Young Children, New Media, and Libraries:

A Guide for Incorporating New Media into Library Collections, Services, and Programs for Families and Children Ages 0-5

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Introduction

by Amy Koester

At the end of November in 2011, librarian Cen Campbell wrote her first blog post for her new website, LittleeLit.com. Her intention: to document her explorations into new media as it related to library services for young children. The iPad had debuted the previous year, ushering in a wave of tablet technology and new media products that continue to evolve and appear on the market to this day. Early on, Campbell saw the potential for this new media to serve as a tool for early literacy development in young children. Not in and of itself—technology alone is just a shiny doodad. But when wielded intentionally and thoughtfully by a caring adult, new media could be another tool in the arsenal of helping young children become ready to read, alongside books, songs, fingerplays, and other elements that library practitioners have long employed.

And so Campbell began experimenting with ways in which tablet technology could be used to supplement early literacy skill building. First with ebooks, and later with apps as they became more prevalent, she started integrating new media into her new digital storytimes—both those that used new media elements in conjunction with traditional storytime elements as well as new all-digital storytimes in unique settings such as the Children's Discovery Museum of San Jose. She experimented, and she documented those experiments. Over time, more professionals from the library world and beyond began weighing in with their own experiments, morphing Little eLit from one librarian's personal

blog to website of a grassroots think tank. Conversations grew. Practices evolved.

Now, in 2015, new media and tablet technology is increasingly present in the day-to-day lives of many American families as well as in their local libraries. Yet as access to this technology has continued to grow, and even as more and more individuals have shared their first-hand experiences with new media in library practice, many voices from within librarianship have continued asking a core set of questions: What type of research and recommendations for young children exists on this topic? What are some ways that librarians have successfully used new media in their libraries? How do I go about evaluating the quality of new media content? And if my library does integrate new media into our youth services, how do we go about managing that technology and getting all of our staff trained? These questions are all good ones, posed by thoughtful advocates for children and families. And these questions have also been persistent, leading to the creation of conference sessions, webinars, intensive trainings, and, ultimately, this very book.

This book is a collaborative project by members of the Little eLit community. Together, our community has been exploring the topic, research, and practice of young children and new media in libraries for several years. Over the course of our explorations, one thing has become extremely clear: library professionals want concrete guidance on exploring this topic within their own libraries and communities. As a profession, we need resources, research, suggested practices, and rationale for doing the things we do in our libraries. This topic of new media with young children is no different. And we at Little eLit believe we may have something to contribute to these conversations.

This book has evolved out of several years' worth of experiences with, frequently asked questions about, and research on the topic of new media and young children in libraries. The chapter authors have supplemented their own first-hand knowledge of this topic with research into the practices and recommendations of other

professionals, all experts in spheres of youth librarianship, early childhood education, and social work. It is our hope that, through the combination of our shared experiences and our ongoing research and exploration, the chapters and appendices in this book can help to answer some of those persistent questions that librarians across the world have asked about new media and young children.

This book is intended to serve as an introduction to the topic of young children, new media, and libraries. The topic itself is broad and—as with all topics connected to technology—constantly evolving. Yet we hope this resource can begin to answer some of the most common fundamental questions about the topic, allowing library practitioners in any setting to gain a foundation of knowledge on this topic to inform and supplement their own forays into the realm of technology as an early literacy tool.

Chapter One:
New Media in Youth Librarianship

by Cen Campbell and Amy Koester

This topic around which we at Little eLit have spent so much time—young children, new media, and libraries—is not inconsequential. In a landscape in which 75 percent of households have digital media, and 72 percent of children ages 0-8 have used digital media (Common Sense Media, 2013), this topic is one that the families we serve every day are encountering first hand. They may be sharing technology with their children in an intentional, informed way; or they may not. At Little eLit, we firmly believe that it is the library's place to serve as a resource and mentor on this topic—as we serve as a resource and mentor on all topics that pertain to the literacy of the children we serve. And yes: young children and new media is a literacy issue. Children expected to read at school must first have the pre-literacy building blocks that will allow them to become fluent, comprehending readers. Children expected to wield technology effectively, and increasingly to create with technology, must first have the hands-on experience of using the technology and understanding good content. Literacy allows success in school and in life, and new media is a facet of that future success.

Why do children's librarians have to be knowledgeable about new media?

In her TEDx talk, entitled "How the iPad affects young children, and what we can do about it," Lisa Guernsey asked: "What if we were to commit to ensuring that every family with young children had access to a media mentor?" (Guernsey, 2014).

At Little eLit, we believe that children's librarians already serve as media mentors, though new formats and platforms require us to do some fast learning to make sure that we're serving the ever-changing information needs of our communities.

Children's librarians are ideally placed to serve as media mentors to families with young children, and we already possess the expertise to evaluate the quality and age appropriateness of different types of media for children. Media mentors help families gain access to high quality resource materials from trusted institutions, then use those resources to make their own informed decisions about media use. The goal is to support families, and to provide access to information and recommendations, so that they decide what type of media use is appropriate for them. The American Academy of Pediatrics (AAP) encourages families to create a Family Media Use Plan, and it also provides guidelines for different age groups (2013), but the reality is that many families don't conform to the "ideal" plan for media use. Each family approaches the topic of media use differently, and as media mentors we can help them as they tailor their own plan. How can librarians meet families where they are; make suggestions for age appropriate media use in a way that supports parents in their role as their child's first and best teacher; and provide guidance that is culturally relevant, appropriate, and respectful?

This generation of children is the first to have been exposed to mobile, touch-screen devices since birth. While we know from decades of research that excessive passive media consumption has detrimental effects on young children, we still don't know what the implications are for interactive technologies; and researchers

are still exploring the "prosocial implications"—the positive influences and effects—of interactive media (AAP Council on Communications and Media, 2013).

What is currently known is that children need interaction from loving caregivers more than anything else, and that media consumption for young neurotypical children should be kept to a minimum (AAP Council on Communications and Media, 2013; Campaign for a Commercial-Free Childhood, 2012). What does that knowledge mean in a time when adults are transfixed by mobile devices, screen media is omnipresent in many communities, and schools are beginning to implement one child, one device programs in kindergarten? How can we use emergent technologies to support parents as they talk, sing, read, write, and play with their children, as outlined by Every Child Ready to Read® @ your library® 2nd Edition (ALSC & PLA, 2010), and break the all-too-common image of children being left alone with mobile devices, like in Hanna Rosin's "The Touch-Screen Generation" (2013)?

The proliferation of digital content for children, and the mainstream interest in media consumption by young children, is a huge opportunity and challenge for children's librarians. We have the opportunity to break the paradigm of children interacting by themselves with a mobile device; we can provide an alternative in storytimes and other library programs that shows parents how they can support their children's engagement through joint use of media.

Children's librarians have long held an interesting position in the lives of the children and families we serve. We are storytime leaders and recommenders of excellent books. We are (hopefully) familiar faces in our communities, and friends to those we serve. And yet we are so much more: we are also advocates for children and supporters of their caregivers. With the development of Every Child Ready to Read® (ALSC & PLA, 2004), we became experts in early literacy, with a goal to share our knowledge and expertise with caregivers so that they can better promote the literacy

development and overall wellbeing of their children. We mentor parents so that they have information and guidance to determine what is best for their children, and then to do those things. Media mentorship is no different. We strive to understand, as best we can, the information surrounding media and young children, and to help the families we serve use this information to make decisions that work for them. We continue to be advocates and supporters, not for media itself, but for the families we serve.

Where did Little eLit come from, and where are we going?

The iPad became available to the commercial market in 2010. In 2011, as I, Cen, was slowly returning to work after staying at home with my son for two years, I started to wonder about the implications of this new format on services to families with young children in public libraries. I downloaded some digital books and apps—not knowing anything about evaluating new forms of media and relying solely on what I knew about selecting children's materials for circulation in public libraries.

After acquainting myself with various tablet devices (I didn't even have an iPad when I started; I did most of my initial exploratory work on a first generation Kindle Fire and a Galaxy Tab), I reached out to two library systems in Silicon Valley where I was working as a substitute librarian. I told them I'd like to try using the iPad in storytime and apply what I knew about storytelling to these emergent formats. I tried a lot of apps, made a lots of mistakes, and spent a lot of time with a confused look on my face in the aisles of electronics stores, trying to figure out what cables and adapters I needed to go with which projectors. I decided to document my projects in libraries on a blog, which I named Little eLit, and I soon began leading and documenting digital storytimes at a children's museum as well.

