

## Chapter 2

# Who's By Their Side? Questions of Context

## Deepen the Research on Children and Media:

### Commentary on Chapter 1

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How refreshing. In years past, as I tried to translate research articles about the impact of media on young children, I usually found myself with no choice but to describe results in hours, minutes, days, and weeks. Studies focused almost exclusively on how much time a child was exposed to a screen. Was it more than an hour a day? Two hours? Three? The higher the number, one could only assume, the more troubling the implications: Here were children being left alone with an electronic babysitter when they should have been playing with toys, napping, or singing nursery rhymes with mom.

This chapter by Lauricella, Blackwell, and Wartella takes us much further in our understanding of screen media's impact. It synthesizes dozens of new studies, going beyond the use of time with screens to examine how the content and context is playing a role. It also shows how basic science—such as the findings from experiments and intervention research—are lending evidence to new theories in media research. One example is the Differential Susceptibility to Media Model (Valkenburg & Peter, 2013) which recognizes that different children and adolescents in different contexts may have different reactions to different media experiences. Rules and recommendations for simply limiting time feel arbitrary without understanding all those differences. One size does not fit all.

This more textured approach will demand much more from our media researchers and learning scientists. Questions are streaming in regarding daily routines in child care centers, prekindergarten classrooms, public schools, afterschool programs, and individual households everywhere. A focus on content begs important questions about design features, teacher training, age-appropriate materials, language-rich narratives, and more. Context is an even more challenging terrain to understand because it comes with so many settings and scenarios—from a toddler reaching for Dad's smartphone to a long-distance grandmother reading an e-book with her grandchildren to "app time" at a desk in a school classroom.

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In the next few pages, let's consider the implications of one of the biggest context questions prompted by the Lauricella, Blackwell, and Wartella review: When does it help for kids to "go solo" in using screen media and digital devices, and when is it more beneficial for them to share those devices with peers or adults?

A child's age, for example, could make a difference here. In the world of edtech for tweens and teens, for example, the word "personalization" has taken hold, and school districts are striving for one-to-one computing in which every student has his or her own device. At the same time, experts continue to call for socialization around media and point to the significance of joint media engagement (JME) in fostering learning (Takeuchi & Stevens, 2011). Much of that research has focused on the needs of infants, toddlers, and children in their very earliest years of school. In what contexts and at what stage in a child's development should "personalization" trump the desire to use media to promote shared experiences? When do shared moments lead to more learning more than individualized learning? Is there a blend that hits a sweet spot for different ages of children in different circumstances? (Consider the combination of individual and shared learning moments that surface during collaborative sessions with 7- or 8-year-old children building worlds in Minecraft, for example.) Should educators and parents be looking for a mix of the two? What kind of mix might that look like?

## 2.1 On-the-Ground Implications

The answers to these context questions cannot arrive soon enough. In the past few years school district leaders and principals have come under increasing pressure to update their classrooms with tablet computers and new apps. Library administrators have had to make tough choices between purchasing printed books and investing in e-books, e-book readers, and digital materials. Children are begging parents for chances to play with apps on their smartphones, while parents are awash in conflicting advice on what to do. For adults working with young children, the confusion has been the most acute, ranging from the American Academy of Pediatrics' recommendation to avoid all screen media before age 2 and its recognition of the need to modernize that approach (AAP, 2013; Brown, Shifrin, & Hill, 2015) to the marketing messages about learning opportunities emanating from technology products such as the Vinci Virtual School for Toddlers (Herold, 2015; Strauss, 2015).

Consider the case of Manassas City Public Schools, a district in the northwestern region of Virginia, which in June of 2015 announced a new approach to prekindergarten education. According to district leaders, many low-income families want to enroll their children in the state-funded pre-K program, known as the Virginia Preschool Initiative, but the district does not have enough classroom space and teachers to meet demand. It receives some pre-K funding from the state but is required to match that funding with local dollars, and local leaders have balked at paying more from their local coffers to open more classrooms. In 2015, more than 100 children were on a waiting list.

