human Subjects Committee at 617-618-2731. This study is funded by the Corporation for Public Broadcasting and the U.S. Department of Education.

Thank you for helping us to learn more about how families with young children use technology.

6612

RTL Parent Survey 2015
English (post) - Yellow

Page 1 of 12

Technology at Home

1. Please look over the list of devices or services in the left hand column. Which, if any, do you have in your home? *(Mark all that apply.)*

	I have this device in my household
a. Television set	☐
b. Cable or satellite TV	☐
c. Paid video subscription (such as Hulu, Netflix, Amazon Prime)	☐
d. DVD, Blu-ray or VHS player	☐
e. Laptop or desktop computer	☐
f. Smart phone (a phone that you can also use to send email, watch videos, or access the Internet)	☐
g. Tablet device (such as an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)	☐
h. Basic electronic reader (such as a Kindle or Nook)	☐
i. Digital educational toys (such as LeapPad or VTech tablet)	☐
j. iPod Touch or other type of video-playing iPod	☐
k. Video game player that hooks up to your TV (such as an Xbox, PlayStation or Wii)	☐
l. Handheld video game player (such as a GameBoy, Nintendo DS or PSP)	☐
m. Other (Please Specify):	☐

2. Please tell us what kind of Internet access you have at home (if any). *(Mark only one.)*

☐ I don't know if I have Internet access at home
☐ I don't have Internet access at home
☐ I have Internet access at home, but I don't know what kind
☐ I have Internet access at home, but only on a cell phone
☐ Dial-up telephone access (through a modem)
☐ High-speed Internet access (such as broadband, cable modem, or DSL)

Your Use of Technology

3. Thinking just about last week, about how often did <u>you</u>...
(Mark one for <u>each</u> row.)

	Never	1 to 2 times	3 to 4 times	Every day
a. Watch non-children's shows on TV	☐	☐	☐	☐
b. Watch video on a cell phone, iPod, iPad, or similar device	☐	☐	☐	☐
c. Watch video on a laptop or desktop computer	☐	☐	☐	☐
d. Play video games on any device	☐	☐	☐	☐
e. Use a computer for something other than watching video or playing video games	☐	☐	☐	☐
f. Read books, magazines, or newspapers for pleasure, including electronically	☐	☐	☐	☐

Your Child's Use of Technology

4. Thinking just about last week, about how often did your child do each of the following activities at home?
(Mark one for <u>each</u> row.)

	Never	1 to 2 times	3 to 4 times	Every day
a. Watch TV, DVDs, online videos, or other types of videos	☐	☐	☐	☐
b. Play games on a video game player, computer, or mobile device (like a cell phone)	☐	☐	☐	☐
c. Use apps or software programs other than games/videos (like a photo app or drawing program)	☐	☐	☐	☐
d. Read or look at electronic books	☐	☐	☐	☐

5. Thinking just about last week, about how often did your child do each of the following activities? Think of educational programs as those that try to teach reading, math, or other skills. *(Mark one for <u>each</u> row.)*

	Never	*1 to 2 times*	*3 to 4 times*	*Every day*
a. Watch **educational** TV, DVDs, online videos, or other types of videos	☐	☐	☐	☐
b. Play **educational** games on a video game player, computer, or mobile device (like a cell phone)	☐	☐	☐	☐

6. Thinking just about last week, about how much time does your child spend using technology (watching TV, using the computer, playing video games, etc.) each day?
(Mark only <u>one</u>.)

☐ Less than half an hour a day
☐ Half an hour to 1 hour a day
☐ 1-2 hours a day
☐ 2-3 hours a day
☐ 3-4 hours a day
☐ More than 4 hours a day

7. Does your child watch any of the following television channels at home?
(Mark <u>all</u> that apply.)

☐ a. **PBS (Channel 13 or WLIW21 in NYC, KQED in Bay Area, or Sprout channel)**
For example: Sesame Street, The Cat in the Hat, Sid the Science Kid, Curious George, Super Why!, Dinosaur Train

☐ b. **Nickelodeon or Nick Jr.**
For example: Dora the Explorer, Bubble Guppies, Team Umizoomi, SpongeBob SquarePants, The Backyardigans, Yo Gabba Gabba!

☐ c. **Disney or Disney Jr.**
For example: Mickey Mouse Clubhouse, Jake and the Never Land Pirates, Doc McStuffins, Winnie the Pooh, Phineas and Ferb, Chuggington, Jessie

☐ d. **Other** *(please list):*

☐ e. **None of the above**

Time and Place for Technology Use

8. **Thinking just about last week, who did your child use technology with at home? (For example, watched TV, used the computer, played video games, etc.)**
(Mark one for each row.)

	Never	1 to 2 times	3 to 4 times	Every day
a. On his/her own	☐	☐	☐	☐
b. With me or another parent or guardian	☐	☐	☐	☐
c. With brothers or sisters	☐	☐	☐	☐
d. With other children (for example, friends or cousins)	☐	☐	☐	☐
e. With grandparents	☐	☐	☐	☐
f. With other adult relatives (for example, aunts or uncles)	☐	☐	☐	☐
g. With someone else (for example, afterschool program or summer camp coordinator, neighbor, librarian, babysitter) *Please specify:*	☐	☐	☐	☐

9. **While your child uses technology at home (watching TV, using the computer, playing video games, etc.), what are you typically doing?** *(Mark all that apply.)*

☐ Doing household chores or tasks (like cooking, cleaning, or paying bills)
☐ Caring for other children
☐ Working
☐ Talking with friends or other adults
☐ Talking with my child about what he or she is watching or playing
☐ Watching or playing together with my child
☐ Watching or playing separately from my child (on another device)
☐ Sleeping or napping
☐ Other *(please specify):*

10. Thinking just about last week, did you use technology with your child in any of the following ways?

(Mark one for each row.)

	Never	1 to 2 times	3 to 4 times	Every day
a. Watched shows, movies, or videos with my child	☐	☐	☐	☐
b. Played digital games or apps with my child	☐	☐	☐	☐
c. Helped setting up the technology or fixing technology problems for my child (for example, if the game "freezes" or the computer needs to be restarted)	☐	☐	☐	☐
d. Asked questions about the show/game my child was watching/playing	☐	☐	☐	☐
e. Answered questions my child asked me about the show/game he or she was watching/playing	☐	☐	☐	☐
f. Made connections between the shows/games my child was watching/playing and things we do in our daily life (for example, talked about how we made pancakes for breakfast, just like Curious George made pancakes on the show your child watched)	☐	☐	☐	☐

11. Thinking just about last week, about how often did your child use technology (watched TV, used the computer, etc.) while doing another activity at the same time, like playing with toys, riding in a car/bus/train, or eating a meal? *(Mark only one.)*

☐ Never
☐ 1 to 2 times
☐ 3 to 4 times
☐ Every day

Beliefs about Technology for Learning

12. **Please indicate whether you agree or disagree with the following statements.** *(Mark one for each row.)*

	Strongly agree	Agree	Disagree	Strongly disagree
a. Technology should be part of young children's learning.	☐	☐	☐	☐
b. Young children spend too much time with technology.	☐	☐	☐	☐
c. Technology encourages young children's creativity.	☐	☐	☐	☐
d. Technology distracts young children from learning.	☐	☐	☐	☐
e. Technology provides young children with information that they might not get at home or school.	☐	☐	☐	☐
f. Using technology helps young children learn skills they will need the future.	☐	☐	☐	☐
g. Technology is helpful for teaching math skills to young children.	☐	☐	☐	☐
h. Technology is helpful for teaching reading skills to young children.	☐	☐	☐	☐

13. **How much has your child learned about each of the following areas from using technology? (For example, watching TV, using a computer, etc.)?** *(Mark one for each row.)*

	A lot	Some	Only a little	Nothing	N/A
a. Math	☐	☐	☐	☐	☐
b. Science	☐	☐	☐	☐	☐
c. Reading or vocabulary	☐	☐	☐	☐	☐
d. Cooperation, manners, sharing or other social skills	☐	☐	☐	☐	☐
e. Memory, problem solving, or other cognitive skills	☐	☐	☐	☐	☐
f. Art or culture	☐	☐	☐	☐	☐
g. Healthy habits, like eating healthy foods or getting exercise	☐	☐	☐	☐	☐

14. If you monitor or limit your child's use of technology, please tell us HOW you do it.
(Mark all that apply.)

☐ I limit my child's **total time** with technology.

☐ I schedule **particular times of day** my child can or cannot watch/play.

☐ I limit the **content** (particular shows/games) my child can watch/play.

☐ I limit which **devices** my child can use.

☐ I set limits by **observing** my child's use of technology.

☐ I set limits based on my child's **behavior** (e.g., allow technology use for good behavior).

☐ I do not monitor or limit my child's use of technology.

☐ Other *(please specify):*

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15. If you monitor or limit your child's use of technology, please tell us WHY you do it.
(Mark all that apply.)

☐ I'm concerned about **inappropriate** content.

☐ I'm concerned about **non-educational** content.

☐ I want my child to have time for other activities, like outdoor play or time with friends.

☐ I'm concerned about overuse of technology.

☐ I'm concerned about technology "addiction" and my child depending on technology too much.

☐ I'm concerned about my child getting enough physical activity.

☐ I do not monitor or limit my child's use of technology.

☐ Other *(please specify):*

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Math Learning at Home

16. Which of the following math skills, if any, do you help your child learn or practice at home or outside of school? *(Mark all that apply.)*

☐ **Counting** *(*for example, counting out loud by saying "1, 2, 3" or counting objects such as cookies or the fingers on their hands)

☐ **Using ordinal numbers** -- like first, second, third, fourth, fifth (for example, when walking up stairs or looking at the order of people standing in a line)

☐ **Identifying written numbers** (for example, the number "1" on the page of a book, or on a sign at the store)

☐ **Recognizing or drawing shapes** (for example, recognizing or drawing circles, triangles, or squares)

☐ **Recognizing or creating patterns** (for example, laying out snacks--cracker, grape, cracker, grape-- or colored blocks-- red, red, blue, red, red, blue-- in a pattern)

☐ **Addition** (for example, knowing how many crackers you have when you add one to the pile)

☐ **Subtraction** (for example, knowing how many berries are left after eating some)

☐ **Measurement** (for example, measuring size with hands or rulers, measuring water with cups, or measuring ingredients for a recipe)

☐ **Positional language**, like above, below, near, far (for example, "Can you put your bear under the table?")

☐ Other *(please specify):*

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17. Please indicate whether you agree or disagree with the following statements. *(Mark one for each row.)*

	Strongly Agree	Agree	Disagree	Strongly disagree
a. Young children (ages 3-5) learn math mainly at school, not at home.	☐	☐	☐	☐
b. I can help my child learn math and other skills like reading and writing.	☐	☐	☐	☐
c. I am confident in my ability to help my child learn and talk about math.	☐	☐	☐	☐
d. Young children (age 3-5) generally like math and are interested in it.	☐	☐	☐	☐
e. Math is too difficult for young children (ages 3-5) to understand.	☐	☐	☐	☐
f. I like helping my child learn about math.	☐	☐	☐	☐
g. Math can be taught any time throughout the day.	☐	☐	☐	☐
h. Part of my role as a parent is to teach math to my children.	☐	☐	☐	☐

Approaches to Learning

18. Thinking just about last week, how often did your child...
(Mark one for each row.)

	Never	Once or twice	Three or four times	Five or more times
a. Complete a task or activity that took 10 minutes or longer (for example, completing a puzzle or putting away toys)?	☐	☐	☐	☐
b. Calm him/herself down when frustrated?	☐	☐	☐	☐
c. Ask for help when he or she was having trouble with solving a problem?	☐	☐	☐	☐

19. Thinking just about last week, how often did you...
(Mark one for each row.)

	Never	Once or twice	Three or four times	Five or more times
a. Ask your child to follow more than one direction (for example, "Take off your coat, hang it on the hook, and pick out a game to play")?	☐	☐	☐	☐
b. Help your child to solve a problem?	☐	☐	☐	☐
c. Help your child to think of a different way to solve a problem?	☐	☐	☐	☐
d. Help your child explore "what if..." scenarios? (for example, "What if we leave the ice sitting in the sun?"	☐	☐	☐	☐
e. Help your child to calm him/herself down when frustrated?	☐	☐	☐	☐
f. Offer encouragement on something your child was doing? (for example, "You worked really hard to find a way to put those puzzle pieces together."	☐	☐	☐	☐
g. Help your child to see mistakes as a natural part of learning?	☐	☐	☐	☐

PEG+CAT QUESTIONS

20. In the past two weeks, how often has your child watched these PBS KIDS shows? *(Mark one for each row.)*

	Don't Know	0 times	1-2 times	3-4 times	5-6 times	More than 6 times
a. Super Why!	☐	☐	☐	☐	☐	☐
b. PEG+CAT	☐	☐	☐	☐	☐	☐
c. Sid the Science Kid	☐	☐	☐	☐	☐	☐

21. In the past two weeks, how often has your child played digital games based on these PBS KIDS shows? *(Mark one for each row.)*

	Don't Know	0 times	1-2 times	3-4 times	5-6 times	More than 6 times
a. Super Why!	☐	☐	☐	☐	☐	☐
b. PEG+CAT	☐	☐	☐	☐	☐	☐
c. Sid the Science Kid	☐	☐	☐	☐	☐	☐

BACKGROUND INFORMATION

22. Does the child listed on this survey have an IEP (individualized education program) or a 504 Plan? *(Mark only one.)*

☐ Yes
☐ No
☐ I don't know

23. What is your relationship to the child listed on this survey?
(Mark only one.)

☐ Mother
☐ Father
☐ Grandmother
☐ Grandfather
☐ Guardian
☐ Other *(please specify):*

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Thank you very much for taking the time to complete this survey!

Appendix S. PBS KIDS Media Diary

PBS KIDS Home Study
Media Diary - Weeks 1 to 6

IMPORTANT: Please use a **BLACK** pen. Mark response boxes with an ☒. Use block printing for any text or numeric responses. If you wish to change a response, mark the right answer and **CIRCLE** it.