By 2012, Little eLit was already picking up steam online as a resource for librarians and storytellers who were also experimenting with using apps and ebooks in their storytimes. I

began serving on the Association for Library Service to Children (ALSC) Children & Technology Committee and presenting at conferences about my pilot projects. In 2013, the work of Little eLit contributors really began to expand at local, state, and federal levels. Now, in 2014, we are a network of approximately 300 children's librarians, app reviewers, researchers, and professors who work together to figure out how best to serve families with young children in the digital age. That mission is key: it's not about the media; it's about the children and their families.

Over the course of our experiments, pilot projects, and programs involving young children and new media, some promising practices have begun to emerge. Some examples of these promising practices include:

1. The best media for very young supports the development of a relationship with another human being.
2. Support and model Joint Media Engagement.
3. Encourage creativity and creation in the use of digital media.
4. Use content that supports the early learning practices: Talk, Sing, Read, Write, Play.
5. Always use a mix of physical and digital props.

These practices have been developed collaboratively; through online interaction and face-to-face meetings; through discussions and disagreements (civilized and otherwise); through resource gathering; through experimentation in our libraries, classrooms, and laboratories; and through continual reflection. We present these promising practices, and more throughout subsequent chapters of this book, as we understand them now, to the best of our current knowledge, and with the understanding that all libraries and storytellers are different. We expect these practices to change, and we expect to modify or even retract some of these practices in the future as we continue to learn more.

The Little eLit Ethos

Little eLit has always been a collaborative grassroots effort, and we have worked together to document our findings and spread the

vision of children's librarians as media mentors to the field. We have done so by reporting back on pilot projects, implementations, failures, successes, and thoughtful experimentations with new media and families in libraries, soliciting feedback, asking questions, and expanding our collective knowledge base. Our work has grown organically, with contributions from front line staff, to administrators, and everyone in between. We describe the body of work on LittleeLit.com as crowd-sourced and grassroots because so many librarians, storytellers, and educators have given their time to sharing what they know, often on their own time and using their own devices in their libraries or institutions.

But why focus on new media in the storytime setting?

We focus on new media in the storytime setting because we are really focusing on new media and young children—and storytime is the most frequent and traditional way in which young children experience the library. When I, Cen, started Little eLit, I was simply curious about the implications of mobile media on my own young child and the implications for me as a children's librarian. But through explorations and pilot projects, it became more and more clear that the issue is not specifically library practice, or new media in storytime. It's much more broad and family-specific.

Now that we've been working on Little eLit for a few years, we're beginning to see that while curiosity and experimentation were where we started, pedagogy and pediatrics must inform how we move forward in devising recommendations for the field. The two seminal documents we refer to when incorporating new media into any collection, service, or program for children ages 0-5 are "Technology and Interactive Media as Tools in Early Childhood Programs Serving Children from Birth through Age 8," a policy statement developed as a collaborative effort between the National Association for the Education of Young Children (NAEYC) and the Fred Rogers Center for Early Learning and Children's Media (2012), and the AAP Council on Communications and Media (2013) "Policy Statement: Children, Adolescents, and the Media."

Roberta Schomburg and Chip Donohue co-authored this joint NAEYC/Fred Rogers Center policy statement after three years of intense academic and field research within early childhood education.[1] Key messages from the position statement include:

- When used intentionally and appropriately, technology and interactive media are effective tools to support learning and development.
- Intentional use requires early childhood teachers and administrators to have information and resources regarding the nature of these tools and the implications of their use with children.
- Limitations on the use of technology and media are important.
- Special considerations must be given to the use of technology with infants and toddlers.
- Attention to digital citizenship and equitable access is essential.
- Ongoing research and professional development are needed. (NAEYC & Fred Rogers Center, 2012)

In 2013, the American Academy of Pediatrics updated its policy statement on children and media. This newest position statement outlines the following suggestions for parents:

- Limit the amount of total entertainment screen time to less than 1-2 hours per day.
- Discourage screen media exposure for children under the age of 2.
- Keep the TV set and internet-connected electronic devices out of the child's bedroom.
- Monitor what media their children are using and accessing including any websites they are visiting and social media sites they are using.

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[1] Donohue, a Senior Fellow at the Fred Rogers Center and Director at the Technology and Early Childhood (TEC) Center, has been an advisor and friend to Little eLit since its creation.

- Coview TV, movies, and videos with children and teenagers, and use this shared media as a way of discussing important family values.
- Model active parenting by establishing a family home use plan for all media. As part of the plan, enforce a mealtime and bedtime "curfew" for media devices, including cell phones. Establish reasonable but firm rules about cell phones, texting, internet, and social media use. (AAP Council on Communication and Media, 2013)

In 2014, Dr. Dimitri Christakis, one of the original authors of the AAP recommendations, published an op-ed in the *Journal of the American Medical Association: Pediatrics* in which he states "that judicious use of interactive media is acceptable for children younger than the age of two years" (p. 400). The opinion piece also included a chart comparing the reactive, interactive, tailorable, progressive, attentional, portable, and tactile features of traditional toys, touch screen devices, and television. By his analysis, Christakis suggests that touch screens are actually more akin to toys than to television, and guidelines should reflect the interactive potential of touch screen devices and not automatically equate touch screens with static screens (i.e., television).

Throughout this chorus of voices and viewpoints, Little eLit workshops and presentations always include guidelines from the AAP and NAEYC/Fred Rogers documents, even though the families we serve may actually choose not to follow those guidelines within their own families. The choice is theirs. The American Academy of Pediatrics encourages families to devise their own family media use plan, and we as librarians provide resources to support those families' decisions and the realities that inform them. We refer parents to resources produced by health and educational organizations, but we do not give our personal opinions or assumptions about media use with young children. We serve children and their families, not a platform.

While we at Little eLit do still focus a fair amount of time on new media use in storytime contexts, it is not our sole, or even our

main, focus. Our focus is young children and their families, and how we can best serve and support them given the practices and research available to us.

Young Children, New Media & Libraries: Children's Librarians as Media Mentors

The media mentor concept was first presented to me, Cen, over brunch in Berkeley by Lisa Guernsey in early 2013. As the author of *Screen Time: How Electronic Media—From Baby Videos to Education Software—Affects Your Young Child* (2012), and the Director of the Early Education Initiative at the New America Foundation, Guernsey has been loudly advocating for librarian involvement in the children's new media marketplace. She's been working with Little eLit ever since that fateful brunch meeting.

Guernsey first published *Into the Minds of Babes: How Screen Time Affects Children From Birth to Age 5* in 2007 because she was concerned about how much television her own children were consuming. The second edition of the book was released in paperback in 2012 with the newer, more eye-catching title and an updated epilogue that includes tablet technology and interactive media as well as resources for parents. *Screen Time* (2012) remains one of our recommended books for librarians and parents alike who are concerned about children's media use.

In 2012, in collaboration with the Campaign for Grade Level Reading, Guernsey co-wrote *Pioneering Literacy in the Digital Wild West: Empowering Parents and Educators* with Michael Levine of the Joan Ganz Cooney Center at Sesame Workshop, Cynthia Chiong of Digital Kids Research, and Maggie Severns of New America. *Pioneering Literacy* was the first document that I, Cen, read on my apps-in-storytime journey that laid out clearly that the incorporation of new media into library collections was not only not optional, but actually a responsibility. With so much competing for the attention of today's children, and so much of their futures riding on the ability to learn to read, schools and community leaders have a responsibility to assess how

technology fits into the lives of the children they are trying to serve —and how it might be used to further, not stymie, their language and literacy development.

But why weren't librarians specifically mentioned as key stakeholders for families, if the conversation was about literacy, access, and parent engagement? Is this not the role we've been striving to play in the lives of our families for over a decade? It seemed like such an obvious fit! Yet the library community wasn't really engaged in the media marketplace for young children when the article was written. In 2014, however, Guernsey authored a policy brief for New America, entitled *Envisioning a Digital Age Architecture For Early Education*, which further outlines the role of libraries in the digital age as well as a number of ideas that have since become cornerstones of the children's librarian as media mentor movement. These ideas—as good ideas usually do—also bring up more questions, including two on which we continue to ponder:

- If technology is not to be used as a babysitter, then how do we use it with young children?
- How can we support children to play actively in the presence of technology?

Further practice and research can help us to understand the range of possible answers to these questions, and in turn allow us to better serve the range of families who look to their librarians for support and guidance.