Eager to support those waitlisted children somehow, Manassas leaders created what they are calling a “blended” model in which the children spend 2–3 days a week in a classroom, instead of the customary five (Balingit, 2015). On their non-school days, the children are encouraged to use Footsteps2Brilliance, a computerized program that works on tablets, smartphones, and desktop computers. The software includes e-books with audio narration, highlighted print, and clickable words; when children come across a word they do not know, they can click on the word and the software pronounces it for them. The software is free for the families to use, and parents are encouraged to come to the school for support sessions and are connected to teachers whom they can call for assistance.

The Manassas approach begs many questions. One is whether evidence exists to show that this software can be effective with young children. A three-year study commissioned by an organization called NapaLearns did show impressive results when comparing kindergartners who did not use the software in the 2010–11 school year to kindergartners who used it in the following years. But those results have not been published in a peer-review journal (Maddocks & Redmond, 2015). Other studies are underway. Another, and possibly even more important, question is *how* the software is being used. For example, according to officials for Footsteps2Brilliance, the software—which is rolling out in school districts across the country—is typically used in classrooms with trained teachers. Some teachers use projectors to display books and media clips from the software onto big screens as they lead group discussions about words, letters, and stories. They may also distribute tablets to children for literacy lessons they can complete at classroom tables. In many of these cases, as documented in YouTube videos about the software, the children are jointly watching, reacting to, and “reading” the stories in large groups, or they are interacting with the software in smaller groups, sharing tablets between two and three children. Often, teachers are close by, guiding children to certain activities or books, answering children’s questions, or responding to their exclamations and reactions to the games and stories.

The context changes dramatically now that Manassas is actively promoting *home use* of Footsteps2Brilliance as part of an experience for children who may be 1 or 2 years younger. When used at home, will four-year-old children continue to have joint learning moments with adults who can support and guide? Could opportunities arise in which they are sharing the tablets and e-books with siblings and friends, and how might those shared moments change the learning experience? Or will they be primarily using the software and e-books on their own?

Another case comes from Los Angeles Unified School District, where an accelerated rollout of iPads for all students quickly turned into a logistical nightmare that contributed to the resignation of the district’s superintendent (Lapowsky, 2015). Yet the problem was not confined to the task of getting devices into the hands of 35,000 students. It went deeper because of failures in the Pearson-designed software that was loaded onto each of the iPads. The vast majority of students had trouble gaining access to the content they needed to learn. They would click on links to missing content or suddenly find themselves logged out. What’s more, the content did not meet standards for accessibility for English language learners who make up a significant portion of L.A.’s population. Teachers and students alike needed huge amounts of

support—in short, they needed someone by their side to guide them—and yet instructional support teams could not take time to train teachers on using the software with their students. “Time that should have been spent providing professional development and other instructional support has been devoted, instead, to troubleshooting technical issues,” wrote the initiative’s director Bernadette Lucas in a now-public memo to Ruth Perez, the district’s deputy director of instruction (Lucas, 2015).

These are just a few examples of recent news accounts that may lead educators, parents, and the public at large to wonder: When do young children need teachers and parents by their sides, and when does a “go solo” approach to technology suffice?

Cutting across all of these developments are the implications for children who need the most support. Children in low-income families, in economically depressed neighborhoods, and in other disadvantaged situations may be the least likely to have access to the kind of quality preschool that enables social interactions with teachers and peers *around technology*. Keen observers of the evolution of the digital divide over the past several years have pointed to a “participation gap” (Jenkins, 2009), in which some students have the knowledge and wherewithal to use technology to participate in learning and civic engagement, and some don’t. But for young children in particular, there may be a different type of gap to worry about. With the advent of technologies that are so responsive and interactive, parents and teachers may be led to believe that kids can just go it alone, contributing to what could be termed a “media mentorship gap.” Some children will have teachers and parents who see an important role for themselves and who have a sense of how to provide guidance in using apps and e-books, and some won’t.