Please provide the following information.

Child's First Name:

Child's Last Name:

Class:

Center:

Staff use only

Region   Center   Class   Child

WEEK 1

Your name:

Today's date: *(mon/day/yr)*
☐☐ / ☐☐ / ☐☐

Your relationship to child:

Please tell us a little bit about the PEG+CAT videos and games your child watched and played TODAY.

1a Full Video: The Ring Problem

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 1b)

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1b Video Clip: Ordering by Size

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 1c)

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1c Full Video: The Wedding Problem

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 1d)

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1d Online Game: Peg's Pizza Place

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play (skip ahead to question 2)

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child play with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

2 This week's home activity is *PEG+CAT Honey Cake*. Did your child complete the activity THIS WEEK?

☐ Yes ☐ No

3 What other *PEG+CAT* games or videos did your child play or watch THIS WEEK? (Mark ALL that apply.)

☐ Full Video: The Circus Problem
☐ Full Video: The Clown Problem
☐ Online Game: Costume Box
☐ Other (specify): ▶ [_____]

4 Which family support materials did you read or use THIS WEEK? (Mark ALL that apply.)

☐ *PEG+CAT* Experience Guide
☐ Tip Sheets in the *PEG+CAT* Experience Guide (specify): ▶ [_____]
☐ Family Support Video(s) (specify): ▶ [_____]
☐ Text messages

5 How useful were the family support materials in helping you and your child use media together?

☐ Very useful ☐ Somewhat useful ☐ Not useful ☐ Did not use

6 Did you encounter any challenges THIS WEEK using the media and technology?

☐ No, I did not encounter any challenges. ☐ Yes

If yes, indicate what challenges you experienced: (Mark ALL that apply.)

☐ Using the technology devices (tablet or Chromebook, etc.)
☐ Using/Accessing the videos and/or interactive games
☐ Finding time to fit the videos and games into our family's schedule
☐ Child's lack of interest or engagement while using the videos or games
☐ Other ▶ [_____]

7 Did you and your child follow the suggested order of videos, games, and activities in the *PEG+CAT* Experience Guide? (Mark ONE only.)

☐ We **always** followed the order. ☐ We **sometimes** followed the order. ☐ We **did not** followed the order.
☐ **I can't remember** if we followed the order.

8 Other than *PEG+CAT* videos and games, did your child engage in any of these activities TODAY? (Mark ALL that apply.)

☐ Watched shows or videos ☐ Played digital games ☐ Read or looked at electronic books
☐ Used apps or software programs other than games/videos (like a photo app or drawing program)
☐ Other ▶ [_____]

☐ My child did not engage in any non-PEG+CAT technology activities today

9 For what purposes did your child use technology TODAY? (Mark ALL that apply.)

☐ Learning ☐ Entertainment ☐ Other ▶ [_____]
☐ My child did not use technology today

10 What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult? (Mark ALL that apply.)

☐ Household chores or tasks (like cooking, cleaning or paying bills) ☐ Caring for other children ☐ Working
☐ Talking with friends or family ☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other ▶ [_____]

☐ My child did not use media or technology without an adult today

WEEK 2

Your name:

Today's date: *(mon/day/yr)*
☐☐ / ☐☐ / ☐☐

Your relationship to child:

Please tell us a little bit about the PEG+CAT videos and games your child watched and played TODAY.

1a Full Video: The Play Date Problem

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 1b)

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1b Full Video: The Beethoven Problem

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 1c)

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1c Online Game: The Chicken Dance

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play (skip ahead to question 2)

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child play with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

2 This week's home activity is *Home Collections*. Did your child complete the activity THIS WEEK?
☐ Yes   ☐ No

3 What other *PEG+CAT* games or videos did your child play or watch THIS WEEK? (Mark ALL that apply.)
☐ Full Video: The Baby Problem
☐ Full Video: The Messy Room Problem
☐ Online Game: Paint-a-Long
☐ Other (specify): ▶ [_____]

4 Which family support materials did you read or use THIS WEEK? (Mark ALL that apply.)
☐ *PEG+CAT* Experience Guide [_____]
☐ Tip Sheets in the *PEG+CAT* Experience Guide (specify): ▶ [_____]
☐ Family Support Video(s) (specify): ▶ [_____]
☐ Text messages

5 How useful were the family support materials in helping you and your child use media together?
☐ Very useful   ☐ Somewhat useful   ☐ Not useful   ☐ Did not use

6 Did you encounter any challenges THIS WEEK using the media and technology?
☐ No, I did not encounter any challenges.   ☐ Yes

If yes, indicate what challenges you experienced: (Mark ALL that apply.)
☐ Using the technology devices (tablet or Chromebook, etc.)
☐ Using/Accessing the videos and/or interactive games
☐ Finding time to fit the videos and games into our family's schedule
☐ Child's lack of interest or engagement while using the videos or games
☐ Other ▶ [_____]

7 Did you and your child follow the suggested order of videos, games, and activities in the *PEG+CAT* Experience Guide? (Mark ONE only.)
☐ We **always** followed the order.   ☐ We **sometimes** followed the order.   ☐ We **did not** followed the order.
☐ **I can't remember** if we followed the order.

8 Other than *PEG+CAT* videos and games, did your child engage in any of these activities TODAY?
(Mark ALL that apply.)
☐ Watched shows or videos   ☐ Played digital games   ☐ Read or looked at electronic books
☐ Used apps or software programs other than games/videos (like a photo app or drawing program)
☐ Other ▶ [_____]

☐ My child did not engage in any non-PEG+CAT technology activities today

9 For what purposes did your child use technology TODAY? (Mark ALL that apply.)
☐ Learning   ☐ Entertainment   ☐ Other ▶ [_____]
☐ My child did not use technology today

10 What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult? (Mark ALL that apply.)
☐ Household chores or tasks (like cooking, cleaning or paying bills)   ☐ Caring for other children   ☐ Working
☐ Talking with friends or family   ☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other ▶ [_____]

☐ My child did not use media or technology without an adult today

WEEK 3

Your name:

Today's date: *(mon/day/yr)*
[ ] [ ] / [ ] [ ] / [ ] [ ]

Your relationship to child:

Please tell us a little bit about the PEG+CAT videos and games your child watched and played TODAY.

1a   Full Video: The Sparkling Sphere Problem

Number of minutes watched: [ ] 1 to 15   [ ] 16 to 30   [ ] More than 30   [ ] Did not watch (skip ahead to 1b)

Device: [ ] Chromebook
[ ] Tablet   [ ] Other ▶

Time of day: [ ] Morning   [ ] Afternoon   [ ] Evening

How did your child feel about the resource?
[ ] Fun/Interesting   [ ] Boring
[ ] Confusing   [ ] Other ▶

Who did your child watch with? (Mark ALL that apply.)
[ ] On his/her own   [ ] With other kids (like friends or cousins)
[ ] With brother(s) or sister(s)   [ ] With parent/caregiver
[ ] Other ▶

1b   Online Game: Magical Shape Hunt

Number of minutes played: [ ] 1 to 15   [ ] 16 to 30   [ ] More than 30   [ ] Did not play (skip ahead to 1c)

Device: [ ] Chromebook
[ ] Tablet   [ ] Other ▶

Time of day: [ ] Morning   [ ] Afternoon   [ ] Evening

How did your child feel about the resource?
[ ] Fun/Interesting   [ ] Boring
[ ] Confusing   [ ] Other ▶

Who did your child play with? (Mark ALL that apply.)
[ ] On his/her own   [ ] With other kids (like friends or cousins)
[ ] With brother(s) or sister(s)   [ ] With parent/caregiver
[ ] Other ▶

1c   Video Clip: Cylinders & Rectangular Prisms

Number of minutes watched: [ ] 1 to 15   [ ] 16 to 30   [ ] More than 30   [ ] Did not watch (skip ahead to 1d)

Device: [ ] Chromebook
[ ] Tablet   [ ] Other ▶

Time of day: [ ] Morning   [ ] Afternoon   [ ] Evening

How did your child feel about the resource?
[ ] Fun/Interesting   [ ] Boring
[ ] Confusing   [ ] Other ▶

Who did your child watch with? (Mark ALL that apply.)
[ ] On his/her own   [ ] With other kids (like friends or cousins)
[ ] With brother(s) or sister(s)   [ ] With parent/caregiver
[ ] Other ▶

1d   Full Video: The Golden Pyramid Problem

Number of minutes watched: [ ] 1 to 15   [ ] 16 to 30   [ ] More than 30   [ ] Did not watch (skip ahead to question 2)

Device: [ ] Chromebook
[ ] Tablet   [ ] Other ▶

Time of day: [ ] Morning   [ ] Afternoon   [ ] Evening

How did your child feel about the resource?
[ ] Fun/Interesting   [ ] Boring
[ ] Confusing   [ ] Other ▶

Who did your child watch with? (Mark ALL that apply.)
[ ] On his/her own   [ ] With other kids (like friends or cousins)
[ ] With brother(s) or sister(s)   [ ] With parent/caregiver
[ ] Other ▶

2 This week's home activity is *PEG+CAT Stick Puppets*. Did your child complete the activity THIS WEEK?
☐ Yes ☐ No

3 What other *PEG+CAT* games or videos did your child play or watch THIS WEEK? (Mark ALL that apply.)
☐ Full Video: The Parade Problem
☐ Full Video: The Halloween Problem
☐ Online Game: Costume Box
☐ Other (specify): ▶ [   ]

4 Which family support materials did you read or use THIS WEEK? (Mark ALL that apply.)
☐ *PEG+CAT* Experience Guide
☐ Tip Sheets in the *PEG+CAT* Experience Guide (specify): ▶ [   ]
☐ Family Support Video(s) (specify): ▶ [   ]
☐ Text messages

5 How useful were the family support materials in helping you and your child notice and talk about math?
☐ Very useful ☐ Somewhat useful ☐ Not useful ☐ Did not use

6 Did you encounter any challenges THIS WEEK using the media and technology?
☐ No, I did not encounter any challenges. ☐ Yes
If yes, indicate what challenges you experienced: (Mark ALL that apply.)
☐ Using the technology devices (tablet or Chromebook, etc.)
☐ Using/Accessing the videos and/or interactive games
☐ Finding time to fit the videos and games into our family's schedule
☐ Child's lack of interest or engagement while using the videos or games
☐ Other ▶ [   ]

7 Did you and your child follow the suggested order of videos, games, and activities in the *PEG+CAT* Experience Guide? (Mark ONE only.)
☐ We **always** followed the order. ☐ We **sometimes** followed the order. ☐ We **did not** followed the order.
☐ **I can't remember** if we followed the order.

8 Other than *PEG+CAT* videos and games, did your child engage in any of these activities TODAY? (Mark ALL that apply.)
☐ Watched shows or videos ☐ Played digital games ☐ Read or looked at electronic books
☐ Used apps or software programs other than games/videos (like a photo app or drawing program)
☐ Other ▶ [   ]

☐ My child did not engage in any non-PEG+CAT technology activities today

9 For what purposes did your child use technology TODAY? (Mark ALL that apply.)
☐ Learning ☐ Entertainment ☐ Other ▶ [   ]
☐ My child did not use technology today

10 What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult? (Mark ALL that apply.)
☐ Household chores or tasks (like cooking, cleaning or paying bills) ☐ Caring for other children ☐ Working
☐ Talking with friends or family ☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other ▶ [   ]

☐ My child did not use media or technology without an adult today

WEEK 4

Your name: _____

Today's date: *(mon/day/yr)* ☐☐ / ☐☐ / ☐☐

Your relationship to child: _____

Please tell us a little bit about the PEG+CAT videos and games your child watched and played TODAY.

1a | Full Video: The Big Dog Problem

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 1b)

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶ _____

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶ _____

Who did your child watch with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶ _____

1b | Video Clip: Peg Measures Cat's Height

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 1c)

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶ _____

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶ _____

Who did your child watch with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶ _____

1c | Full Video: The Buried Treasure Problem

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 1d)

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶ _____

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶ _____

Who did your child watch with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶ _____

1d | Online Game: Rock Art

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play (skip ahead to question 2)

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶ _____

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶ _____

Who did your child play with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶ _____

2 This week's home activity is *Super PEG+CAT Guy Activity Page*. Did your child complete the activity THIS WEEK?

☐ Yes ☐ No

3 What other *PEG+CAT* games or videos did your child play or watch THIS WEEK? (Mark ALL that apply.)

☐ Full Video: The Ring Problem
☐ Full Video: The Wedding Problem
☐ Online Game: 321 Snack
☐ Other (specify): ▶

4 Which family support materials did you read or use THIS WEEK? (Mark ALL that apply.)

☐ *PEG+CAT* Experience Guide
☐ Tip Sheets in the *PEG+CAT* Experience Guide (specify): ▶
☐ Family Support Video(s) (specify): ▶
☐ Text messages

5 Did you encounter any challenges THIS WEEK using the media and technology?

☐ No, I did not encounter any challenges. ☐ Yes

If yes, indicate what challenges you experienced: (Mark ALL that apply.)

☐ Using the technology devices (tablet or Chromebook, etc.)
☐ Using/Accessing the videos and/or interactive games
☐ Finding time to fit the videos and games into our family's schedule
☐ Child's lack of interest or engagement while using the videos or games
☐ Other ▶

6 Did you and your child follow the suggested order of videos, games, and activities in the PEG+CAT Experience Guide? (Mark ONE only.)

☐ We **always** followed the order. ☐ We **sometimes** followed the order. ☐ We **did not** followed the order.
☐ **I can't remember** if we followed the order.