Pro-Tech or No-Tech? That's the Wrong Question.

While we at Little eLit are still learning on many counts, we are quite firm in one specific ideal: to move children's librarianship as a profession past the false dichotomy of pro-tech vs. no-tech. Many Little eLit contributors, including its founder, started from a philosophy of caution and minimized personal technology use when it comes to children. The overwhelming opportunity to engage caregivers, however, as well as the plethora of high quality digital content and legitimate digital reading choices for

families, has begun to encourage even the most technology-cautious librarians to apply their traditional librarian skills to the digital realm. Overwhelmingly, these librarians have asserted that they realized they were already doing these core things: sharing stories, recommending content, modeling positive behaviors between caregiver and child, and evaluating media. These practices are the bread and butter of children's librarianship, and librarians who began to add digital elements to their practice recognized that the practices themselves have not changed—the range of media and support we provide has simply expanded.

Access is Not Enough

Public libraries have long been advocates for providing access to technology for adults, and in the past few years there has been an increased interest in the provision of access to devices for younger library patrons as well. AWE stations have served as children's technology access for many libraries, but as consumers are becoming more discerning of interactive digital content, and libraries expect to have more control over their digital collections, plug-and-play systems like AWE are finding competition in the form of more customizable and inexpensive commercial (as opposed to proprietary) devices. The Darien Library in Connecticut was one of the first libraries to create early literacy iPads kits, with librarian-curated app collections and information for caregivers on joint media engagement (Parrott, 2011). The librarians, under the leadership of Gretchen Casseroti (now director of the Meridian Library District in Idaho) saw the need both for access to the devices, but also for curated content and guidance for engagement.

In 2012, Susan B. Neuman and Donna Celano published *Giving Our Children a Fighting Chance*, a book encompassing their ten-year study based in two communities in Philadelphia, one impoverished and one wealthy, which showed for the first time that even in the "field leveling" environment of the public library, access to computers (their study was conducted before the invention of the iPad) alone is not enough to bridge the digital divide:

Consequently, technology appeared to inadvertently reinforce the gap that already existed between students and their families from neighborhoods of poverty and privilege. Further, given the extraordinary capabilities of the new media environment, one could defensibly argue that these conditions actually exacerbated differences in educational opportunity. In short, a new age of inequality is upon us. (Neuman & Celano, 2012, p. 124)

Neuman and Celano's book greatly influenced the Little eLit thinking around the use of new media with young children. *Giving our Children a Fighting Chance* supplies a new vocabulary for understanding that not only do children need to develop early literacy skills (those outlined in the first edition of Every Child Ready to Read® @ your library®), but they also need to develop information and cultural capital in order to really make use of those early literacy skills and translate them into success later in life.

Joint Media Engagement

Joint media engagement, or "the new coviewing," as coined by the Joan Ganz Cooney Center (Takeuchi & Stevens, 2011), is a concept that we incorporated very early on into our set of promising practices at Little eLit; it refers to the practice of a child and caregiver consuming and interacting with media together. Joint media engagement, however jargon-y or academic, is not a new concept for children's librarians. Reading books together is joint media engagement because books are a type of media (and an earlier type of technology, as Lisa Guernsey points out in her TEDxMidAtlantic talk), and when we share them interactively with children, we are engaging jointly. One of the best opportunities we have to model joint media engagement is through storytime, especially in a storytime that incorporates Every Child Ready to Read® @ your library®-style parental asides that support the use of the early learning practices. What better way to empower parents to be actively thinking about their roles in their young children's media consumption habits?

The Fallacy of Universally Appropriate Practice

If we want all caregivers, universally, to engage with their children as they use technology, it may seem to follow that there would also be a universal standard for appropriate practice of how to use that technology with children, and how much. Not so; there is no one definitive way to appropriately engage with young children and new media. Rather, there is only the practice that is best for the specific caregiver/child pair and what they hope to do with the media.

When thinking about what the range of appropriate practice may look like, it is integral to consider three key components—what Lisa Guernsey (2012) calls the "three C's," content, context, and the child:

> **Content** - What is the specific media content? Is it user-friendly? Does it include ads and in-app purchases? Is it intuitive for children and their caregivers to use? Is it glitchy? Does it relate to the topic or practice the child and caregiver wish to explore? These questions are examples of considering the content that may be used in any media engagement. The content itself is a huge factor in appropriate practice, as the variety of content available is wide and ever-growing. When considering what is developmentally appropriate, it is necessary to evaluate the content of the media in question. Chapter Five of this book, "Evaluation of New Media" by Carisa Kluver and Claudia Haines, will explore content evaluation in depth.

> **Context** - What do child and caregiver aim to accomplish in using the media together? How one wants to use new media, and the outcomes one hopes to get from the new media, go a long way in determining what type of practice is appropriate. Consider, for example, an alphabet game app in which a child matches pictures of common items to the letter they begin with; e.g., matches an apple to the letter "A." Whether this particular media is appropriate depends upon the context in which it will be used. Is it

being used to reinforce letter knowledge? If so, it is probably appropriate. Is it being used to teach letter recognition to children who are just starting to learn the alphabet? In that context, the app is probably too advanced and thus not appropriate. The context of use is key. Chapter Six of this book, "New Media in Storytimes" by Carissa Christner, Anne Hicks, and Amy Koester, further explores the range of contexts in which new media may be used in storytime settings.

Child - Every child is different—developmentally, emotionally, perceptively, etc. It should come as no surprise, then, that each individual child may have unique appropriate practices when it comes to new media. It is integral for caregivers and librarians to take the individual child into consideration when creating a family media use plan or guidelines for appropriate practice. For instance, it may be relevant to consider how a particular child responds to and interacts with lots of sensory stimuli; a child who thrives with sensory stimuli will respond differently to an app with sound and motion than a child who becomes overwhelmed by the same elements. No single type of media, or way of using media, is appropriate for every child, and the needs of each child should absolutely be considered in all discussions of appropriate practice. In that same vein, what is appropriate for a child at age three will not necessarily be the same as what is appropriate for the same child at age four. Chapter Three of this book, "Developmentally Appropriate Practice" by Anne Hicks, includes information and discussion about general media use guidelines by age.

When thinking about developmentally appropriate practice, and particularly in providing resources to families as they determine their own family media use plans, thinking about these three C's is vital. It is also important to share these considerations with caregivers who may be anxious about the fact that their child is not necessarily using the same media, or using it in the same

ways, as their peers. Recognizing that the idea of developmentally appropriate practice for young children and new media is both relative and dynamic can allow library practitioners to more effectively advocate for the needs of each child and family served.

So how do we move forward?

We move forward respectfully, and with open minds. We must at all times respect the needs and the realities of the families we serve, understanding that although we may provide suggestions regarding appropriate new media use, the decision of how to use new media with their young children remains theirs.

Additionally, we must continue to have open minds. Open minds in terms of our ideas of what it means to serve children and their families—regardless of what our personal philosophies may be on the topic of young children and new media. Also, we must have open minds regarding what we currently consider promising practice. This landscape of new media is still new and is always evolving, and at this point educational and developmental research has not kept pace with technology and its many uses. As new research emerges, it is vital to reflect on existing practice to determine how best to move forward. It is vital to remember that our goal is serving children and their families, not specific types and methods of technology use. We must be open to all the possibilities of future use as they may emerge.

References

American Academy of Pediatrics. (2013). *AAP: Have a Family Media Use Plan* [video]. Retrieved from http://www.aap.org/en-us/about-the-aap/aap-press-room/aap-press-room-media-center/Pages/Family-Media-Use-Plan.aspx

American Academy of Pediatrics, Council on Communications and Media. (2013). Policy statement: Children, adolescents, and the media. *Pediatrics, 132*(5), 958-961.

Association for Library Service to Children and Public Library Association. (2004). *Every child ready to read® @ your library®*. Chicago, IL.

Association for Library Service to Children and Public Library Association. (2010). *Every child ready to read® @ your library® 2nd edition*. Chicago, IL.

Campaign for a Commercial-Free Childhood, Alliance for Childhood, & Teachers Resisting Unhealthy Children's Entertainment. (2012). *Facing the screen dilemma: Young children, technology and early education*. Boston, MA: Colleen Cordes, ed.

Campaign for Grade-Level Reading. (2012). *Pioneering literacy in the digital wild west: Empowering parents and educators*. Washington, DC: Lisa Guernsey, Michael Levine, Cynthia Chiong, & Maggie Severns.