To keep a watchful eye on whether technology is exacerbating inequality and whether children have equal access to human capital (teachers, librarians, and other educated adults, including parents), education leaders and policymakers need a deeper understanding of content and context—and some good professional development to help them get there. Lauricella, Blackwell, and Wartella provide a good overview of the guidance that exists so far: the technology position statement from the National Association for the Education of Young Children, the Screen Sense guide published by the research and advocacy group Zero to Three, and the recommendations from the American Academy of Pediatrics. But these documents are nowhere near enough. Leaders need to know more about how children from varying backgrounds learn from *joint engagement* with different forms of media and different interactive tools, and how much they learn when they are *left alone* with those media and tools. Understanding these dynamics could help them make smarter decisions about where and how to deploy new technologies with families and young children.

## 2.2 Going Solo

Let’s start with the question of whether children can learn from screen media on their own at all. So far the science tells us they can, even as young as 6 months of age (Guernsey, 2013, see Hipp and colleagues Chap. 3 and Kirkorian and colleagues Chap. 5, this volume). Research on television shows such as *Sesame Street*, *Blue’s*

*Clues*, *Cyberchase*, and *The Adventures of SuperWhy!* shows that children can learn from watching well-designed video by themselves many years before they have reached the ability to read by themselves.

Today, technology has advanced to include interactive e-books, videogames, and apps—technologies that not only present and display information but that also prompt children to interact and actively respond to that information. Given that the act of interacting with something or someone is viewed as a key mechanism for learning, these interactive technologies raise significant questions about how they should be used independently versus jointly. Some studies are showing that interactive features have potential to benefit children when they use them on their own, with some important caveats. The study by Gong and Levy (2009), for example, showed that children benefit from the highlighting of words as they are watching and reading along in an e-book without an adult. Research from Korat and Shamir (2007) shows children gaining an understanding of vocabulary and print concepts when using an interactive e-book that is designed to be educational. These studies point to the significance of certain features within the e-books, such as word highlighting and educationally oriented design, that can serve as instructional scaffolding and help children reach for higher levels of understanding.

Other research shows that, in e-books at least, hotspots, embedded games, and poorly designed interactive features can be distracting, leading children on their own to gain less of an understanding of the plot and narrative from reading an e-book as opposed to a print book (Bus, Takacs, & Kegel, 2015). Whether a child can learn from a solo experience with the technology appears to be dependent on the content (the curricular design or the use of certain features and affordances, such as text highlighting, for example) and, not to be forgotten, the individual child (his or her age and stage of development, for example).

## 2.3 Sharing Devices

For decades, research has pointed to the importance of sharing a media experience with an adult or peer. Again, much of what we know comes from television research. Lauricella, Blackwell, and Wartella sum up the results of four landmark studies showing that “when parents ask questions or reiterate the learning messages from educational television, children learn the concepts better.” This co-using shares many beneficial attributes with the concept of “dialogic reading”—the practice of pausing and engaging in questions and dialog during storytime—that permeates research on emergent and early literacy (Whitehurst & Lonigan, 1998). Studies of e-book use that involves parents and children talking together and interacting with the content together also show positive results (Korat & Or, 2010; Strouse & Troseth, 2014).

Yet it is still to be seen whether habits of coviewing and dialogic reading can transfer to the realm of apps and mobile devices. There are some signs that instilling those habits will be an uphill battle (Connell, Lauricella, & Wartella, 2015), particularly because of the “pass back” effect, in which parents are more likely to “share” their devices by giving them to their children to use by themselves instead of joining them to attend to games or videos together.