7 Other than *PEG+CAT* videos and games, did your child engage in any of these activities TODAY?
(Mark ALL that apply.)

☐ Watched shows or videos ☐ Played digital games ☐ Read or looked at electronic books
☐ Used apps or software programs other than games/videos (like a photo app or drawing program)
☐ Other ▶

☐ My child did not engage in any non-PEG+CAT technology activities today

8 For what purposes did your child use technology TODAY? (Mark ALL that apply.)

☐ Learning ☐ Entertainment ☐ Other ▶
☐ My child did not use technology today

9 What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult? (Mark ALL that apply.)

☐ Household chores or tasks (like cooking, cleaning or paying bills) ☐ Caring for other children ☐ Working
☐ Talking with friends or family ☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other ▶

☐ My child did not use media or technology without an adult today

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RTL 2014 Media Diary (T)
Weeks 1 to 6

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WEEK 5

Your name: [   ]

Today's date: *(mon/day/yr)* [ ] / [ ] / [ ]

Your relationship to child: [   ]

Please tell us a little bit about the PEG+CAT videos and games your child watched and played TODAY.

1a Full Video: The Tree Problem

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 1b)

Device: ☐ Chromebook [   ]
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1b Video Clip: Ordering Spheres 1

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 1c)

Device: ☐ Chromebook [   ]
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1c Full Video: Another Tree Problem

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 1d)

Device: ☐ Chromebook [   ]
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1d Video Clip: The Long Line Problem

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 1e)

Device: ☐ Chromebook [   ]
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

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1e **Online Game: Hungry Pirates**

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play (skip ahead to question 2)

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Who did your child play with? (Mark ALL that apply.)
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

2 **What other *PEG+CAT* games or videos did your child play or watch THIS WEEK?** (Mark ALL that apply.)
☐ Full Video: The Birthday Present Problem
☐ Full Video: The Election Problem
☐ Online Game: Chicken Dance
☐ Online Game: Magical Shape Hunt
☐ Other (specify):

3 **Which family support materials did you read or use THIS WEEK?** (Mark ALL that apply.)
☐ *PEG+CAT* Experience Guide
☐ Tip Sheets in the *PEG+CAT* Experience Guide (specify):

☐ Family Support Video(s) (specify):

☐ Text messages

4 **How useful were the family support materials in helping you encourage your child's problem solving skills?**
☐ Very useful
☐ Somewhat useful
☐ Not useful
☐ Did not use

5 **Did you encounter any challenges THIS WEEK using the media and technology?**
☐ No, I did not encounter any challenges.
☐ Yes

If yes, indicate what challenges you experienced: (Mark ALL that apply.)
☐ Using the technology devices (tablet or Chromebook, etc.)
☐ Using/Accessing the videos and/or interactive games
☐ Finding time to fit the videos and games into our family's schedule
☐ Child's lack of interest or engagement while using the videos or games
☐ Other ▶

Week 5 continues on the next page.

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6 **Did you and your child follow the suggested order of videos, games, and activities in the PEG+CAT Experience Guide?** (Mark ONE only.)

☐ We **always** followed the order.

☐ We **sometimes** followed the order.

☐ We **did not** followed the order.

☐ **I can't remember** if we followed the order.

7 **Other than *PEG+CAT* videos and games, did your child engage in any of these activities TODAY?** (Mark ALL that apply.)

☐ Watched shows or videos

☐ Played digital games

☐ Read or looked at electronic books

☐ Used apps or software programs other than games/videos (like a photo app or drawing program)

☐ Other (specify):

☐ My child did not engage in any non-PEG+CAT technology activities today

8 **For what purposes did your child use technology TODAY?** (Mark ALL that apply.)

☐ Learning

☐ Entertainment

☐ Other (specify):

☐ My child did not use technology today

9 **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** (Mark ALL that apply.)

☐ Household chores or tasks (like cooking, cleaning or paying bills)

☐ Caring for other children

☐ Working

☐ Talking with friends or family

☐ Watching TV/videos or playing games/apps separately from my child (on another device)

☐ Other (specify):

☐ My child did not use media or technology without an adult today

Your name:

Today's date: *(mon/day/yr)*

[ ] / [ ] / [ ]

Your relationship to child:

Please tell us a little bit about the PEG+CAT videos and games your child watched and played TODAY.

1a   Full Video: The Doohickey Problem

Number of minutes watched: [ ] 1 to 15   [ ] 16 to 30   [ ] More than 30   [ ] Did not watch (skip ahead to 1b)

Device: [ ] Chromebook
[ ] Tablet   [ ] Other ▶

Time of day: [ ] Morning   [ ] Afternoon   [ ] Evening

How did your child feel about the resource?
[ ] Fun/Interesting   [ ] Boring
[ ] Confusing   [ ] Other ▶

Who did your child watch with? (Mark ALL that apply.)
[ ] On his/her own   [ ] With other kids (like friends or cousins)
[ ] With brother(s) or sister(s)   [ ] With parent/caregiver
[ ] Other ▶

1b   Online Game: Chicken Blast Off

Number of minutes played: [ ] 1 to 15   [ ] 16 to 30   [ ] More than 30   [ ] Did not play (skip ahead to 1c)

Device: [ ] Chromebook
[ ] Tablet   [ ] Other ▶

Time of day: [ ] Morning   [ ] Afternoon   [ ] Evening

How did your child feel about the resource?
[ ] Fun/Interesting   [ ] Boring
[ ] Confusing   [ ] Other ▶

Who did your child play with? (Mark ALL that apply.)
[ ] On his/her own   [ ] With other kids (like friends or cousins)
[ ] With brother(s) or sister(s)   [ ] With parent/caregiver
[ ] Other ▶

1c   Video Clip: The Baby Problem

Number of minutes watched: [ ] 1 to 15   [ ] 16 to 30   [ ] More than 30   [ ] Did not watch (skip ahead to 1d)

Device: [ ] Chromebook
[ ] Tablet   [ ] Other ▶

Time of day: [ ] Morning   [ ] Afternoon   [ ] Evening

How did your child feel about the resource?
[ ] Fun/Interesting   [ ] Boring
[ ] Confusing   [ ] Other ▶

Who did your child watch with? (Mark ALL that apply.)
[ ] On his/her own   [ ] With other kids (like friends or cousins)
[ ] With brother(s) or sister(s)   [ ] With parent/caregiver
[ ] Other ▶

Week 6 continues on the next page.

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WEEK 6

1d — Video Clip: The Messy Room Problem 1

Number of minutes watched: ☐ 1 to 15   ☐ 16 to 30   ☐ More than 30   ☐ Did not watch (skip ahead to 1e)

Device: ☐ Chromebook
☐ Tablet   ☐ Other ▶

Time of day: ☐ Morning   ☐ Afternoon   ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting   ☐ Boring
☐ Confusing   ☐ Other ▶

Who did your child watch with? (Mark ALL that apply.)
☐ On his/her own   ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)   ☐ With parent/caregiver
☐ Other ▶

1e — Video Clip: The Messy Room Problem 2

Number of minutes watched: ☐ 1 to 15   ☐ 16 to 30   ☐ More than 30   ☐ Did not watch (skip ahead to 1f)

Device: ☐ Chromebook
☐ Tablet   ☐ Other ▶

Time of day: ☐ Morning   ☐ Afternoon   ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting   ☐ Boring
☐ Confusing   ☐ Other ▶

Who did your child watch with? (Mark ALL that apply.)
☐ On his/her own   ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)   ☐ With parent/caregiver
☐ Other ▶

1f — Big Gig App: Patterns

Number of minutes played: ☐ 1 to 15   ☐ 16 to 30   ☐ More than 30   ☐ Did not play (skip ahead to 1g)

Device: ☐ Chromebook
☐ Tablet   ☐ Other ▶

Time of day: ☐ Morning   ☐ Afternoon   ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting   ☐ Boring
☐ Confusing   ☐ Other ▶

Who did your child play with? (Mark ALL that apply.)
☐ On his/her own   ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)   ☐ With parent/caregiver
☐ Other ▶

1g — Big Gig App: Magic Cylinder Song

Number of minutes played: ☐ 1 to 15   ☐ 16 to 30   ☐ More than 30   ☐ Did not play (skip ahead to question 2)

Device: ☐ Chromebook
☐ Tablet   ☐ Other ▶

Time of day: ☐ Morning   ☐ Afternoon   ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting   ☐ Boring
☐ Confusing   ☐ Other ▶

Who did your child play with? (Mark ALL that apply.)
☐ On his/her own   ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)   ☐ With parent/caregiver
☐ Other ▶

2 What other *PEG+CAT* games or videos did your child play or watch THIS WEEK? (Mark ALL that apply.)
☐ Full Video: The Three Bears Problem
☐ Full Video: The Big Gig Problem
☐ Big Gig App
☐ Other (specify): ▶

3 Which family support materials did you read or use THIS WEEK? (Mark ALL that apply.)
☐ *PEG+CAT* Experience Guide
☐ Tip Sheets in the *PEG+CAT* Experience Guide (specify): ▶
☐ Family Support Video(s) (specify): ▶
☐ Text messages

4 Did you encounter any challenges THIS WEEK using the media and technology?
☐ No, I did not encounter any challenges.   ☐ Yes

If yes, indicate what challenges you experienced: (Mark ALL that apply.)
☐ Using the technology devices (tablet or Chromebook, etc.)
☐ Using/Accessing the videos and/or interactive games
☐ Finding time to fit the videos and games into our family's schedule
☐ Child's lack of interest or engagement while using the videos or games
☐ Other ▶

5 Did you and your child follow the suggested order of videos, games, and activities in the PEG+CAT Experience Guide? (Mark ONE only.)
☐ We **always** followed the order.   ☐ We **sometimes** followed the order.   ☐ We **did not** followed the order.
☐ **I can't remember** if we followed the order.

6 Other than *PEG+CAT* videos and games, did your child engage in any of these activities TODAY?
(Mark ALL that apply.)
☐ Watched shows or videos   ☐ Played digital games   ☐ Read or looked at electronic books
☐ Used apps or software programs other than games/videos (like a photo app or drawing program)
☐ Other ▶

☐ My child did not engage in any non-PEG+CAT technology activities today

7 For what purposes did your child use technology TODAY? (Mark ALL that apply.)
☐ Learning   ☐ Entertainment   ☐ Other ▶
☐ My child did not use technology today

8 What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult? (Mark ALL that apply.)
☐ Household chores or tasks (like cooking, cleaning or paying bills)   ☐ Caring for other children   ☐ Working
☐ Talking with friends or family   ☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other ▶

☐ My child did not use media or technology without an adult today

This concludes your Media Diary for Weeks 1 to 6.
Thank you!

Region: [ ]

Class: [   ]

Center: [   ]

PBS KIDS Home Study
Media Diary - Weeks 7 to 12

IMPORTANT: Please use a **BLACK** pen. Mark response boxes with an ☒. Use block printing for any text or numeric responses. If you wish to change a response, mark the right answer and **CIRCLE** it.

Please provide the following information.

Child's First Name:

Child's Last Name:

Class:

Center:

Staff use only

Region	Center		Class		Child			

WEEK 7

Your name:

Today's date: *(mon/day/yr)*

☐ / ☐ / ☐

Your relationship to child:

Please tell us a little bit about the PEG+CAT videos and games your child watched and played TODAY.

1a **Full Video: The Dinosaur Problem**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1b)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

1b **Online Game: Chicken Dance**

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play ▶ *(skip ahead to 1c)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Who did your child play with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

1c **Full Video: The Penguin Problem**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to question 2)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

2 **This week's home activity is *Toy Hunt*. Did your child complete the activity THIS WEEK?**
☐ Yes
☐ No

3 **What other *PEG+CAT* games or videos did your child play or watch THIS WEEK?** *(Mark ALL that apply.)*
☐ Full Video: The Arch Villain Problem
☐ Full Video: The Straight & Narrow Problem
☐ Online Game: Chicken Blast Off
☐ Other ▶

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4 Which family support materials did you read or use THIS WEEK? *(Mark ALL that apply.)*

☐ *PEG+CAT* Experience Guide

☐ Tip Sheets in the *PEG+CAT* Experience Guide (specify):

☐ Family Support Video(s) (specify):

☐ Text messages

5 Did you encounter any challenges THIS WEEK using the media and technology?

☐ No, I did not encounter any challenges.

☐ Yes ▶ **If yes, indicate what challenges you experienced:** *(Mark ALL that apply.)*

    ☐ Using the technology devices (tablet or Chromebook, etc.)

    ☐ Using/Accessing the videos and/or interactive games

    ☐ Finding time to fit the videos and games into our family's schedule

    ☐ Child's lack of interest or engagement while using the videos or games

    ☐ Other (specify):

6 Did you and your child follow the suggested order of videos, games, and activities in the *PEG+CAT* Experience Guide? *(Mark ONE only.)*

☐ We **always** followed the order.

☐ We **sometimes** followed the order.

☐ We **did not** followed the order.

☐ **I can't remember** if we followed the order.

7 Other than *PEG+CAT* videos and games, did your child engage in any of these activities TODAY? *(Mark ALL that apply.)*

☐ Watched shows or videos   ☐ Played digital games   ☐ Read or looked at electronic books

☐ Used apps or software programs other than games/videos (like a photo app or drawing program)

☐ Other ▶

☐ My child did not engage in any non-PEG+CAT technology activities today

8 For what purposes did your child use technology TODAY? *(Mark ALL that apply.)*

☐ Learning   ☐ Entertainment   ☐ Other ▶

☐ My child did not use technology today

9 What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult? *(Mark ALL that apply.)*

☐ Household chores or tasks (like cooking, cleaning or paying bills)   ☐ Caring for other children   ☐ Working

☐ Talking with friends or family   ☐ Watching TV/videos or playing games/apps separately from my child (on another device)

☐ Other ▶

☐ My child did not use media or technology without an adult today

WEEK 8

Your name: _____

Today's date: *(mon/day/yr)* ☐☐ / ☐☐ / ☐☐

Your relationship to child: _____

Please tell us a little bit about the PEG+CAT videos and games your child watched and played TODAY.