Christakis, D. (2014). Interactive media use at younger than the age of 2 years: Time to rethink the American Academy of Pediatrics guideline? *JAMA Pediatrics, 168*(5), 399-400.

Common Sense Media. (2013). *Zero to eight: Children's media use in America 2013*. Washington, DC: Victoria Rideout.

Guernsey, L. (2007). *Into the minds of babes: How screen time affects children from birth to age five*. Philadelphia, PA: Basic Books.

Guernsey, L. (2012). *Screen time: How electronic media—from baby videos to education software—affects your young child*. Philadelphia, PA: Basic Books.

Guernsey, L. (2014). TEDxMidAtlantic: *How the iPad affects young children, and what we can do about it* [video]. Retrieved from https://www.youtube.com/watch?v=P41_nyYY3Zg

National Association for the Education of Young Children & Fred Rogers Center for Early Learning and Children's Media. (2012). *Technology and interactive media as tools in early childhood programs serving children from birth through age 8*. Washington, DC: Roberta Schomburg & Chip Donohue.

Neuman, S.B. & Celano, D.C. (2012). *Giving our children a fighting chance: Poverty, literacy, and the development of information capital*. New York, NY: Teachers College P.

New America. (2014). *Policy brief: Envisioning a digital age architecture for early education*. Washington, DC: Lisa Guernsey.

Parrott, K. (2011). Circulating iPads in the children's library. *ALSC blog: The official blog of the Association for Library Service to Children*. Retrieved from http://www.alsc.ala.org/blog/2011/11/circulating-ipads-in-the-childrens-library/

Rosin, H. (2013). The touch-screen generation. *The Atlantic*. Retrieved from http://www.theatlantic.com/magazine/archive/2013/04/the-touch-screen-generation/309250/

Takeuchi, L. & Stevens, R. (2011). *The new coviewing: Designing for learning through joint media engagement*. New York, NY: The Joan Ganz Cooney Center at Sesame Workshop.

Chapter Two:
Children and Technology:
What can research tell us?

by Tess Prendergast

This chapter provides a brief summary of some of the existing and emerging research that librarians may wish to familiarize themselves with as they navigate the digital terrain of early childhood literacy. By pointing out key position statements, and summarizing some of the existing research about technology and childhood, this segment aims to lay some groundwork for library practitioners to build onto their current approaches to supporting early and family literacy, with the intentional and carefully planned integration of digital tools.

Key Position Statements

Any foray into the topic of children and media of any kind will quickly lead to a mention of the American Academy of Pediatrics (2013) position statement on media in childhood. Drawing on studies that correlate issues like obesity, sleep disturbances, and attention difficulties with children's media viewing, the AAP guidelines promote healthy child development by suggesting that adults limit children's exposure to screen media—particularly for those under the age of two years when media use is discouraged in favor of "unstructured, unplugged play" (Brown & Council on Communications and Media, 2011, p. 1043). The AAP guidelines notwithstanding, researchers in the general field of early childhood

education have been studying the effects of technology and media, and most recently, interactive new media/touch technology, for several decades. Evidence from early childhood education literature suggests that, with appropriate scaffolding from adults, and for specific purposes, technological tools provide children with a range of learning resources in early childhood (McManis & Gunnewig, 2012; Northrop & Killeen, 2013).

Studies done in both homes and early childhood settings emphasize the role of interaction and the relevance of the resource to the child (Guernsey, 2012; Liebeskind, Piotrowski, Lapierre, & Linebarger, 2013). A position statement from the National Association for the Education of Young Children and the Fred Rogers Center (2012) provides early childhood professionals (including children's librarians) with a number of guidelines from which to build developmentally appropriate approaches to implementing technology into early childhood settings. In these guidelines, the focus remains on the child, with the aims of supporting child development across domains at the forefront.

Summary of Research about Children and Technology

Over a decade ago, literacy scholars Lankshear and Knobel (2003) reported on their extensive review of research concerned with new technologies and early literacy. While they concluded that the subject of new technologies in early literacy was thinly represented, they also determined that what did exist mainly emphasized "using these resources to promote abilities to handle conventional alphabetic print text rather than to generate multimodal text and to understand principles of multimodal meanings" (p.77). This trend, they believed, underestimated the power of new technologies to help to "orient children toward literacy futures that will be very different from the past" (p.77).

The U.K. early literacy scholar Marsh (2004) reported on her study of a group of young children's "techno-literacy" practices. From a stance that views children as "active meaning-makers," she

described how her participants demonstrated varied avenues to learning literacy by their interaction and engagement with technology media such as television programs and video-games. Marsh identified and confronted the intense focus still placed on literacy as a mainly print-based concept. This focus has led to over-emphasizing formal, printed, and text-based reading and writing skills. Also discussed are the negative views of media in young children's lives that Marsh contends are largely unfounded. In her study, Marsh found that families valued the role that television played in their children's lives and that parents actively participated in their children's engagement with the media texts made available to them via shows such as *Bob the Builder*. Parents believed such television shows facilitated imaginative social and cognitive development. By exploring these families' encounters with media in early childhood, Marsh emphasized the importance of non-print media, such as television, computers, and mobile phones, that young children continue to encounter in their non-school lives.

In "A is for Avatar," early literacy scholar Karen Wohlwend (2010) echoes many of Marsh's sentiments as she discusses children's encounters with digital media by emphasizing the concept of play in early childhood: "Children pretend their way into literacies by 'playing at' using computers, iPads, or cell phones as they try on technologically savvy user identities" (p. 145). The so-called digital divide is also dealt with as she promotes the idea that the early childhood classroom is the ideal place for disadvantaged children to engage with the digital media that shapes communication in the world today. Wohlwend confronts the spectre of the "natural child" and discusses how this idealized notion of childhood distances young children from access to digital technologies that constitute our modern literacies (p. 146). She encourages the questioning of the commonplace and commonsensical so that practitioners are better able to see how our beliefs "keep us compliant and complicit" in maintaining the status quo (p. 149).

More recently, Alper (2013) discussed children and technology through a new media literacies framework drawing on the work of

Jenkins (2009). Alper (2013) addressed the knowledge gaps that remain in our collective understanding of how new media literacy develops across the years of early childhood. Specifically, Alper used Reggio Emilia-inspired teaching as the lens through which to explore the affordances of digital technology in the lives of today's young children. Said Alper: "We should conceptualize media literacy as thinking critically, becoming confident and expressive, and sharing ideas in different forms in order to add depth to children's understanding of representation and meaning making" (p.189). Echoing many of the concerns that librarians have about children and technology, Alper concluded by saying that while children today may indeed be able to access ever more interactive technologies, they continue to have social, emotional, cultural, physical, and cognitive needs that still need to be met.

Building on these studies, it would seem that librarians should seek to strike a balance between the affordances of experiencing technology and the importance of meeting all of young children's other developmental needs. Understanding what children need to thrive should therefore guide librarians' approaches to integrating new media experiences into our existing developmentally beneficial programs, services, and collections.

Overview of Touch Screen Studies

In 2010, the iPad's arrival in the marketplace brought with it a new kind of touch screen experience. It was soon discovered that children's little hands and fingers were much better at swiping, clicking and generally manipulating these devices as compared to smaller touch-screens, such as iPod Touches and iPhones. Tablets are also easier for young children to master from a motor skill perspective than the traditional computer mouse. YouTube videos of babies and young children appearing to interact with tablets and smart phones can now be found in abundance (Teichert & Anderson, 2014).

Despite the overwhelming popularity of tablets (including those designed specifically for young children, e.g., LeapPads) not much is known about how or what children are actually able to learn

from their experiences using new technology. A whole new chapter of the screen-time debate is being written right now as educators (including librarians), researchers, and policy-makers ponder what the differences are between passive screen technology (i.e., television) and interactive screen technology (i.e., an app). Meanwhile, tablets are now on the top of many parents' gifts lists for their children, and ownership of tablets by even very young children continues to climb.

A recent study about parent perceptions of their children's digital media use suggests that parents generally are in favor of their children's use of technology for both learning and fun, and they are sure that their children are benefiting from the time they spend using them (Vittrup, Snider, Rose, & Rippy, 2014). Furthermore, the majority of the parents surveyed in this study believe that children who are not familiar with modern technology will be at a distinct disadvantage when they enter school. The researchers also noted that the majority of parents in their study hold opinions about children and technology that contrast sharply with the recommendations of the American Academy of Pediatrics (Vittrup et al., 2014).