Fortunately, a study by Courtney Blackwell, “iPads in Kindergarten,” sheds more light on what could be gained from shared attention and joint engagement around interactive technologies (Blackwell, 2015). The quasi-experimental study involved three elementary schools in a suburban Midwestern school district with a majority white, middle-class population. In six classrooms, students shared iPads (typically used in a 2:1 ratio); in another six classrooms, students each had an iPad to themselves (1:1 ratio), and in the third group of six classrooms, no iPads were available. There were no measurable differences in teacher pedagogy, no differences in measures of how teachers interacted with students, and no significant differences between all three groups on students’ test scores in the fall semester. In terms of content used by the students, the study did not address how individual students or groups of students used specific apps or piece of curriculum. All of the classrooms that included iPads used some collection of an average of 10 apps, with only two apps used by all the teachers (*DoodleBuddy*, a creation app, and *10 Frame Fill*, a math app.)

An analysis of students’ test scores on the spring assessment showed that students in 1:1 classrooms did no worse and no better than children in classrooms with no iPads. It was the children in the *shared* condition who performed significantly better compared to both of the other groups. There was one demographic group of students who scored higher without the iPads and those were the Asian/Pacific Islanders, though Blackwell cautions that the sample size for that group was low and that more research is necessary on the interplay between ethnicity, tablet use, and achievement.

One theory for the better performance among the shared iPad users is the interaction between the students as they used the devices together. Blackwell notes that the shared condition may have “increased opportunities for peer-to-peer interaction and scaffolding that helped students better construct knowledge.” She raises the notion of Computer-Supported Collaborative Learning, a term coined in the late 1980s and 1990s to describe environments and teaching strategies that foster collaboration and interaction between individuals, helping student to build knowledge and insight through their discourse (Lauricella and colleagues, Chap. 1 this volume). The research field could do a huge service by testing this theory with young children in home environments. For children in Manassas, for example, participating in the home-based digital-software program may cause them to miss opportunities to use the software in collaboration with their peers, though possibly that could be mitigated by the presence of siblings. It is unclear so far whether school officials are evaluating the impact of those factors.

## 2.4 When to Share, When to Enable Independent Use, and What Research Is Needed Now

These results have big implications for school districts’ technology decisions. The Blackwell study suggests that school leaders in districts—at least those in districts with similar demographics—may be wise to consider rolling out technology programs

that enable shared use of touchscreen tablets among young children instead of pushing for 1:1 use. Studies showing that e-books can promote independent learning when they are embedded with educational features, such as text highlighting or research-based curricula, suggest that parents and educators should choose e-books with those features, especially if they are expecting children to have time alone with the devices. And research on the positive effects of coviewing of media as well as dialogic reading of printed and electronic books suggests that community and education leaders should build environments that encourage teachers, parents, and other adults to engage jointly with children around media where possible. School leaders may want to consider the benefits of a buddy system in which young children could be paired in technology use with children in a grade or two above them, enabling children to learn from each other and for older children to gain skills in mentoring.

More research is desperately needed on the impact of solo versus joint use of technology on minority children and those in low-income households. The Blackwell study, for example, was based in a majority white suburban school district. And the Manassas City program offers rich ground for comparison studies, with its bifurcated model in which some children go to 5-day-a-week preschool and others go for fewer number of days supplemented with software use at home. A key question, for example, is whether Manassas parents will be using the software together with their children on their days off from school, or whether parents will assume their kids should use it solo. Across all studies, many variations need to be considered. It may be too much to ask researchers to answer questions at the level of individual apps, with details on specific features within those apps, and the effects of their use, solo and jointly, with individual children and peer groups, but studies that bring us closer to the ground and that help make differentiations across content and context are incredibly valuable. With the adoption of technology moving so quickly, and with parents and school leaders relying on software purchases to reduce costs for traditional teaching or increase costs for equipment, the stakes are high. Not only are the implications significant for what children learn and the foundation that they build for their future learning and success in school, they also have large bearing on the allocation of scarce dollars in educational settings and they are likely to set the course for the habits and routines of daily school and home life for the twenty-first century. It's a relief to see that research has finally started to ask these questions instead of continuing to fixate on the hollow measure of hours per day.

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