1a Full Video: The Big Gig Problem

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1b)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶ _____

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶ _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶ _____

1b Big Gig App: Cat Dance

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play ▶ *(skip ahead to 1c)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶ _____

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶ _____

Who did your child play with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶ _____

1c Video Clip: Ordinal Numbers

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1d)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶ _____

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶ _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶ _____

1d Video Clip: The Beethoven Problem 1

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1e)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶ _____

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶ _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶ _____

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1e **Video Clip: The Straight & Narrow Problem**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1f)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1f **Video Clip: The Golden Pyramid Problem**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1g)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1g **Online Game: Star Swiper**

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play ▶ *(skip ahead to question 2)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child play with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

2 **This week's home activity is** *Chicken Coop.* **Did your child complete the activity THIS WEEK?**
☐ Yes
☐ No

3 **What other** *PEG+CAT* **games or videos did your child play or watch THIS WEEK?** *(Mark ALL that apply.)*
☐ Full Video: The Race Car Problem
☐ Full Video: The Birthday Cake Problem
☐ Online Game: Peg's Pizza Place
☐ Big Gig App
☐ Other (specify):

Week 8 continues on the next page.

WEEK 8

4 **Which family support materials did you read or use THIS WEEK?** *(Mark ALL that apply.)*
☐ *PEG+CAT* Experience Guide
☐ Tip Sheets in the PEG+CAT Experience Guide (specify):

☐ Family Support Video(s) (specify):

☐ Text messages

5 **Did you encounter any challenges THIS WEEK using the media and technology?**
☐ No, I did not encounter any challenges.
☐ Yes ▶ **If yes, indicate what challenges you experienced:** *(Mark ALL that apply.)*
☐ Using the technology devices (tablet or Chromebook, etc.)
☐ Using/Accessing the videos and/or interactive games
☐ Finding time to fit the videos and games into our family's schedule
☐ Child's lack of interest or engagement while using the videos or games
☐ Other (specify):

6 **Did you and your child follow the suggested order of videos, games, and activities in the *PEG+CAT* Experience Guide?** *(Mark ONE only.)*
☐ We **always** followed the order.
☐ We **sometimes** followed the order.
☐ We **did not** followed the order.
☐ **I can't remember** if we followed the order.

7 **Other than *PEG+CAT* videos and games, did your child engage in any of these activities TODAY?** *(Mark ALL that apply.)*
☐ Watched shows or videos   ☐ Played digital games   ☐ Read or looked at electronic books
☐ Used apps or software programs other than games/videos (like a photo app or drawing program)
☐ Other ▶

☐ My child did not engage in any non-PEG+CAT technology activities today

8 **For what purposes did your child use technology TODAY?** *(Mark ALL that apply.)*
☐ Learning   ☐ Entertainment   ☐ Other ▶
☐ My child did not use technology today

9 **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** *(Mark ALL that apply.)*
☐ Household chores or tasks (like cooking, cleaning or paying bills)   ☐ Caring for other children   ☐ Working
☐ Talking with friends or family   ☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other ▶

☐ My child did not use media or technology without an adult today

Your name:

Today's date: *(mon/day/yr)*

☐☐ / ☐☐ / ☐☐

Your relationship to child:

Please tell us a little bit about the PEG+CAT videos and games your child watched and played TODAY.

1a **Full Video: The Honey Problem**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1b)*

Device: ☐ Chromebook ☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1b **Video Clip: The Penguin Problem**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1c)*

Device: ☐ Chromebook ☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child play with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1c **Full Video: The Cleopatra Problem**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1d)*

Device: ☐ Chromebook ☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1d **Video Clip: Weight**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1e)*

Device: ☐ Chromebook ☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

WEEK 9

1e **Online Game: Happy Camel**

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play ▶ *(skip ahead to question 2)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶ [_____]

Who did your child play with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶ [_____]

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶ [_____]

2 **This week's home activity is *How Heavy?*. Did your child complete the activity THIS WEEK?**
☐ Yes
☐ No

3 **What other *PEG+CAT* games or videos did your child play or watch THIS WEEK?** *(Mark ALL that apply.)*
☐ Full Video: The Chicken Problem
☐ Full Video: The Slop Problem
☐ Online Game: Scrub-a-Dub
☐ Online Game: Bubble Bath
☐ Other (specify):
[_____]

4 **Which family support materials did you read or use THIS WEEK?** *(Mark ALL that apply.)*
☐ *PEG+CAT* Experience Guide
☐ Tip Sheets in the *PEG+CAT* Experience Guide (specify):
[_____]

☐ Family Support Video(s) (specify):
[_____]

☐ Text messages

5 **Did you encounter any challenges THIS WEEK using the media and technology?**
☐ No, I did not encounter any challenges. ☐ Yes
If yes, indicate what challenges you experienced: *(Mark ALL that apply.)*
☐ Using the technology devices (tablet or Chromebook, etc.) ☐ Using/Accessing the videos and/or interactive games
☐ Finding time to fit the videos and games into our family's schedule
☐ Child's lack of interest or engagement while using the videos or games
☐ Other ▶ [_____]

6 **Did you and your child follow the suggested order of videos, games, and activities in the PEG+CAT Experience Guide?** *(Mark ONE only.)*
☐ We **always** followed the order.
☐ We **sometimes** followed the order.
☐ We **did not** followed the order.
☐ **I can't remember** if we followed the order.

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7 **Other than *PEG+CAT* videos and games, did your child engage in any of these activities TODAY?**
(Mark ALL that apply.)

☐ Watched shows or videos
☐ Played digital games
☐ Read or looked at electronic books
☐ Used apps or software programs other than games/videos (like a photo app or drawing program)
☐ Other (specify):

☐ My child did not engage in any non-PEG+CAT technology activities today

8 **For what purposes did your child use technology TODAY?** *(Mark ALL that apply.)*

☐ Learning
☐ Entertainment
☐ Other (specify):

☐ My child did not use technology today

9 **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** *(Mark ALL that apply.)*

☐ Household chores or tasks (like cooking, cleaning or paying bills)
☐ Caring for other children
☐ Working
☐ Talking with friends or family
☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other (specify):

☐ My child did not use media or technology without an adult today

Your name:

Today's date: *(mon/day/yr)*

☐☐ / ☐☐ / ☐☐

Your relationship to child:

Please tell us a little bit about the PEG+CAT videos and games your child watched and played TODAY.

1a **Full Video: The Blabberwocky Problem**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1b)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1b **Online Game: Chicken Dance**

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play ▶ *(skip ahead to 1c)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child play with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1c **Video Clip: The Beethoven Problem 2**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1d)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1d **Video Clip: The Birthday Cake Problem**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1e)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watched with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1e **Video Clip: The Dinosaur Problem**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to question 2)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watched with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

2 **There are two home activities this week. Did your child complete them THIS WEEK?**

PEG+CAT Pirates Great Banana Fruit Salad	☐ Yes	☐ No
Shapely Treats	☐ Yes	☐ No

3 **What other *PEG+CAT* games or videos did your child play or watch THIS WEEK?** *(Mark ALL that apply.)*
☐ Full Video: Yet Another Tree Problem
☐ Full Video: The Romeo & Juliet Problem
☐ PBS KIDS Lab Activity: Up, Down, All Around Location Words
☐ Other ▶

4 **Which family support materials did you read or use THIS WEEK?** *(Mark ALL that apply.)*
☐ *PEG+CAT* Experience Guide
☐ Tip Sheets in the *PEG+CAT* Experience Guide *(Specify.)* ▶
☐ Family Support Video(s) *(Specify.)* ▶
☐ Text messages

5 **Did you encounter any challenges THIS WEEK using the media and technology?**
☐ No, I did not encounter any challenges. ☐ Yes
If yes, indicate what challenges you experienced: *(Mark ALL that apply.)*
☐ Using the technology devices (tablet or Chromebook, etc.) ☐ Using/Accessing the videos and/or interactive games
☐ Finding time to fit the videos and games into our family's schedule
☐ Child's lack of interest or engagement while using the videos or games
☐ Other ▶

6 **Did you and your child follow the suggested order of videos, games, and activities in the PEG+CAT Experience Guide?** *(Mark ONE only.)*
☐ We **always** followed the order.
☐ We **sometimes** followed the order.
☐ We **did not** followed the order.
☐ **I can't remember** if we followed the order.

Week 10 continues on the next page.

7 **Other than *PEG+CAT* videos and games, did your child engage in any of these activities TODAY?**
(Mark ALL that apply.)

☐ Watched shows or videos
☐ Played digital games
☐ Read or looked at electronic books
☐ Used apps or software programs other than games/videos (like a photo app or drawing program)
☐ Other (specify):

> [blank box]

☐ My child did not engage in any non-PEG+CAT technology activities today

8 **For what purposes did your child use technology TODAY?** *(Mark ALL that apply.)*

☐ Learning
☐ Entertainment
☐ Other (specify):

> [blank box]

☐ My child did not use technology today

9 **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** *(Mark ALL that apply.)*

☐ Household chores or tasks (like cooking, cleaning or paying bills)
☐ Caring for other children
☐ Working
☐ Talking with friends or family
☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other (specify):

> [blank box]

☐ My child did not use media or technology without an adult today

Your name:

Today's date: *(mon/day/yr)*

☐☐ / ☐☐ / ☐☐

Your relationship to child:

Please tell us a little bit about the PEG+CAT videos and games your child watched and played TODAY.

1a **Full Video: The Giant Problem**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1b)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1b **Video Clip: The Ring Problem 1**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1c)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1c **Video Clip: The Ring Problem 2**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1d)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

1d **Video Clip: The Wedding Problem 1**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch ▶ *(skip ahead to 1e)*

Device: ☐ Chromebook
☐ Tablet ☐ Other ▶

Time of day: ☐ Morning ☐ Afternoon ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring
☐ Confusing ☐ Other ▶

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s) ☐ With parent/caregiver
☐ Other ▶

WEEK 11

1e **Video Clip: The Wedding Problem 2**

Number of minutes watched: ☐ 1 to 15   ☐ 16 to 30   ☐ More than 30   ☐ Did not watch ▶ *(skip ahead to 1f)*

Device: ☐ Chromebook
☐ Tablet   ☐ Other ▶ [_____]

Time of day: ☐ Morning   ☐ Afternoon   ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting   ☐ Boring
☐ Confusing   ☐ Other ▶ [_____]

Who did your child watched with? *(Mark ALL that apply.)*
☐ On his/her own   ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)   ☐ With parent/caregiver
☐ Other ▶ [_____]

1f **Online Game: 321 Snack**

Number of minutes played: ☐ 1 to 15   ☐ 16 to 30   ☐ More than 30   ☐ Did not play ▶ *(skip ahead to 1g)*

Device: ☐ Chromebook
☐ Tablet   ☐ Other ▶ [_____]

Time of day: ☐ Morning   ☐ Afternoon   ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting   ☐ Boring
☐ Confusing   ☐ Other ▶ [_____]

Who did your child play with? *(Mark ALL that apply.)*
☐ On his/her own   ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)   ☐ With parent/caregiver
☐ Other ▶ [_____]

1g **Online Game: Paint-a-Long**

Number of minutes played: ☐ 1 to 15   ☐ 16 to 30   ☐ More than 30   ☐ Did not play ▶ *(skip ahead to question 2)*

Device: ☐ Chromebook
☐ Tablet   ☐ Other ▶ [_____]

Time of day: ☐ Morning   ☐ Afternoon   ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting   ☐ Boring
☐ Confusing   ☐ Other ▶ [_____]

Who did your child play with? *(Mark ALL that apply.)*
☐ On his/her own   ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)   ☐ With parent/caregiver
☐ Other ▶ [_____]

2 **This week's home activity is *The PEG+CAT Doodle It Yourself Flipbook*. Did your child complete the activity THIS WEEK?**
☐ Yes
☐ No

3 **What other *PEG+CAT* games or videos did your child play or watch THIS WEEK?** *(Mark ALL that apply.)*
☐ Full Video: The Space Creature Problem
☐ Full Video: The Doohickey Problem
☐ Online Game: Star Swiper
☐ Other (specify):
[_____]

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4 **Which family support materials did you read or use THIS WEEK?** *(Mark ALL that apply.)*
☐ *PEG+CAT* Experience Guide
☐ Tip Sheets in the *PEG+CAT* Experience Guide (specify):

☐ Family Support Video(s) (specify):

☐ Text messages

5 **Did you encounter any challenges THIS WEEK using the media and technology?**
☐ No, I did not encounter any challenges.
☐ Yes ▶ **If yes, indicate what challenges you experienced:** *(Mark ALL that apply.)*
　　☐ Using the technology devices (tablet or Chromebook, etc.)
　　☐ Using/Accessing the videos and/or interactive games
　　☐ Finding time to fit the videos and games into our family's schedule
　　☐ Child's lack of interest or engagement while using the videos or games
　　☐ Other (specify):

6 **Did you and your child follow the suggested order of videos, games, and activities in the *PEG+CAT* Experience Guide?** *(Mark ONE only.)*
☐ We **always** followed the order.
☐ We **sometimes** followed the order.
☐ We **did not** followed the order.
☐ **I can't remember** if we followed the order.

7 **Other than *PEG+CAT* videos and games, did your child engage in any of these activities TODAY?** *(Mark ALL that apply.)*
☐ Watched shows or videos　　☐ Played digital games　　☐ Read or looked at electronic books
☐ Used apps or software programs other than games/videos (like a photo app or drawing program)
☐ Other ▶

☐ My child did not engage in any non-PEG+CAT technology activities today

8 **For what purposes did your child use technology TODAY?** *(Mark ALL that apply.)*
☐ Learning　　☐ Entertainment　　☐ Other ▶
☐ My child did not use technology today

9 **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** *(Mark ALL that apply.)*
☐ Household chores or tasks (like cooking, cleaning or paying bills)　　☐ Caring for other children　　☐ Working
☐ Talking with friends or family　　☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other ▶

☐ My child did not use media or technology without an adult today

1e   **Video Clip: The Play Date Problem 2**

Number of minutes watched: ☐ 1 to 15   ☐ 16 to 30   ☐ More than 30   ☐ Did not watch ▶ *(skip ahead to 1f)*

Device: ☐ Chromebook
☐ Tablet   ☐ Other ▶

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own   ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)   ☐ With parent/caregiver
☐ Other ▶

Time of day: ☐ Morning   ☐ Afternoon   ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting   ☐ Boring
☐ Confusing   ☐ Other ▶

1f   **Online Game: Scrub-a-Dub**

Number of minutes played: ☐ 1 to 15   ☐ 16 to 30   ☐ More than 30   ☐ Did not play ▶ *(skip ahead to question 2)*

Device: ☐ Chromebook
☐ Tablet   ☐ Other ▶

Who did your child play with? *(Mark ALL that apply.)*
☐ On his/her own   ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)   ☐ With parent/caregiver
☐ Other ▶

Time of day: ☐ Morning   ☐ Afternoon   ☐ Evening

How did your child feel about the resource?
☐ Fun/Interesting   ☐ Boring
☐ Confusing   ☐ Other ▶

2   This week's home activity is *Bath Time is Math Time*. Did your child complete the activity THIS WEEK?
☐ Yes
☐ No

3   What other *PEG+CAT* games or videos did your child play or watch THIS WEEK? *(Mark ALL that apply.)*
☐ Full Video: The Pirate Problem
☐ Full Video: The Buried Treasure Problem
☐ Online Game: Hungry Pirates
☐ Other (specify):

4   Which family support materials did you read or use THIS WEEK? *(Mark ALL that apply.)*
☐ *PEG+CAT* Experience Guide
☐ Tip Sheets in the *PEG+CAT* Experience Guide (specify):

☐ Family Support Video(s) (specify):

☐ Text messages

Week 12 continues on the next page.