Another study, by Danby et al. (2013), used conversation analysis to explore how one father and his two children actually interacted with iPads and iPhone apps in their home. The researchers found, among other things, that the father oriented his talk towards his children's level of competence and individual interests when interacting with various apps. This behavior resembles the types of conversations that librarians and early childhood educators have long been encouraging families to have when engaging in activities together (Copple & Bredekamp, 2012).

Finally, a large UK study (Formby, 2014) suggested that parents have positive attitudes about the time their children spend with a range of technology. Most interestingly, this study suggests that having digital technology in the home might offer "a route into reading" for children of lower socioeconomic status. The study found that economically disadvantaged three- to five-year-olds

who had touch screens at home were twice as likely to look at stories daily compared to similar status children without touch screens at home. Furthermore, disadvantaged children who had access to *both* traditional and digital stories fared better on early literacy measures than their counterparts who had only interacted with traditional print stories.

Digital Technology, Children and Libraries: What do we know?

An action research study conducted in Taiwan reports on a series of parent-child digital technology workshops held at public libraries. A range of positive outcomes were noted, including intergenerational learning, providing parents and caregivers with the skills needed to find and download appropriate apps for their children, and children interacting and collaborating on digital creations together (Sung & Siraj-Blatchford, 2014). Prior long-term studies about technology in libraries also suggest that an important role can be played by libraries to help mitigate the effects of the digital divide (Neuman & Celano, 2012).

Additionally, professional children's librarianship literature indicates broad update of this topic and these tools in the day-to-day work of children's librarians in communities (Campbell, 2013; Campbell & Koester, 2014; Graves, 2012). This emerging work within the field of children's librarianship points out the importance of maintaining our collective early literacy expertise and our abilities to support diverse family literacy practices. By modeling appropriate and healthy use of digital resources as well as providing readers' advisory services for digital material, librarians can act as media mentors for parents and caregivers of young children in their communities as they seek to learn about and use digital tools. While it is critical that librarians take up this role, it is equally critical that public libraries are included in research about digital tools and early literacy. Now more than ever, librarians need library-based research to help guide and mold practices in the digital age.

The Librarian's Interpretation of the Literature

Just as effective teachers must continually question the status quo, professional librarians need to question the way we support early childhood literacy now. We must go beyond the traditional role of being about the best books for children. Contemporary children's librarians concern themselves with the quality of *content*, regardless of platform or media on which that content is currently delivered. The librarian's role is to learn how to evaluate all kinds of content; curate it appropriately; and promote the best content among all that is available to families that seek our input on the content present in their children's lives. By drawing on research studies that emphasize the importance of acknowledging children's actual lives across settings, librarians can continue to provide the best services to families in our communities with regards to new media of all kinds.

As many librarians who have already ventured into the digital realm have discovered in too many blog posts to mention—and, it should be noted, a substantial portion of the library conversation around young children and new media is taking place online and on blogs—one of the biggest barriers to address is the negative attitude about children and so-called screens. Critical educators, including librarians who work with young children and their caregivers, must be able to cope with the ambiguity that is inherent in a society that does not know quite what it thinks about children and technology. We need to be able to respond to our community's needs, interests, and concerns and move forward with curricular and pedagogical choices that provide a range of early literacy experiences and support early literacy skill development without being detrimental to young children's social and physical domains.

Conclusion

Although there remains of great deal of important research that needs to be done in this area, the preponderance of evidence supports a view that the provision of developmentally appropriate,

intentional, and interactive experiences with digital technology, including iPads, apps, and so forth, can support early literacy development in young children. While this book gives practitioners the tools of the "digital storytime" trade, this chapter specifically aims to provide a solid research foundation for why this work is important and, moreover, why it is critical that the library's different ways and contexts of "doing" new media in early childhood are included in future research in this area.

References

Alper, M. (2013). Developmentally appropriate new media literacies: Supporting cultural competencies and social skills in early childhood education. *Journal of Early Childhood Literacy, 13*(2), 175-196. doi: 10.1177/1468798411430101

American Academy of Pediatrics, Council on Communications and Media. (2013). Policy statement: Children, adolescents, and the media. *Pediatrics, 132*(5), 958-961.

Brown, A., & Council on Communications and Media. (2011). Media use by children younger than 2 years. *Pediatrics, 128*(5), 1040.

Campbell, C. (2013). Start-up librarian: Expanding our skills into new arenas. *American Libraries, 44*(11/12), 20.

Campbell, C., & Koester, A. (2014). *Little eLit: Young children, new media & libraries*. Retrieved from www.littleelit.com

Copple, C., and Bredekamp, S. (Eds.). (2012). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.

Danby, S., Davidson, C., Theobald, M., Scriven, B., Cobb-Moore, C., Houen, S., . . . Thorpe, K. (2013). Talk in activity during young children's use of digital technologies at home. *Australian Journal of Communication, 40*(2), 83-99.

Formby, S. (2014). Parents' perspectives: Children's use of technology in the early years. London, UK: National Literacy Trust.

Graves, A. (2012). Here to stay: Mobile technology and young children in the library. *Children & Libraries, 10*(3), 52.

Guernsey, L. (2012). *Screen time: How electronic media—from baby videos to educational software— affects your young child*. Philadelphia, PA: Basic Books.

Jenkins, H. (2009). *Confronting the challenges of participatory culture: Media education for the 21st century*. Cambridge, MA: MIT Press.

Lankshear, C., & Knobel, M. (2003). New technologies in early childhood literacy research: A review of research. *Journal of Early Childhood Literacy, 3*(1), 59-82. doi: 10.1177/1468798403003001003

Liebeskind, K. G., Piotrowski, J. T., Lapierre, M. A., & Linebarger, D. L. (2013). The home literacy environment: Exploring how media and parent-child interactions are associated with children's language production. *Journal of Early Childhood Literacy*. doi: 10.1177/1468798413512850

Marsh, J. (2004). The techno-literacy practices of young children. *Journal of Early Childhood Research, 2*(1), 51-66. doi: 10.1177/1476718X0421003

McManis, L. D., & Gunnewig, S. B. (2012). Finding the education in educational technology with early learners. *Young Children, 67*(3), 14-24.

National Association for the Education of Young Children & Fred Rogers Center for Early Learning and Children's Media. (2012). *Technology and interactive media as tools in early childhood programs serving children from birth through age 8.* Washington, DC: Roberta Schomburg & Chip Donohue.

Neuman, S. B., & Celano, D. C. (2012). Don't level the playing field: Tip it toward the underdogs. *American Educator, 36*(3), 20-21.

Northrop, L., & Killeen, E. (2013). A framework for using iPads to build early literacy skills. *The Reading Teacher, 66*(7), 531.

Sung, H.-Y., & Siraj-Blatchford, J. (2014). Supporting family learning and interaction through information and communications technology in public libraries in Taiwan. *Journal of Librarianship and Information Science*. doi: 10.1177/0961000614528967

Teichert, L., & Anderson, A. (2014). "I don't even know what blogging is": The role of digital media in a five-year-old girl's life. *Early Child Development and Care*, 1-15. doi: 10.1080/03004430.2013.875540

Vittrup, B., Snider, S., Rose, K. K., & Rippy, J. (2014). Parental perceptions of the role of media and technology in their young children's lives. *Journal of Early Childhood Research*. doi: 10.1177/1476718x14523749

Wohlwend, K. E. (2010). A is for avatar: Young children in literacy 2.0 worlds and literacy 1.0 schools. *Language Arts, 88*(2), 144-152.

Chapter Three:
Developmentally Appropriate Practice:
Using New Media with Children, Birth through School-age

by Anne Hicks

The practice of striving to be developmentally appropriate in the integration of new media into the lives and library services for young children is not without precedent; health and educational institutions have weighed in on the benefits, concerns, and recommended practices in utilizing technology of all kinds with youth for as long as there have been technology formats to discuss. This chapter examines the background of these recommendations for developmentally appropriate practice over the past decade and a half before exploring the current recommended practices for infants and toddlers, preschoolers and kindergarteners, and school-age children.

A Brief History of Recommendations for Developmentally Appropriate Practice

Until recently, the prevailing wisdom had been that all screen time should be avoided for children under the age of two. For children over the age of two, it was recommended that screen time be limited to 1 to 2 hours per day. This advice came to parents through many avenues but originated with a policy statement

issued by the American Academy of Pediatrics in 1999 that addressed media use in children. The statement included a recommendation to pediatricians that they should caution parents against television viewing for children under the age of two (Hogan, et al., 1999). This guideline was supported by research on the effects of mass media in small children and included information on aggressive behavior, sexual content in media, the effects of media on obesity rates, and the fact that media consumption often displaces other activities. The statement recommended that pediatricians encourage parents to examine their media use habits, and it also recommended pediatricians give a range of advice to parents including:

- encouraging careful selection of programs to view;
- co-viewing and discussing content with children and adolescents;
- teaching critical viewing skills;
- limiting and focusing time spent with media;
- being good media role models by selectively using media and limiting their own media choices;
- emphasizing alternative activities;
- creating an "electronic media-free" environment in children's rooms; and
- avoiding use of media as an electronic babysitter. (p. 342)

Tablets and new media were not included in this AAP statement, as they were either not yet invented, or not yet used prevalently. However, many in the media and others in the early childhood education community extended the 1999 guidelines (specifically the recommendation for no screen time before age two) to encompass tablets, smartphones, and ereaders as these devices became ubiquitous. In 2011 the American Academy of Pediatrics issued an update to this statement; "Media Use by Children Younger Than 2 Years" reaffirmed the 1999 statement with updated research. It did not, however, make specific recommendations for interactive or new media and the growing landscape of digital devices. The iPad had only just been released in 2010, and research on its effects with regard to child

development was non-existent. In fact, the 2011 statement was virtually unchanged from its predecessor in that it defines "media" as "television programs, pre-recorded videos, web-based programing, and DVDs viewed on either traditional or new screen technologies" (Brown, et al., 2011, p. 2).

Then the National Association for the Education of Young Children (NAEYC) and the Fred Rogers Center for Early Learning issued a joint position statement in January 2012, titled "Technology and Interactive Media as Tools in Early Childhood Programs Serving Children from Birth through Age 8." The joint statement highlights the fact that "all screens are not created equal," and the way children consume media, with regard to digital devices, has fundamentally changed (NAEYC, 2012a, p. 3). "Screen time," according to the statement, can no longer be defined simply as children passively watching television shows or dvds. New media in the form of apps and ebooks requires active participation from users. Taking these technological advancements and the new ways children are interacting with media into account, the definition of "screen time" must be reevaluated. The NAEYC and Fred Rogers statement takes a much more nuanced approach than the 2011 AAP guidelines and states that "as digital technology has expanded in scope beyond linear, non-interactive media to include interactive options, it is evident that each unique screen demands its own criteria for best usage" (p. 3).

In a lecture at the 2013 American Library Association Annual Conference, Chip Donohue, Director of the Technology in Early Childhood Center and coauthor of the NAEYC and Fred Rogers Center joint statement, cautioned against falling into the false dichotomy of the "screen time vs. no screen time" debate, which fundamentally overlooks the interactive aspects of new media (2013). Instead he stresses the importance of how technology is used with children to foster learning, promote creativity, and enhance real world experiences. It is also promising to note that the latest policy statement issued by the AAP in 2013, "Children, Adolescents, and Media," included a recommendation that schools "encourage innovative use of technology where it is not

already being used," and that those schools that do use iPads need to have strict rules about what students can access (AAP Council on Communications and Media, 2013, p. 960). From these newer guidelines, it appears that the AAP does in fact recognize that there are potential educational applications for new screen technologies.

This chapter will explore recommendations for using new media with children at different developmental stages outlined by the NAEYC and Fred Rogers Center statement. The authors of the statement based their recommendations on three distinct developmental stages—Infants and Toddlers, Preschoolers and Kindergarteners, and School-age children through age 8—and this chapter shall use the same age categories.

Infants and Toddlers

In her 2012 book *Screen Time: How Electronic Media—From Baby Videos to Educational Software—Affects Your Young Child,* Lisa Guernsey looks at how babies and toddlers learn in order to determine if children at this young age can derive any benefit from interacting with technology. As an example, some of the first interactive screen-based products specifically marketed towards babies and toddlers, on the market in 2006, involved a video recording and a wireless remote control-like device to be used by the child to "interact" with the video. The problem with these products, Guernsey points out, is that they fail to take into account that babies and toddlers have "a limited understanding of cause and effect when it isn't close and immediate" (p. 196). The unavoidable distance between the television screen and the wireless remote made it difficult for the child to establish what researchers call "contingency." Contingency refers to the learning process where feedback is contingent upon a child's action.

Guernsey (2012) also points out the drawbacks of using a traditional computer and mouse with very young children. Toddlers often lack the fine motor skills necessary to control a mouse. Even if they are able to master this equipment, the issue of the cause (the child moving or clicking a mouse) and effect (something

happening on screen) being separated by distance still remains. The advent of touch screen technology has removed both of these issues. With touch screens, cause and effect is immediate and close, and these devices do not require the fine motor skills needed to operate a mouse. Even a baby has the ability to tap a flat screen.

The next question, then, is, can these devices be used as educational tools with children this young, and if so, how? The NAEYC and Fred Rogers Center statement recommends that if technology is used with this age group it should be in the "context of conversation and interaction with an adult" (NAEYC, 2012b, p. 1). In the earliest years, children learn and interact primarily with people; studies have shown a correlation between play with an adult and improved emergent language skills in children (Guernsey, 2012, p.22).

The NAEYC and Fred Rogers Center statement also recommends avoiding passive screen time with this age group, as there is little research to suggest that babies and toddlers learn from watching videos (NAEYC, 2012a). Instead, the statement recommends that caregivers should "use technology as an active tool when appropriate to provide infants and toddlers with access to images of their families and friends, animals and objects in their environment, and a wide range of diverse images of people and things they might not otherwise encounter (photos of children from other countries, for example)" (p.1). The statement recognizes that there is a difference between passively watching a video and using a touch screen device to interact with images, sounds, and ideas. However, the authors suggest that use of technology with infants and toddlers remain very limited and be based on "exploration and include shared joint attention and language-rich interactions; and that it does not reduce the opportunities for tuned-in and attentive interactions between the child and the caregiver" (p.6).

The suggestion that certain types of media can be appropriately shared with babies and toddlers seems to contradict, or even

totally ignore, the advice by the AAP to avoid screen time for children under the age of two. However, not only did the AAP 2011 statement (and subsequent 2013 update) fail to address the effects of new, interactive media with this age group, one of the authors has published an opinion piece suggesting that there are potential educational benefits to touch screen devices. In March of 2014, Dr. Dimitri A. Christakis published a statement in *Pediatrics* addressing his concerns that the AAP guidelines do not account for the interactive nature of new media. Christakis explains that, since research on the effects of interactive media will take years to complete, he hopes to offer his opinion on the topic based on theoretical grounds. He questions whether interactive touch-screen technologies are more similar to passively watching television or to actively playing with blocks. He states: "my hunch is that they are more akin to block play and here is why: the one thing a child never says (or thinks) when he or she interacts with passive media is 'I did it!' This is, of course, quite different than what might be experienced in the context of using a well-designed interactive app" (p. 399).

Christakis goes on to outline the key features of traditional toys, comparing them to new media devices:

> Reactivity - whether the device can respond to something a child does
>
> Interactivity - whether the device can prompt reactions from a child based on actions he or she takes
>
> Tailorability - whether the device can behave differently based on particularities of the child (e.g., age and stated preferences)
>
> Progressiveness - whether the device can move a child along a continuum such that it begins where he or she last left off, advancing in complexity as understanding deepens
>
> Promotion of Joint Attention - whether the device can enable or facilitate adults and children interacting with one another

> Portability - how easy it is to transport the device and make it readily available in different venues
>
> 3-dimensionality - whether the child can engage the device across space by manipulating it with his or her hands (p. 399)

Christakis illustrates that, when assessed against these criteria, iPads (and more specifically interactive apps) have more in common with traditional toys than they do with passive media such as television. Christakis uses this assessment to argue that "there is a strong theoretical foundation to posit that the AAP recommendations regarding media for children younger than the age of 2 should not be applied to these newer media" (p. 400).

Preschoolers and Kindergartners

As an appendix to the joint statement issued by NAEYC and the Fred Rogers Center (2012b), the authors have offered selected examples of effective ways to use technology and interactive media with children in the classroom setting. This appendix explains that preschoolers and kindergartners are at a stage in their development that involves a newfound sense of initiative and creativity; they are exploring their ability to create and communicate, and digital technology can provide another outlet to achieve this. According to the authors, children at this age should be allowed to freely explore touch screen devices that are loaded with well-designed apps that enhance feelings of success. Guernsey (2012) offers similar advice in her book *Screen Time*. She explains that research has shown preschoolers can indeed learn from television programing if it has been well designed.