5 **Did you encounter any challenges THIS WEEK using the media and technology?**
☐ No, I did not encounter any challenges.　　☐ Yes

If yes, indicate what challenges you experienced: *(Mark ALL that apply.)*
☐ Using the technology devices (tablet or Chromebook, etc.)　　☐ Using/Accessing the videos and/or interactive games
☐ Finding time to fit the videos and games into our family's schedule
☐ Child's lack of interest or engagement while using the videos or games
☐ Other ▶ _____

6 **Did you and your child follow the suggested order of videos, games, and activities in the *PEG+CAT Experience Guide?* (Mark ONE only.)**
☐ We **always** followed the order.
☐ We **sometimes** followed the order.
☐ We **did not** followed the order.
☐ **I can't remember** if we followed the orderr.

7 **Other than *PEG+CAT* videos and games, did your child engage in any of these activities TODAY?**
(Mark ALL that apply.)
☐ Watched shows or videos　　☐ Played digital games　　☐ Read or looked at electronic books
☐ Used apps or software programs other than games/videos (like a photo app or drawing program)
☐ Other ▶ _____

☐ My child did not engage in any non-PEG+CAT technology activities today

8 **For what purposes did your child use technology TODAY?** *(Mark ALL that apply.)*
☐ Learning　　☐ Entertainment　　☐ Other ▶ _____
☐ My child did not use technology today

9 **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** *(Mark ALL that apply.)*
☐ Household chores or tasks (like cooking, cleaning or paying bills)　　☐ Caring for other children　　☐ Working
☐ Talking with friends or family　　☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other ▶ _____

☐ My child did not use media or technology without an adult today

This concludes your Media Diary for Weeks 7 to 12.
Thank you!

Region: ☐

Class: _____

Center: _____

PBS KIDS Home Study
Media Diary - Weeks 1 to 6

IMPORTANT: Please use a **BLACK** pen. Mark response boxes with an ☒. Use block printing for any text or numeric responses. If you wish to change a response, mark the right answer and **CIRCLE** it.

Please provide the following information.

Child's First Name:

Child's Last Name:

Class:

Center:

Staff use only

| Region | Center | Class | Child |

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WEEK 1

Your name:
[   ]

Today's date: *(mon/day/yr)*
[ ] / [ ] / [ ]

Your relationship to child:
[   ]

1 **Which of the following technology devices did your child use TODAY?** *(Mark ALL that apply.)*
- [ ] Television
- [ ] Laptop or desktop computer
- [ ] Tablet (such as an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)
- [ ] Video game system (such as an Xbox, PlayStation, or Wii)
- [ ] Smart phone (a phone that you can also use to send email, watch videos, or access the Internet)
- [ ] Other (please specify): [   ]

Please tell us a little bit about the media that your child watched or played TODAY.

2a **Television show(s)**

Number of minutes watched: [ ] 1 to 15 [ ] 16 to 30 [ ] More than 30 [ ] Did not watch (skip ahead to 2b)

Name of program(s) watched: [   ]

Who did your child watch with? *(Mark ALL that apply.)*
- [ ] On his/her own   [ ] With other kids (like friends or cousins)
- [ ] With brother(s) or sister(s)
- [ ] With parent/caregiver   [ ] Other: [   ]

How did your child feel about the resource?
- [ ] Fun/Interesting [ ] Boring [ ] Confusing
- [ ] Other: [   ]

2b **Video(s)**

Number of minutes watched: [ ] 1 to 15 [ ] 16 to 30 [ ] More than 30 [ ] Did not watch (skip ahead to 2c)

Name of video(s) watched: [   ]

Who did your child watch with? *(Mark ALL that apply.)*
- [ ] On his/her own   [ ] With other kids (like friends or cousins)
- [ ] With brother(s) or sister(s)
- [ ] With parent/caregiver   [ ] Other: [   ]

How did your child feel about the resource?
- [ ] Fun/Interesting [ ] Boring [ ] Confusing
- [ ] Other: [   ]

2c **Computer game(s)**

Number of minutes played: [ ] 1 to 15 [ ] 16 to 30 [ ] More than 30 [ ] Did not play (skip ahead to 2d)

Name of game(s) played: [   ]

Who did your child watch with? *(Mark ALL that apply.)*
- [ ] On his/her own   [ ] With other kids (like friends or cousins)
- [ ] With brother(s) or sister(s)
- [ ] With parent/caregiver   [ ] Other: [   ]

How did your child feel about the resource?
- [ ] Fun/Interesting [ ] Boring [ ] Confusing
- [ ] Other: [   ]

2d **Other media resource(s)**

Number of minutes used: [ ] 1 to 15 [ ] 16 to 30 [ ] More than 30 [ ] Did not use (skip ahead to question 3)

Name of resource(s) used: [   ]

Who did your child use them with? *(Mark ALL that apply.)*
- [ ] On his/her own   [ ] With other kids (like friends or cousins)
- [ ] With brother(s) or sister(s)
- [ ] With parent/caregiver   [ ] Other: [   ]

How did your child feel about the resource?
- [ ] Fun/Interesting [ ] Boring [ ] Confusing
- [ ] Other: [   ]

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3 **For what purposes did your child use technology TODAY?** *(Mark ALL that apply.)*

☐ Learning
☐ Entertainment
☐ Other (please specify):

_____

☐ My child did not use technology today

4 **Did you (or another adult caregiver) use technology with your child in any of the following ways TODAY?**
(Mark ALL that apply.)

☐ Watched shows, movies, or videos with my child
☐ Played digital games or apps with my child
☐ Helped set up the technology or fix technology problems for my child (for example, if the game "froze" or
   the computer needed to be restarted)
☐ Asked questions about the show/game my child was watching/playing
☐ Answered questions my child asked me about the show/game he or she was watching/playing
☐ Made connections between the shows/games my child was watching/playing and things we do in our daily life
   (for example, talked about how we made pancakes for breakfast, just like Curious George made pancakes).
   If so, what connection did you make? (please specify):

_____

☐ Other (please specify):

_____

☐ My child did not use technology today with me or another adult caregiver

5 **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** *(Mark ALL that apply.)*

☐ Household chores or tasks (like cooking, cleaning or paying bills)
☐ Caring for other children
☐ Working
☐ Talking with friends or family
☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other (please specify):

_____

☐ My child did not use media or technology without an adult today

WEEK 2

Your name: _____

Today's date: *(mon/day/yr)* ☐☐ / ☐☐ / ☐☐

Your relationship to child: _____

1 **Which of the following technology devices did your child use TODAY?** *(Mark ALL that apply.)*
- ☐ Television
- ☐ Laptop or desktop computer
- ☐ Tablet (such as an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)
- ☐ Video game system (such as an Xbox, PlayStation, or Wii)
- ☐ Smart phone (a phone that you can also use to send email, watch videos, or access the Internet)
- ☐ Other (please specify): _____

Please tell us a little bit about the media that your child watched or played TODAY.

2a **Television show(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2b)

Name of program(s) watched: _____

Who did your child watch with? *(Mark ALL that apply.)*
- ☐ On his/her own   ☐ With other kids (like friends or cousins)
- ☐ With brother(s) or sister(s)
- ☐ With parent/caregiver   ☐ Other: _____

How did your child feel about the resource?
- ☐ Fun/Interesting ☐ Boring ☐ Confusing
- ☐ Other: _____

2b **Video(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2c)

Name of video(s) watched: _____

Who did your child watch with? *(Mark ALL that apply.)*
- ☐ On his/her own   ☐ With other kids (like friends or cousins)
- ☐ With brother(s) or sister(s)
- ☐ With parent/caregiver   ☐ Other: _____

How did your child feel about the resource?
- ☐ Fun/Interesting ☐ Boring ☐ Confusing
- ☐ Other: _____

2c **Computer game(s)**

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play (skip ahead to 2d)

Name of game(s) played: _____

Who did your child watch with? *(Mark ALL that apply.)*
- ☐ On his/her own   ☐ With other kids (like friends or cousins)
- ☐ With brother(s) or sister(s)
- ☐ With parent/caregiver   ☐ Other: _____

How did your child feel about the resource?
- ☐ Fun/Interesting ☐ Boring ☐ Confusing
- ☐ Other: _____

2d **Other media resource(s)**

Number of minutes used: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not use (skip ahead to question 3)

Name of resource(s) used: _____

Who did your child use them with? *(Mark ALL that apply.)*
- ☐ On his/her own   ☐ With other kids (like friends or cousins)
- ☐ With brother(s) or sister(s)
- ☐ With parent/caregiver   ☐ Other: _____

How did your child feel about the resource?
- ☐ Fun/Interesting ☐ Boring ☐ Confusing
- ☐ Other: _____

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3 | **For what purposes did your child use technology TODAY?** *(Mark ALL that apply.)*

☐ Learning
☐ Entertainment
☐ Other (please specify):

[ ]

☐ My child did not use technology today

4 | **Did you (or another adult caregiver) use technology with your child in any of the following ways TODAY?**
(Mark ALL that apply.)

☐ Watched shows, movies, or videos with my child
☐ Played digital games or apps with my child
☐ Helped set up the technology or fix technology problems for my child (for example, if the game "froze" or
   the computer needed to be restarted)
☐ Asked questions about the show/game my child was watching/playing
☐ Answered questions my child asked me about the show/game he or she was watching/playing
☐ Made connections between the shows/games my child was watching/playing and things we do in our daily life
   (for example, talked about how we made pancakes for breakfast, just like Curious George made pancakes).
   If so, what connection did you make? (please specify):

[ ]

☐ Other (please specify):

[ ]

☐ My child did not use technology today with me or another adult caregiver

5 | **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** *(Mark ALL that apply.)*

☐ Household chores or tasks (like cooking, cleaning or paying bills)
☐ Caring for other children
☐ Working
☐ Talking with friends or family
☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other (please specify):

[ ]

☐ My child did not use media or technology without an adult today

WEEK 3

Your name:

Today's date: *(mon/day/yr)*

[ ] / [ ] / [ ]

Your relationship to child:

1 **Which of the following technology devices did your child use TODAY?** *(Mark ALL that apply.)*
- [ ] Television
- [ ] Laptop or desktop computer
- [ ] Tablet (such as an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)
- [ ] Video game system (such as an Xbox, PlayStation, or Wii)
- [ ] Smart phone (a phone that you can also use to send email, watch videos, or access the Internet)
- [ ] Other (please specify):

Please tell us a little bit about the media that your child watched or played TODAY.

2a **Television show(s)**

Number of minutes watched: [ ] 1 to 15 [ ] 16 to 30 [ ] More than 30 [ ] Did not watch (skip ahead to 2b)

Name of program(s) watched:

Who did your child watch with? *(Mark ALL that apply.)*
- [ ] On his/her own [ ] With other kids (like friends or cousins)
- [ ] With brother(s) or sister(s)
- [ ] With parent/caregiver [ ] Other:

How did your child feel about the resource?
- [ ] Fun/Interesting [ ] Boring [ ] Confusing
- [ ] Other:

2b **Video(s)**

Number of minutes watched: [ ] 1 to 15 [ ] 16 to 30 [ ] More than 30 [ ] Did not watch (skip ahead to 2c)

Name of video(s) watched:

Who did your child watch with? *(Mark ALL that apply.)*
- [ ] On his/her own [ ] With other kids (like friends or cousins)
- [ ] With brother(s) or sister(s)
- [ ] With parent/caregiver [ ] Other:

How did your child feel about the resource?
- [ ] Fun/Interesting [ ] Boring [ ] Confusing
- [ ] Other:

2c **Computer game(s)**

Number of minutes played: [ ] 1 to 15 [ ] 16 to 30 [ ] More than 30 [ ] Did not play (skip ahead to 2d)

Name of game(s) played:

Who did your child watch with? *(Mark ALL that apply.)*
- [ ] On his/her own [ ] With other kids (like friends or cousins)
- [ ] With brother(s) or sister(s)
- [ ] With parent/caregiver [ ] Other:

How did your child feel about the resource?
- [ ] Fun/Interesting [ ] Boring [ ] Confusing
- [ ] Other:

2d **Other media resource(s)**

Number of minutes used: [ ] 1 to 15 [ ] 16 to 30 [ ] More than 30 [ ] Did not use (skip ahead to question 3)

Name of resource(s) used:

Who did your child use them with? *(Mark ALL that apply.)*
- [ ] On his/her own [ ] With other kids (like friends or cousins)
- [ ] With brother(s) or sister(s)
- [ ] With parent/caregiver [ ] Other:

How did your child feel about the resource?
- [ ] Fun/Interesting [ ] Boring [ ] Confusing
- [ ] Other:

3 **For what purposes did your child use technology TODAY?** *(Mark ALL that apply.)*

☐ Learning

☐ Entertainment

☐ Other (please specify):

_____

☐ My child did not use technology today

4 **Did you (or another adult caregiver) use technology with your child in any of the following ways TODAY?** *(Mark ALL that apply.)*

☐ Watched shows, movies, or videos with my child

☐ Played digital games or apps with my child

☐ Helped set up the technology or fix technology problems for my child (for example, if the game "froze" or the computer needed to be restarted)

☐ Asked questions about the show/game my child was watching/playing

☐ Answered questions my child asked me about the show/game he or she was watching/playing

☐ Made connections between the shows/games my child was watching/playing and things we do in our daily life (for example, talked about how we made pancakes for breakfast, just like Curious George made pancakes).