But what does a well-designed interactive app look like, and how should preschoolers and kindergartners use them? Guernsey (2012) explains that well-designed media for children should allows them to go where their imaginations take them. To illustrate, she describes a study by Warren Buckleitner in which children ages 3.5 to 5 were observed playing two different styles of interactive games. One game included excessive praise and instructions, while the other included just a few sound effects to

signify correct answers and offered few instructions. "Buckleitner found that, when kids were given a chance to go forward on their own without waiting for instructions or sitting through multiple seconds of praise, they were more active and engaged, focusing on the task at hand instead of looking around" (p. 205). Guernsey reports that Buckleitner believes this is evidence that the more children in this age group can control the interactive experience, the more they respond to it.

Guernsey also looked at the ways children and parents use interactive books. The first edition of her book was published in 2007, and at that time an ebook looked very different than ebooks we see today. In the 2007 text, she describes a study done using a specialized paper book that is inserted into a plastic frame with an accompanying computer cartridge. When a child touched an image on the page, the book would "talk." One study found that when a parent and child read this type of book, there was much less discussion revolving around the story and much more discussion about how to use the device. This finding seems discouraging, as reading together is one of the best ways adults can improve literacy and language skills in their child. However, those ebooks were very different from ones available for tablets today. Touch screen technology is more intuitive and easier to use, even for children with limited fine motor skills. But the issue of distraction should still be taken into consideration.

When choosing ebooks for young children, adults should avoid ones that include advertisements and requests for in-app purchases, but also those that include what some researchers are calling "gimmicks and distractions." Schugar, Schugar, & Smith (2013), researchers who conducted a study observing teachers as they used interactive ebooks with children in kindergarten through sixth grade, found that certain features of these books acted as distractions that interfered with comprehension. Some ebooks include games that are related to the story but exist completely separate from the narrative, and the study found that often children choose to spend their time playing the game rather than reading the story. Paul (2014) suggests looking for ebooks that

"enhance and extend interactions with the text, rather than those that offer only distractions; that promote interactions that are relatively brief rather than time-consuming; that provide supports for making text-based inferences or understanding difficult vocabulary; and that locate interactions on the same page as the text display, rather than on a separate screen."

Open-ended and dramatic play is also an important feature of development during the preschool and kindergarten years (NAEYC, 2012b). Technology can be used to support this development, as the NAEYC and Fred Rogers statement suggests. In the experience of this author, Toca Boca is a highly regarded app developer that focuses on creating digital toys for children ages 3-6 and their caregivers. Their apps are an example of new media that is designed to promote developmentally appropriate interaction. The apps have no advertising, include no scoring or levels to be completed, and are inherently open-ended and non-competitive. For instance, Toca Tea Party is a digital version of the classic imaginative game and was developed with the intention that child and caregiver would play with it together; children can choose the table cloth, dishes, cups, and even the desserts they wish to "serve" to their guests. This type of new media promotes joint engagement and increases the opportunity for conversation, creativity, and learning.

School-age Children

The NAEYC and Fred Rogers Center (2012a) statement stresses the importance of allowing children to have access to new technologies, stating that "children need time to explore the functionality of technology before they can be expected to use these tools to communicate" (p.6). According to the Pew Center for Research, as of January 2014, 42 percent of American adults own a tablet and 58 percent own a smartphone. The NAEYC and Fred Rogers Center statement explains that this "prevalence of technology and media in the daily lives of young children and their families—in their learning and their work—will continue to increase in more ways than we can predict" (p.9). As the use of new media becomes essential to the work required of teens and adults, the

education of young children should include the use of these new technologies in order to ensure that all children have strong digital literacy skills. In their 2013 study "T is for Transmedia: Learning Through Trans-media Play," Herr-Stephenson, Alper, Reilly, and Jenkins emphasize the importance of letting children play with the tools they will be expected to use as adults, stating that "in a hunting society, children learn by playing with bows and arrows. In an information society, they learn to play with information" (p. 6). Adults should help children use media in a way that allows the child to control the medium and the outcome of the experience, and in ways that allow the child to pretend and simulate how it might be used in real life (NAEYC, 2012a).

As with the other age groups discussed in this chapter, it is important that adults take an active role in using new media with children. "Digital and media literacy for children means having critical viewing, listening, and Web-browsing skills," and according to the authors of the NAEYC and Fred Rogers Center statement, this requires that adults model appropriate uses with school-aged children (2012a, p. 10). Digital and media literacy can be achieved in myriad ways, but one suggestion is to allow school-age children to use new media as a tool for self-expression. Creating digital artwork and sound recordings or using storytelling apps is a wonderful way for school-age children to develop digital literacy skills while also engaging creatively. The NAEYC and Fred Rogers Center statement stresses also that "these opportunities should not replace paints, markers, crayons, and other graphic art materials but should provide additional options for self expression" (2012a, p.8).

In an interview with ABCmouse.com, Chip Donohue reaffirmed this viewpoint by explaining that adults should take on the role of guiding children to make connections between the media they use and real-world experiences. He goes on to say that "we want parents to be doing the same thing with technology that they are already doing with books and stories—share the experience with the child, and talk about it so that children can relate that

experience to other experiences in their lives and to the things they see in the world around them" (Donohue, 2012).

Educational apps should be used to reinforce what children are already learning in school and at home. For instance, Chiong & Schuler (2010) looked at how children are using apps and whether or not learning is occurring. Some parents in the study reported that they would reinforce vocabulary from an app in other real world situations. The researchers believe that the power of apps as a supplemental educational tool depends on how well content is linked to other curriculum and how caregivers encourage these connections.

The need for adults to model appropriate uses of new media with children is illustrated in a paper titled "Teaching With Interactive Picture e-Books in Grades K-6" (Schugar, Schugar, & Smith, 2013). The researchers describe a situation in which a teacher demonstrated how to transfer the skills commonly used by children deciphering text in print books to the newer medium of ebooks. The teacher helped a student by explaining how she determined the meaning of the word "stampeding" in the ebook *Wild About Books* by Judy Sierra by looking at the context of the word, the clues in the pictures, as well as the interactive features unique to ebooks:

> She models for him how she would use this strategy with the word stampeding. She reads aloud the line from the text, "…every beast in the zoo was stampeding" and shows how she uses the text ("I see from the text clues that stampeding is something zoo animals might do."), the pictures ("The animals are all grouped together, so maybe stampeding involves a herd of animals."), and the interactions ("When I press the animals, they run in a herd across the page and make loud clomping noises."). Josey demonstrates how she uses the clues from each of these aspects of the text in conjunction with each other to infer the meaning of the word stampede. (p. 619)

Additionally, many ebooks include interactive supports such as read-to-me features and dictionaries. It is important for caregivers and teachers to show school-aged children when and how to use these interactive features appropriately, as the researchers worried that children may overly rely on these supports. We want our children to learn to be app-enabled rather than app-dependent, and this requires active involvement from and modeling by adults (Gardner and Davis, 2013).

Conclusion

With each stage of child development discussed in this chapter, the overriding recommendation is that adults take an active role in not only choosing the interactive media their children use, but also that the adult and child use apps and tablets together. This concept is known as "joint media engagement" (sometimes also referred to as "co-viewing" or "joint attention") and has been endorsed by the American Academy of Pediatrics, the National Association for the Education of Young Children, the Fred Rogers Center for Early Learning, the Joan Ganz Cooney Center, and many more researchers in the field. Donohue summed up the importance of joint media engagement by stating that "the role of the adult is to help children make connections between the technology experience and real-life experiences" (2012).

As librarians begin to implement the use of tablets and apps with the children they serve, they should not only consider the advice summarized in this chapter, but also use the opportunity to share this information with adult caregivers. By doing so, librarians will take on the role of media mentors for the families in their communities, a much needed service in this ever-changing digital age.

References

American Academy of Pediatrics, Council on Communications and Media. (2013). Policy statement: Children, adolescents, and the media. *Pediatrics*, *132*(5), 958-961.

Brown, A., Mulligan, D.A., Altamann, T.R., Christakis, D.A., Clarke-Pearson, K., Falik, H.L., et al. (2011). Media Use by Children Younger Than 2 Years. *Pediatrics*, *128*(5), 1040-1045.