If so, what connection did you make? (please specify):

_____

☐ Other (please specify):

_____

☐ My child did not use technology today with me or another adult caregiver

5 **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** *(Mark ALL that apply.)*

☐ Household chores or tasks (like cooking, cleaning or paying bills)

☐ Caring for other children

☐ Working

☐ Talking with friends or family

☐ Watching TV/videos or playing games/apps separately from my child (on another device)

☐ Other (please specify):

_____

☐ My child did not use media or technology without an adult today

WEEK 4

Your name:

Today's date: *(mon/day/yr)*

☐☐ / ☐☐ / ☐☐

Your relationship to child:

1 **Which of the following technology devices did your child use TODAY?** *(Mark ALL that apply.)*
☐ Television
☐ Laptop or desktop computer
☐ Tablet (such as an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)
☐ Video game system (such as an Xbox, PlayStation, or Wii)
☐ Smart phone (a phone that you can also use to send email, watch videos, or access the Internet)
☐ Other (please specify):

Please tell us a little bit about the media that your child watched or played TODAY.

2a **Television show(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2b)

Name of program(s) watched:

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

2b **Video(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2c)

Name of video(s) watched:

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

2c **Computer game(s)**

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play (skip ahead to 2d)

Name of game(s) played:

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

2d **Other media resource(s)**

Number of minutes used: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not use (skip ahead to question 3)

Name of resource(s) used:

Who did your child use them with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

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3 For what purposes did your child use technology TODAY? *(Mark ALL that apply.)*

☐ Learning
☐ Entertainment
☐ Other (please specify):

[ ]

☐ My child did not use technology today

4 Did you (or another adult caregiver) use technology with your child in any of the following ways TODAY? *(Mark ALL that apply.)*

☐ Watched shows, movies, or videos with my child
☐ Played digital games or apps with my child
☐ Helped set up the technology or fix technology problems for my child (for example, if the game "froze" or the computer needed to be restarted)
☐ Asked questions about the show/game my child was watching/playing
☐ Answered questions my child asked me about the show/game he or she was watching/playing
☐ Made connections between the shows/games my child was watching/playing and things we do in our daily life (for example, talked about how we made pancakes for breakfast, just like Curious George made pancakes).
If so, what connection did you make? (please specify):

[ ]

☐ Other (please specify):

[ ]

☐ My child did not use technology today with me or another adult caregiver

5 What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult? *(Mark ALL that apply.)*

☐ Household chores or tasks (like cooking, cleaning or paying bills)
☐ Caring for other children
☐ Working
☐ Talking with friends or family
☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other (please specify):

[ ]

☐ My child did not use media or technology without an adult today

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WEEK 5

Your name:

Today's date: *(mon/day/yr)*
☐☐ / ☐☐ / ☐☐

Your relationship to child:

1 **Which of the following technology devices did your child use TODAY?** *(Mark ALL that apply.)*
☐ Television
☐ Laptop or desktop computer
☐ Tablet (such as an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)
☐ Video game system (such as an Xbox, PlayStation, or Wii)
☐ Smart phone (a phone that you can also use to send email, watch videos, or access the Internet)
☐ Other (please specify):

Please tell us a little bit about the media that your child watched or played TODAY.

2a **Television show(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2b)

Name of
program(s) watched:

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

2b **Video(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2c)

Name of
video(s) watched:

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

2c **Computer game(s)**

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play (skip ahead to 2d)

Name of
game(s) played:

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

2d **Other media resource(s)**

Number of minutes used: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not use (skip ahead to question 3)

Name of
resource(s) used:

Who did your child use them with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

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3 **For what purposes did your child use technology TODAY?** *(Mark ALL that apply.)*

☐ Learning
☐ Entertainment
☐ Other (please specify):

[   ]

☐ My child did not use technology today

4 **Did you (or another adult caregiver) use technology with your child in any of the following ways TODAY?** *(Mark ALL that apply.)*

☐ Watched shows, movies, or videos with my child
☐ Played digital games or apps with my child
☐ Helped set up the technology or fix technology problems for my child (for example, if the game "froze" or the computer needed to be restarted)
☐ Asked questions about the show/game my child was watching/playing
☐ Answered questions my child asked me about the show/game he or she was watching/playing
☐ Made connections between the shows/games my child was watching/playing and things we do in our daily life (for example, talked about how we made pancakes for breakfast, just like Curious George made pancakes).
  If so, what connection did you make? (please specify):

[   ]

☐ Other (please specify):

[   ]

☐ My child did not use technology today with me or another adult caregiver

5 **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** *(Mark ALL that apply.)*

☐ Household chores or tasks (like cooking, cleaning or paying bills)
☐ Caring for other children
☐ Working
☐ Talking with friends or family
☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other (please specify):

[   ]

☐ My child did not use media or technology without an adult today

5014

WEEK 6

Your name: _____

Today's date: *(mon/day/yr)* ☐☐ / ☐☐ / ☐☐

Your relationship to child: _____

1 **Which of the following technology devices did your child use TODAY?** *(Mark ALL that apply.)*
☐ Television
☐ Laptop or desktop computer
☐ Tablet (such as an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)
☐ Video game system (such as an Xbox, PlayStation, or Wii)
☐ Smart phone (a phone that you can also use to send email, watch videos, or access the Internet)
☐ Other (please specify): _____

Please tell us a little bit about the media that your child watched or played TODAY.

2a **Television show(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2b)

Name of program(s) watched: _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

2b **Video(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2c)

Name of video(s) watched: _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

2c **Computer game(s)**

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play (skip ahead to 2d)

Name of game(s) played: _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

2d **Other media resource(s)**

Number of minutes used: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not use (skip ahead to question 3)

Name of resource(s) used: _____

Who did your child use them with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

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RTL 2014 Media Diary (C)
Weeks 1 to 6

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3 **For what purposes did your child use technology TODAY?** *(Mark ALL that apply.)*

☐ Learning
☐ Entertainment
☐ Other (please specify):

[ ]

☐ My child did not use technology today

4 **Did you (or another adult caregiver) use technology with your child in any of the following ways TODAY?** *(Mark ALL that apply.)*

☐ Watched shows, movies, or videos with my child
☐ Played digital games or apps with my child
☐ Helped set up the technology or fix technology problems for my child (for example, if the game "froze" or
   the computer needed to be restarted)
☐ Asked questions about the show/game my child was watching/playing
☐ Answered questions my child asked me about the show/game he or she was watching/playing
☐ Made connections between the shows/games my child was watching/playing and things we do in our daily life
   (for example, talked about how we made pancakes for breakfast, just like Curious George made pancakes).
   If so, what connection did you make? (please specify):

[ ]

☐ Other (please specify):

[ ]

☐ My child did not use technology today with me or another adult caregiver

5 **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** *(Mark ALL that apply.)*

☐ Household chores or tasks (like cooking, cleaning or paying bills)
☐ Caring for other children
☐ Working
☐ Talking with friends or family
☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other (please specify):

[ ]

☐ My child did not use media or technology without an adult today

This concludes your Media Diary for Weeks 1 to 6.
Thank you!

Region: [ ]

Class: [ ]

Center: [ ]

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PBS KIDS Home Study
Media Diary - Weeks 7 to 12

IMPORTANT: Please use a **BLACK** pen. Mark response boxes with an ☒. Use block printing for any text or numeric responses. If you wish to change a response, mark the right answer and **CIRCLE** it.

Please provide the following information.

Child's First Name:

Child's Last Name:

Class:

Center:

Staff use only

Region		Center		Class		Child	

WEEK 7

Your name:

Today's date: *(mon/day/yr)*
☐☐ / ☐☐ / ☐☐

Your relationship to child:

1 **Which of the following technology devices did your child use TODAY?** *(Mark ALL that apply.)*
☐ Television
☐ Laptop or desktop computer
☐ Tablet (such as an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)
☐ Video game system (such as an Xbox, PlayStation, or Wii)
☐ Smart phone (a phone that you can also use to send email, watch videos, or access the Internet)
☐ Other (please specify):

Please tell us a little bit about the media that your child watched or played TODAY.

2a **Television show(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2b)

Name of program(s) watched:

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

2b **Video(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2c)

Name of video(s) watched:

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

2c **Computer game(s)**

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play (skip ahead to 2d)

Name of game(s) played:

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

2d **Other media resource(s)**

Number of minutes used: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not use (skip ahead to question 3)

Name of resource(s) used:

Who did your child use them with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

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RTL 2014 Media Diary (C)
Weeks 7 to 12

Page 2 of 14

3 **For what purposes did your child use technology TODAY?** *(Mark ALL that apply.)*

☐ Learning
☐ Entertainment
☐ Other (please specify):

[   ]

☐ My child did not use technology today

4 **Did you (or another adult caregiver) use technology with your child in any of the following ways TODAY?** *(Mark ALL that apply.)*

☐ Watched shows, movies, or videos with my child
☐ Played digital games or apps with my child
☐ Helped set up the technology or fix technology problems for my child (for example, if the game "froze" or
   the computer needed to be restarted)
☐ Asked questions about the show/game my child was watching/playing
☐ Answered questions my child asked me about the show/game he or she was watching/playing
☐ Made connections between the shows/games my child was watching/playing and things we do in our daily life
   (for example, talked about how we made pancakes for breakfast, just like Curious George made pancakes).
   If so, what connection did you make? (please specify):

[   ]

☐ Other (please specify):

[   ]

☐ My child did not use technology today with me or another adult caregiver

5 **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** *(Mark ALL that apply.)*

☐ Household chores or tasks (like cooking, cleaning or paying bills)
☐ Caring for other children
☐ Working
☐ Talking with friends or family
☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other (please specify):

[   ]

☐ My child did not use media or technology without an adult today

WEEK 8

Your name:

Today's date: *(mon/day/yr)*
☐☐ / ☐☐ / ☐☐

Your relationship to child:

1 **Which of the following technology devices did your child use TODAY?** *(Mark ALL that apply.)*
☐ Television
☐ Laptop or desktop computer
☐ Tablet (such as an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)
☐ Video game system (such as an Xbox, PlayStation, or Wii)
☐ Smart phone (a phone that you can also use to send email, watch videos, or access the Internet)
☐ Other (please specify):

Please tell us a little bit about the media that your child watched or played TODAY.

2a **Television show(s)**
Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2b)

Name of program(s) watched:

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

2b **Video(s)**
Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2c)

Name of video(s) watched:

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

2c **Computer game(s)**
Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play (skip ahead to 2d)

Name of game(s) played:

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

2d **Other media resource(s)**
Number of minutes used: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not use (skip ahead to question 3)

Name of resource(s) used:

Who did your child use them with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other:

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other:

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RTL 2014 Media Diary (C)
Weeks 7 to 12

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3 **For what purposes did your child use technology TODAY?** *(Mark ALL that apply.)*

- ☐ Learning
- ☐ Entertainment
- ☐ Other (please specify):

  [ ]

- ☐ My child did not use technology today

4 **Did you (or another adult caregiver) use technology with your child in any of the following ways TODAY?** *(Mark ALL that apply.)*

- ☐ Watched shows, movies, or videos with my child
- ☐ Played digital games or apps with my child
- ☐ Helped set up the technology or fix technology problems for my child (for example, if the game "froze" or the computer needed to be restarted)
- ☐ Asked questions about the show/game my child was watching/playing
- ☐ Answered questions my child asked me about the show/game he or she was watching/playing
- ☐ Made connections between the shows/games my child was watching/playing and things we do in our daily life (for example, talked about how we made pancakes for breakfast, just like Curious George made pancakes).
  If so, what connection did you make? (please specify):

  [ ]

- ☐ Other (please specify):

  [ ]

- ☐ My child did not use technology today with me or another adult caregiver

5 **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** *(Mark ALL that apply.)*

- ☐ Household chores or tasks (like cooking, cleaning or paying bills)
- ☐ Caring for other children
- ☐ Working
- ☐ Talking with friends or family
- ☐ Watching TV/videos or playing games/apps separately from my child (on another device)
- ☐ Other (please specify):

  [ ]

- ☐ My child did not use media or technology without an adult today

WEEK 9

Your name: _____

Today's date: *(mon/day/yr)* ☐☐ / ☐☐ / ☐☐

Your relationship to child: _____

1 **Which of the following technology devices did your child use TODAY?** *(Mark ALL that apply.)*
☐ Television
☐ Laptop or desktop computer
☐ Tablet (such as an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)
☐ Video game system (such as an Xbox, PlayStation, or Wii)
☐ Smart phone (a phone that you can also use to send email, watch videos, or access the Internet)
☐ Other (please specify): _____

Please tell us a little bit about the media that your child watched or played TODAY.

2a **Television show(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2b)

Name of program(s) watched: _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

2b **Video(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2c)

Name of video(s) watched: _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

2c **Computer game(s)**

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play (skip ahead to 2d)

Name of game(s) played: _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

2d **Other media resource(s)**

Number of minutes used: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not use (skip ahead to question 3)

Name of resource(s) used: _____

Who did your child use them with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

RTL 2014 Media Diary (C)
Weeks 7 to 12

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3 For what purposes did your child use technology TODAY? *(Mark ALL that apply.)*

☐ Learning

☐ Entertainment

☐ Other (please specify):

☐ My child did not use technology today

4 Did you (or another adult caregiver) use technology with your child in any of the following ways TODAY? *(Mark ALL that apply.)*

☐ Watched shows, movies, or videos with my child

☐ Played digital games or apps with my child

☐ Helped set up the technology or fix technology problems for my child (for example, if the game "froze" or the computer needed to be restarted)

☐ Asked questions about the show/game my child was watching/playing

☐ Answered questions my child asked me about the show/game he or she was watching/playing

☐ Made connections between the shows/games my child was watching/playing and things we do in our daily life (for example, talked about how we made pancakes for breakfast, just like Curious George made pancakes).

If so, what connection did you make? (please specify):

☐ Other (please specify):

☐ My child did not use technology today with me or another adult caregiver

5 What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult? *(Mark ALL that apply.)*

☐ Household chores or tasks (like cooking, cleaning or paying bills)

☐ Caring for other children

☐ Working

☐ Talking with friends or family

☐ Watching TV/videos or playing games/apps separately from my child (on another device)

☐ Other (please specify):

☐ My child did not use media or technology without an adult today

WEEK 10

Your name: _____

Today's date: *(mon/day/yr)* ☐☐ / ☐☐ / ☐☐

Your relationship to child: _____

1 **Which of the following technology devices did your child use TODAY?** *(Mark ALL that apply.)*
☐ Television
☐ Laptop or desktop computer
☐ Tablet (such as an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)
☐ Video game system (such as an Xbox, PlayStation, or Wii)
☐ Smart phone (a phone that you can also use to send email, watch videos, or access the Internet)
☐ Other (please specify): _____

Please tell us a little bit about the media that your child watched or played TODAY.

2a **Television show(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2b)

Name of program(s) watched: _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

2b **Video(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2c)

Name of video(s) watched: _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

2c **Computer game(s)**

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play (skip ahead to 2d)

Name of game(s) played: _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

2d **Other media resource(s)**

Number of minutes used: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not use (skip ahead to question 3)

Name of resource(s) used: _____

Who did your child use them with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

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3 **For what purposes did your child use technology TODAY?** *(Mark ALL that apply.)*

☐ Learning
☐ Entertainment
☐ Other (please specify):

_____

☐ My child did not use technology today

4 **Did you (or another adult caregiver) use technology with your child in any of the following ways TODAY?** *(Mark ALL that apply.)*

☐ Watched shows, movies, or videos with my child
☐ Played digital games or apps with my child
☐ Helped set up the technology or fix technology problems for my child (for example, if the game "froze" or the computer needed to be restarted)
☐ Asked questions about the show/game my child was watching/playing
☐ Answered questions my child asked me about the show/game he or she was watching/playing
☐ Made connections between the shows/games my child was watching/playing and things we do in our daily life (for example, talked about how we made pancakes for breakfast, just like Curious George made pancakes).
  If so, what connection did you make? (please specify):

_____

☐ Other (please specify):

_____

☐ My child did not use technology today with me or another adult caregiver

5 **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** *(Mark ALL that apply.)*

☐ Household chores or tasks (like cooking, cleaning or paying bills)
☐ Caring for other children
☐ Working
☐ Talking with friends or family
☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other (please specify):

_____

☐ My child did not use media or technology without an adult today

WEEK 11

Your name:

Today's date: *(mon/day/yr)*

[ ] / [ ] / [ ]

Your relationship to child:

1 **Which of the following technology devices did your child use TODAY?** *(Mark ALL that apply.)*
- [ ] Television
- [ ] Laptop or desktop computer
- [ ] Tablet (such as an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)
- [ ] Video game system (such as an Xbox, PlayStation, or Wii)
- [ ] Smart phone (a phone that you can also use to send email, watch videos, or access the Internet)
- [ ] Other (please specify):

Please tell us a little bit about the media that your child watched or played TODAY.

2a **Television show(s)**

Number of minutes watched: [ ] 1 to 15 [ ] 16 to 30 [ ] More than 30 [ ] Did not watch (skip ahead to 2b)

Name of program(s) watched:

Who did your child watch with? *(Mark ALL that apply.)*
- [ ] On his/her own
- [ ] With other kids (like friends or cousins)
- [ ] With brother(s) or sister(s)
- [ ] With parent/caregiver
- [ ] Other:

How did your child feel about the resource?
- [ ] Fun/Interesting [ ] Boring [ ] Confusing
- [ ] Other:

2b **Video(s)**

Number of minutes watched: [ ] 1 to 15 [ ] 16 to 30 [ ] More than 30 [ ] Did not watch (skip ahead to 2c)

Name of video(s) watched:

Who did your child watch with? *(Mark ALL that apply.)*
- [ ] On his/her own
- [ ] With other kids (like friends or cousins)
- [ ] With brother(s) or sister(s)
- [ ] With parent/caregiver
- [ ] Other:

How did your child feel about the resource?
- [ ] Fun/Interesting [ ] Boring [ ] Confusing
- [ ] Other:

2c **Computer game(s)**

Number of minutes played: [ ] 1 to 15 [ ] 16 to 30 [ ] More than 30 [ ] Did not play (skip ahead to 2d)

Name of game(s) played:

Who did your child watch with? *(Mark ALL that apply.)*
- [ ] On his/her own
- [ ] With other kids (like friends or cousins)
- [ ] With brother(s) or sister(s)
- [ ] With parent/caregiver
- [ ] Other:

How did your child feel about the resource?
- [ ] Fun/Interesting [ ] Boring [ ] Confusing
- [ ] Other:

2d **Other media resource(s)**

Number of minutes used: [ ] 1 to 15 [ ] 16 to 30 [ ] More than 30 [ ] Did not use (skip ahead to question 3)

Name of resource(s) used:

Who did your child use them with? *(Mark ALL that apply.)*
- [ ] On his/her own
- [ ] With other kids (like friends or cousins)
- [ ] With brother(s) or sister(s)
- [ ] With parent/caregiver
- [ ] Other:

How did your child feel about the resource?
- [ ] Fun/Interesting [ ] Boring [ ] Confusing
- [ ] Other:

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RTL 2014 Media Diary (C)
Weeks 7 to 12

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3 For what purposes did your child use technology TODAY? *(Mark ALL that apply.)*

☐ Learning
☐ Entertainment
☐ Other (please specify):

[ ]

☐ My child did not use technology today

4 Did you (or another adult caregiver) use technology with your child in any of the following ways TODAY?
(Mark ALL that apply.)

☐ Watched shows, movies, or videos with my child
☐ Played digital games or apps with my child
☐ Helped set up the technology or fix technology problems for my child (for example, if the game "froze" or
  the computer needed to be restarted)
☐ Asked questions about the show/game my child was watching/playing
☐ Answered questions my child asked me about the show/game he or she was watching/playing
☐ Made connections between the shows/games my child was watching/playing and things we do in our daily life
  (for example, talked about how we made pancakes for breakfast, just like Curious George made pancakes).
  If so, what connection did you make? (please specify):

[ ]

☐ Other (please specify):

[ ]

☐ My child did not use technology today with me or another adult caregiver

5 What were you doing TODAY while your child used media and technology at home (watching TV, using the
computer, playing video games, etc.) without an adult? *(Mark ALL that apply.)*

☐ Household chores or tasks (like cooking, cleaning or paying bills)
☐ Caring for other children
☐ Working
☐ Talking with friends or family
☐ Watching TV/videos or playing games/apps separately from my child (on another device)
☐ Other (please specify):

[ ]

☐ My child did not use media or technology without an adult today

WEEK 12

Your name: _____

Today's date: *(mon/day/yr)* ☐☐ / ☐☐ / ☐☐

Your relationship to child: _____

1 **Which of the following technology devices did your child use TODAY?** *(Mark ALL that apply.)*

☐ Television
☐ Laptop or desktop computer
☐ Tablet (such as an iPad, Galaxy Tab, Nexus 7, Microsoft Surface, or Kindle Fire)
☐ Video game system (such as an Xbox, PlayStation, or Wii)
☐ Smart phone (a phone that you can also use to send email, watch videos, or access the Internet)
☐ Other (please specify): _____

Please tell us a little bit about the media that your child watched or played TODAY.

2a **Television show(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2b)

Name of program(s) watched: _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

2b **Video(s)**

Number of minutes watched: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not watch (skip ahead to 2c)

Name of video(s) watched: _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

2c **Computer game(s)**

Number of minutes played: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not play (skip ahead to 2d)

Name of game(s) played: _____

Who did your child watch with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

2d **Other media resource(s)**

Number of minutes used: ☐ 1 to 15 ☐ 16 to 30 ☐ More than 30 ☐ Did not use (skip ahead to question 3)

Name of resource(s) used: _____

Who did your child use them with? *(Mark ALL that apply.)*
☐ On his/her own ☐ With other kids (like friends or cousins)
☐ With brother(s) or sister(s)
☐ With parent/caregiver ☐ Other: _____

How did your child feel about the resource?
☐ Fun/Interesting ☐ Boring ☐ Confusing
☐ Other: _____

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Weeks 7 to 12

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3 **For what purposes did your child use technology TODAY?** *(Mark ALL that apply.)*

- ☐ Learning
- ☐ Entertainment
- ☐ Other (please specify):

  [_____]

- ☐ My child did not use technology today

4 **Did you (or another adult caregiver) use technology with your child in any of the following ways TODAY?** *(Mark ALL that apply.)*

- ☐ Watched shows, movies, or videos with my child
- ☐ Played digital games or apps with my child
- ☐ Helped set up the technology or fix technology problems for my child (for example, if the game "froze" or the computer needed to be restarted)
- ☐ Asked questions about the show/game my child was watching/playing
- ☐ Answered questions my child asked me about the show/game he or she was watching/playing
- ☐ Made connections between the shows/games my child was watching/playing and things we do in our daily life (for example, talked about how we made pancakes for breakfast, just like Curious George made pancakes).

  If so, what connection did you make? (please specify):

  [_____]

- ☐ Other (please specify):

  [_____]

- ☐ My child did not use technology today with me or another adult caregiver

5 **What were you doing TODAY while your child used media and technology at home (watching TV, using the computer, playing video games, etc.) without an adult?** *(Mark ALL that apply.)*

- ☐ Household chores or tasks (like cooking, cleaning or paying bills)
- ☐ Caring for other children
- ☐ Working
- ☐ Talking with friends or family
- ☐ Watching TV/videos or playing games/apps separately from my child (on another device)
- ☐ Other (please specify):

  [_____]

- ☐ My child did not use media or technology without an adult today

This concludes your Media Diary for Weeks 7 to 12.
Thank you!

Region:

Class:

Center:

Appendix U. Home Visit 1 Protocol

Home Visit Protocol – Visit 1

Interviewer:	
Documenter:	
Child ID#:	
Home Visit # (1 or 2):	
Visit Date:	
Visit Start Time:	
Visit End Time:	
Family member(s) and relationship to the child	

Note the space in which you are conducting the interview at the time you arrive. Include details such as:

- The layout of the room(s) in which you conduct the interview.
- The technology devices visible in the room.
- The presence of other people in the home.
- The presence of noise or other interview distractions.

Interview

When family members participating in the interview are ready, introduce yourself. If there are adults present who were not at the orientation, explain the study and have them sign a consent form. If there are children present who are not listed on the consent forms we have, make sure an adult who is present at the interview can consent for them. Other family members are welcome to be a part of the conversation; make sure it is clear that they may stay or leave as they please.

Some of the interview questions will be directed to caregivers, some will be directed to the child, and some will be appropriate for all family members who are present. Whenever possible and appropriate, elicit responses from each person present. For example, if a caregiver answers, follow up by asking the children or other family members if they have something to add. If there are children present who are too young to answer for themselves, ask the caregiver(s), "How about [Child's Name]?"

Rapport Questions

These questions are intended to establish rapport with each family member present and to establish the norm of inviting the participation of everyone present. When possible and appropriate, invite multiple people to respond to questions.

"Thank you for inviting us into your home. We really appreciate you taking the time to talk!"

A. How long have you lived here? What's your favorite thing about the neighborhood?
B. What do you like to do for fun?
C. Who lives here with you?
     If you already know, just ask another small-talk/warm-up question.

"For notetaking purposes we'd like to audio record this interview. Is that okay with you?"

Interview Questions

"We'd like to know about the technology you have in your home. First, we'll go through and ask what technology you have at home. Then we'll ask more specifically about how you all use each piece. We're asking about the whole family, but would especially like to know about the child(ren)."

1. Which of the following do you have at home?
- *laptops (& PBS Kids laptop)*
- *iPads or tablets (& PBS Kids tablet)*
- *digital devices for kids (e.g., LeapFrog)*
- *smart phones*

- *TVs*
- *gaming systems*
- *DVD players*
- *desktop computers*
- *Anything else?*

"Thank you! Now let's go through and talk a little about the ways in which you all use the technology you just mentioned. Starting with the _____."

2. Where do people in your family use _____?
Prompt: At home? At school? In the car? At the library? At daycare? Etc.

laptops (& PBS Kids laptop)

iPads or tablets (& PBS Kids tablet)

digital devices for kids (LeapFrog)

smart phones

TVs

gaming systems

DVD players

desktop computers

Anything else?

3. What sort of things does your family use the _____ for?
Prompt: Watching? Playing? Searching? Creating? Listening? Ask for specifics.

laptops (& PBS Kids laptop)

iPads or tablets (& PBS Kids tablet)

digital devices for kids (LeapFrog)

smart phones

TVs

gaming systems

DVD players

desktop computers

Anything else?

4. How often does your family use _____ in your home?

Prompt: Do you (and/or child and/or other family members use it daily? weekly? How many hours per day? Time of day? Weekdays/weekends?

laptops (& PBS Kids laptop)

iPads or tablets (& PBS Kids tablet)

digital devices for kids (LeapFrog)

smart phones

TVs

gaming systems

DVD players

desktop computers

Anything else?

5. How does your family use the _____? Do people take turns using it, use it together…?

Prompt: [We want an idea of how much is on their own, how much is with parents, how much is with siblings, etc.] **Does CHILD talk about what s/he's doing while using the _____? After s/he uses it? Any examples?**

laptops (& PBS Kids laptop)

iPads or tablets (& PBS Kids tablet)

digital devices for kids (LeapFrog)

smart phones

TVs

gaming systems

DVD players

desktop computers

Anything else?

6. Is there anything CHILD does with the _____ that involves math? *Prompt: Tell me about those shows/games. Do you think the show helps your child learn math? Any examples?*

laptops (& PBS Kids laptop)

iPads or tablets (& PBS Kids tablet)

digital devices for kids (LeapFrog)

smart phones

TVs

gaming systems

DVD players

desktop computers

Anything else?

7. Is there anything CHILD does with the _____ that might teach about behavior? *Prompt: For example, sharing, trying hard, overcoming frustration, and taking initiative. Which shows? Do you think shows help teach those skills?*

laptops (& PBS Kids laptop)

iPads or tablets (& PBS Kids tablet)

digital devices for kids (LeapFrog)

smart phones

TVs

gaming systems

DVD players

desktop computers

Anything else?

8. Do you feel like CHILD is learning things from using the _____?

> *Prompt: Math, reading, or science? Social (ATL) skills? Technology skills? Do you have any examples that show learning?*

laptops (& PBS Kids laptop)

iPads or tablets (& PBS Kids tablet)

digital devices for kids (LeapFrog)

smart phones

TVs

gaming systems

DVD players

desktop computers

Anything else?

9. How much do you choose what CHILD watches/plays/does on the _____?

> *Prompt: Why did you choose it? Are there things you particularly like or dislike about it? Educational value? High interest?*

laptops (& PBS Kids laptop)

iPads or tablets (& PBS Kids tablet)

digital devices for kids (LeapFrog)

smart phones

TVs

gaming systems

DVD players

desktop computers

Anything else?

Last question

10. Are there other things you and CHILD do at home that are about math? What about behavior?

> *Prompt: Counting, measuring, cooking? Games you play? Things you talk about? Does CHILD play math games that do not involve the use of technology?*

Wrap Up

"Thank you so much for having us today. We really appreciate your taking the time to host us. We'll give you a call soon to schedule our second visit. We hope to come back during the week of January 12th and 19th.

During this visit, we did a lot of talking about technology. On our second visit, we're hoping you'll show us some of the media and technology we talked about today so that we can watch your family use it. Before our next visit, you may want to think about what you'd like us to see.

Call us with any questions or concerns. Thank you!!"

Grid for Notes:

	Where do people in your family use _____? (Locations, rooms in the home)	**What sort of things does your family use the _____ for?** (Activities, names of media)	**How often does your family use _____ in your home?** (Frequency)	**How does your family use the _____? For example, do people take turns using it or use it together?** *(Coviewing JEM)*	**Is there anything the child does with the _____ that teaches math? Behavior? Other learning?** (Media and learning)	**How much do you choose what your child watches/plays/ does on the _____?** (Parent criteria for content)
Laptop computers (& PBS Kids Laptop)						
iPads or tablets (& PBS Kids Tablet)						
Digital devices for kids						
Smart phones						
TVs						
Gaming systems						
DVD players						
Desktop computers						
Other						
Other						
10. Are there other things you and CHILD do at home that are about math? What about behavior?						

Appendix V. Home Visit 2 Protocol

Home Visit #2 Protocol

During this home visit, you will observe families engaged in a minimum of two media scenarios totaling roughly 45 minutes. Pick which 2-3 activities you would like to see your families engage in based on your notes from Visit 1.

1. In one scenario (15 minutes), the family engages with media in the way that they said during Home Visit 1 is most common/typical, or most preferred.
2. In the second scenario (15 minutes), we ask them to demonstrate something unique that they discussed during the first home visit (ex: they talked about how mom vs dad have different roles during media engagement, so suggest that we observe those individuals taking turns using media with the child in a way they normally do).
3. If treatment families do not choose P+C as a focal resource for either observation scenario, ask them to pick a Peg resource they use the most, or one that they like the best, and observe them use/watch it together (10-15 minutes).

If possible, when you call to confirm your home visit, suggest the scenarios we would like to see based on the first home visit. During the visit, if the family has other scenarios in mind, be open to observing those instead.

Roles:
- The **Documenter** will focus on capturing a *running record* of the home visit, including verbal and nonverbal interactions that take place among and between family members. Documenters will again be responsible for audio recording the visit.
- The **Lead Interviewer** should recommend the media resources they hope to observe families engage with, and explain why we chose those resources/scenarios. Additionally, the Lead Interviewer will *take notes in response to the questions* below as the family engages with the media resources.
- Both researchers must come to the home visit with a laptop for note taking.

Data Capture:
- The Lead Interviewer will take the first pass at thoroughly answering the questions on the data capture after the home visit, and send those responses to the Documenter.
- The Documenter will revise answers and copy and paste information from the running record (e.g., quotes, relevant sequences of interactions, fine-grained descriptions of behaviors) into the data capture.
- **Notes and data capture should be submitted within 48 hours.**

Tips for Observation:
- Tell caregivers ahead of time what you are hoping to observe.
- During the observation, put family members at ease by encouraging them to do what "comes naturally in the moment". Ensure they do not feel judged if things don't go as they hope.
  When observing, sit at a comfortable distance from the family. You should be able to see what they are doing, without being intrusive.

Interviewer 1:
Interviewer 2:
Child ID#:
Home Visit # (1 or 2):
Observation Date:
Observation Start Time:
Observation End Time:
Adult(s) interviewed and relationship to the child

For each scenario, please answer the following questions

1. Describe the scene.
   o Who is present?
   o Where are they?
   o How are they configured?

2. Describe the technology and media content.
   o What device are they using?
   o What are they watching/doing/playing/reading?
   o Who chose the media and device? Why did they choose it?
   o Do they experience any tech problems?

3. Describe interactions between the individuals using the resource.
   o Who is leading the activity?
   o Is someone holding the technology?
   o Who is making decisions about navigation (when to go to the next screen, pressing buttons; what part to watch; when to turn the page)

4. Describe the behaviors and interactions **between the child and family member(s)**.
   - What caregiver behaviors do you observe? (e.g., asking the child questions, commenting on what she/he or the child is seeing/doing, interrupting/halting child's play).
   - What verbal and nonverbal interactions take place between family members?

5. Describe the child's engagement **with the media**.

   - What are the child's physical behaviors during media engagement? (e.g., sitting still, moving around, attending to or looking away from the screen?)
   - Is there evidence that the child is connecting with the media resource or the characters? (e.g., laughing at jokes, talking to characters, singing along).
   - Are there times when the child or family members seem disengaged? When, and why do you think that is?
   - What seems to be the child's level of interest in engaging with family members versus engaging with the media?

6. [direct this question to the primary caregiver(s), and ask it after observing family members use each resource]What are your opinions of the resource we watched you use? What do you like about it? Why do you use it? Is there anything you don't like about it?

7. [ask this after observing family members use each resource] How is what we just observed similar and different from what typically goes on when you use these resources?

8. Are there other details, interactions, or behaviors that took place that you think are noteworthy, but do not fit into any question above? If so, please include that information from the running here (when necessary, provide context so it makes sense to the reader).

OBSERVATION 2

1. Describe the scene.
   - Who is present?
   - Where are they?
   - How are they configured?

2. Describe the technology and media content.
   - What device are they using?
   - What are they watching/doing/playing/reading?
   - Who chose the media and device? Why did they choose it?
   - Do they experience any tech problems?

3. Describe interactions between the individuals using the resource.
   - Who is leading the activity?
   - Is someone holding the technology?

- o Who is making decisions about navigation (when to go to the next screen, pressing buttons; what part to watch; when to turn the page)
4. Describe the behaviors and interactions **between the child and family member(s)**.
   - o What caregiver behaviors do you observe? (e.g., asking the child questions, commenting on what she/he or the child is seeing/doing, interrupting/halting child's play).
   - o What verbal and nonverbal interactions take place between family members?

5. Describe the child's engagement **with the media**.

   - o What are the child's physical behaviors during media engagement? (e.g., sitting still, moving around, attending to or looking away from the screen?)
   - o Is there evidence that the child is connecting with the media resource or the characters? (e.g., laughing at jokes, talking to characters, singing along).
   - o Are there times when the child or family members seem disengaged? When, and why do you think that is?
   - o What seems to be the child's level of interest in engaging with family members versus engaging with the media?

6. [direct this question to the primary caregiver(s), and ask it after observing family members use each resource]What are your opinions of the resource we watched you use? What do you like about it? Why do you use it? Is there anything you don't like about it?

7. [ask this after observing family members use each resource] How is what we just observed similar and different from what typically goes on when you use these resources?

8. Are there other details, interactions, or behaviors that took place that you think are noteworthy, but do not fit into any question above? If so, please include that information from the running here (when necessary, provide context so it makes sense to the reader).

1. Describe the scene.
   - o Who is present?
   - o Where are they?
   - o How are they configured?

2. Describe the technology and media content.
   - o What device are they using?
   - o What are they watching/doing/playing/reading?

- o   Who chose the media and device? Why did they choose it?
- o   Do they experience any tech problems?

3.   Describe interactions between the individuals using the resource.
- o   Who is leading the activity?
- o   Is someone holding the technology?
- o   Who is making decisions about navigation (when to go to the next screen, pressing buttons; what part to watch; when to turn the page)

4.   Describe the behaviors and interactions **between the child and family member(s)**.
- o   What caregiver behaviors do you observe? (e.g., asking the child questions, commenting on what she/he or the child is seeing/doing, interrupting/halting child's play).
- o   What verbal and nonverbal interactions take place between family members?

5.   Describe the child's engagement **with the media**.

- o   What are the child's physical behaviors during media engagement? (e.g., sitting still, moving around, attending to or looking away from the screen?)
- o   Is there evidence that the child is connecting with the media resource or the characters? (e.g., laughing at jokes, talking to characters, singing along).
- o   Are there times when the child or family members seem disengaged? When, and why do you think that is?
- o   What seems to be the child's level of interest in engaging with family members versus engaging with the media?

6.   [direct this question to the primary caregiver(s), and ask it after observing family members use each resource]What are your opinions of the resource we watched you use? What do you like about it? Why do you use it? Is there anything you don't like about it?

7.   [ask this after observing family members use each resource] How is what we just observed similar and different from what typically goes on when you use these resources?

8.   Are there other details, interactions, or behaviors that took place that you think are noteworthy, but do not fit into any question above? If so, please include that information from the running here (when necessary, provide context so it makes sense to the reader).

Appendix W. Focus Group Protocol

RTL Home Study Y5 Focus Group Protocol

Parent Attitudes

1. **Adult attitudes about the role of media to support learning**
   - There are a lot of different ways that children can learn. Some say that children learn the most from school. Others say they learn the most from family or friends. Others say they learn the most from doing things like using the internet, watching TV, or playing games. How much do you think each of these things contributes to your child's learning?
   - What role does media play in your child's learning? *[if needed to reset discussion]*
   - Which of the shows, movies, videos, apps, or other media that your child watches or plays, if any, do you find educational? Why or why not?
   - What does your child say about the digital media that you find educational? *[prompt: does your child like/dislike the games you consider "educational?"]*
   - Do you think YOU have a role in highlighting the educational value of the media that your child engages with?

2. **Adult attitudes about children's ATL**
   - How does your child respond when he/she confronts challenges in everyday life, such as when your child cannot solve a puzzle, has trouble with a game/toy, or cannot have what he/she wants?
   - How do you think children learn how to deal with feelings like frustration? How do they learn to be persistent when something may seem difficult?
     - Do you see a role for media in teaching those behavior skills [use examples that parents just offered], like cooperating with others, trying hard when something is frustrating, etc.?

Media Use and Preferences

3. **Tech context**
   - (PBS KIDS only) Does your child prefer to use the Chromebook or the tablet? Which of these devices do you prefer to use with your child? Why?
   - (PBS KIDS only) How often have you visited the study website? On a single visit, did your child access more than one game or video from the study website?
   - (BAU) Of the devices that you have in your home, which device does your child like using the most? Which device, if any, do you prefer to use with your child?
   - (BAU) To what extent does your child (rather than you) choose what media (shows, apps, etc.) he/she watches or plays with?
   - (BAU) How do you make decisions about what media (shows, apps) to put on the devices that your child uses?

Supporting Children's Media Use

4. (PBS KIDS only) **Use of family support materials**: We included some materials, like parent tip sheets and parent tip videos to help you watch the PEG+CAT videos and play the PEG+CAT games with your child.

    - Did you use any of those materials? What did you like and dislike about them? Did you return to them more than once?
    - What did you think about receiving the weekly text messages suggesting math activities to do with your child? Were the suggestions/tips helpful? Did you ever do any of the activities? [prompt: if so, which ones?] Would it have been better if they came at another time?
    - Do you think the PEG+CAT resources attempt to teach children how to cooperate with one another or how to deal with frustration? How helpful (or unhelpful) do you think these resources are in these ways?
    - (BAU only) Some parents find it difficult to help children learn from media. It's hard to know what things you should say to your child to help their learning from videos and games! What makes it so hard? Are there things that you do to help your child learn from media? [prompt: for example, some parents try to pause a video to ask their child a question, but some kids hate that!]
    - (BAU only) What might make it easier for you, or parents like you, to help children learn from media?

5. **Joint Media Engagement**
    - Do you watch television or videos or play digital games with your child? What are you doing while you watch or play with them?
    - Are there situations when you think your child learns more from using media alone, and situations when you think your child learns more from using media with you or others?

PEG+CAT

6. (PBS KIDS only) **Child engagement while using resources**
    - What does your child like about the PEG+CAT show and games?
    - What does your child dislike about the PEG+CAT show and games?
    - Does your child talk about what s/he sees in the videos and games, or include what he/she sees in their play? Can you think of an example?

Adherence to the Suggested Sequence

7. (PBS KIDS only) **Challenges to using the study materials**
    - Did you follow along with the order of games and videos on the website, or did you and your child skip around?
    - When you and your child did not use the resources in order, how did you decide what to watch or do next?
    - Did your child decide what games and videos to use or did you?
    - What were some of your child's favorite and least favorite pieces of media?

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