Chiong, C., & Shuler, C. (2010). Learning: Is there an app for that? Investigations of young children's usage and learning with mobile devices and apps. New York: The Joan Ganz Cooney Center at Sesame Workshop. Retrieved from: http://www.joanganzcooneycenter.org/wp-content/uploads/2010/10/learningapps_final_110410.pdf

Christakis, D. (2014). Interactive media use at younger than the age of 2 years: Time to rethink the American Academy of Pediatrics guideline? *JAMA Pediatrics*, *168*(5), 399-400.

Donohue, C. (2012, November). Children and technology: The right balance? ABCmouse.com Newsletter. Retrieved from: https://www.abcmouse.com/newsletter/technology

Donohue, C. (2013, June 3). Conversation starters: Building A to zoo for apps: Time-tested librarian skills meet cutting edge technology for kids. American Library Association Annual Conference. Lecture conducted from American Library Association, Chicago.

Gardner, H., & Davis, K. (2013). The app generation: How today's youth navigate identity, intimacy, and imagination in a digital world. New Haven: Yale University Press.

Guernsey, L. (2007). *Into the minds of babes: How screen time affects children from birth to age five.* New York: Basic Books.

Guernsey, L. (2012). *Screen time: How electronic media—from baby videos to educational software—affects your young child.* New York: Basic Books.

Herr-Stephenson, B., Alper, M., Reilly, E. and Jenkins, H. (2013). T is for transmedia: Learning through trans-media play. Los Angeles and New York: USC Annenberg Innovation Lab and The Joan Ganz Cooney Center at Sesame Workshop.

Retrieved from: http://www.annenber-glab.com/viewresearch/46

Hogan, M., Bar-on, M., Beard, L., Corrigan, S., Gedissman, A., Palumbo, F., et al. (1999). Media Education. *Pediatrics, 104*, 341-343.

"Mobile Technology Fact Sheet, 2014." Pew Research Centers Internet American Life Project RSS. Pew Research Center, Washington, D.C. (January 1, 2014). Retrieved from: http://www.pewinternet.org/fact-sheets/mobile-technology-fact-sheet/

National Association for the Education of Young Children & Fred Rogers Center for Early Learning and Children's Media. (2012a). Technology and interactive media as tools in early childhood programs serving children from birth through age 8. Washington, DC: Roberta Schomburg & Chip Donohue.

National Association for the Education of Young Children and the Fred Rogers Center for Early Learning and Children's Media. (2012b). Selected examples of effective classroom practice involving technology tools and interactive media. Washington, DC.

Paul, A. M. (2014, April). What you need to know before letting your kids read e-books. *Time*. Retrieved from: http://time.com/77751/e-books-reading-children/

Schugar, J. T., Schugar, H. R., & Smith, C. A. (2013). Teaching with interactive picture e-books in grades K-6. *The Reading Teacher, 66*, 615-624.

Chapter Four:
The Role of New Media in Inclusive Early Literacy Programs & Services

by Tess Prendergast

Tablet technology has taken hold in mainstream early childhood, and while debates about screen-time persist (Christakis, 2014; Guernsey, 2012), the notion that children both with and without disabilities are acquiring knowledge via digital modes has been reported in recent research (Danby et al., 2013; Jowett, Moore, & Anderson, 2012; Levy, 2008; Winters & Vratulis, 2012). A number of studies suggest that tablet technology shows promise as a universally accessible tool for language and literacy learning (Neumann & Neumann, 2014). Tablet technology, repurposed as augmentative and alternative communication (AAC) devices, have more recently been able to give nonverbal people their "voices" (Bradshaw, 2013; McNaughton & Light, 2013; Neider, 2013). Librarians should consider the potential of tablet technology to provide children with viable means for both adult-child and peer-to-peer communication in inclusive settings, such as library storytime programs (Feinberg, Jordan, Deerr, Langa, & Banks, 2014).

Since tablet technology is so new to the assistive technology field, the role of mainstream devices and their range of uses in inclusive early childhood learning require a great deal more study if we are

to better understand the affordances of technology within diverse children's homes and early literacy settings, including those of the public library. There is not yet sufficient research evidence to drawn on, therefore this chapter aims to provide readers with an orientation towards the consideration of tablet technology, and the apps that run on them, as potential tools for inclusion in our work with children who have disabilities, as well as their families.

Pre-iPad Studies about Assistive Technology (AT) and Early Literacy

Assistive technology has been used in special education spheres for decades. A significant body of research in both education and speech sciences reflects the importance of assistive technology in the lives of people with disabilities. However, in the field of assistive technology studies, there are very few that consider the role of AT in supporting early literacy development. For example, Burne, Knafelc, Melonis, and Heyn (2011) reveal a scarcity of empirical research that demonstrates the benefit of AT to promote emergent literacy in young children with disabilities. They conclude that, even though there is evidence of the benefits of early literacy support in early childhood, and evidence of the benefits of AT in intervention for children with disabilities, there has not been enough research linking these two areas together. More studies that investigate specific approaches in the use of assistive technology to help develop early literacy in children with disabilities may help to build a rationale for the effective integration of AT (which would now include tablet technology) into inclusive early childhood literacy settings. The authors summarize this review of assistive technology and early literacy research from the past two decades by acknowledging that evidence is emerging that various kinds of AT, mainly computer-based programs, are effective in supporting early literacy in young children, particularly those with disabilities. Importantly, they also point out that some technology is used as assistive technology, and some assistive technology is just technology in mainstream inclusive settings. They state that this cross-over practice points to "greater homogeneity between children with disabilities and children

without disabilities" (p. 212) which supports the development of more inclusive classrooms and other literacy learning sites. The iPad and other tablet devices is an example of a mainstream device that can serve multiple purposes across contexts.

A study by Jeffs, Behrmann, and Bannan-Ritland (2006) explores the "interactions and attitudes of parents and children…to build literacy skills" (p. 37). This study's participants were children with significant disabilities who were also struggling readers. They and their parents were introduced to a range of computer-based assistive technologies designed to both engage and bolster reading skills. All the children involved in the study showed some improvement in their literacy skills in both reading and writing after they and their parents were introduced to literacy-building computer-based programs. Features such as voice recognition and highlighted text functions were noted to be valuable in keeping the children focused on the literacy-building activities. These and other pre-2010 studies about children and technology suggest that children with disabilities were already benefiting from the affordances of computer technologies to support their literacy development (Hetzroni & Schanin, 2002). Librarians can build on this body of research by integrating tablet technology (among other digital tools that may be appropriate) into their children's services, collections, and programs to ensure that children who need the features offered by technological tools have them at their disposal in the library.

Librarians, Assistive Technology, and Children with Disabilities

A study by Ennis-Cole and Smith (2011) considers the role of the school librarian in the provision of assistive technology for students with autism. The authors found that:

> The success of AT is dependent on careful selection and use, operational knowledge, family support, and integration of the device into the curriculum. These are all areas where school librarians can take a leadership role ensuring

access, equity, distribution, appropriate training, evaluation, and support to both school professionals and families. (p.91)

The authors articulate a strong rationale for the continued development of the school librarian's expertise in and knowledge of various types of assistive technology that can further the educational experiences of children with autism as well as other disabilities. Corollaries can be found between the role of the school librarian and that of the public library children's librarian. Both kinds of librarians encounter diverse children with communication, literacy, and other learning needs that can be met by the judicious selection and provision of a range of assistive technology tools.

Recently, three books from the field of librarianship touch on the role of technology in the lives of young people with disabilities (Farmer, 2013; Feinberg et al., 2014; Klipper, 2014). All of these titles deal with the topic of technology as well as tablet technology's unique potential for supporting communication and literacy development for children with a range of disabilities. This work emerging from the field of children's librarianship demonstrates that librarians can take up this vital role in the convergence of so-called assistive technology and new media to advance inclusion aims across settings. However, as we move forward with the development of collections, programs, and services that utilize new media, we must still acknowledge the almost complete lack of empirical research about young children with disabilities and new media in library settings.

iPads and Children with Disabilities

Research about young children with disabilities and iPads (and similar tablet devices) is in extremely short supply. This segment summarizes some of what has been published on this important topic (mainly emerging from the early childhood special education field) and provides food for thought about the appropriateness of incorporating new media into inclusive early literacy resources,

collections, services, and programs within the public library sphere.

By presenting a vignette of early childhood classrooms that include children with disabilities, More and Travers (2013) present a universal design for learning (UDL) framework for app selection that considers how accessible apps are across a range of developmental domains (motor, cognitive, language and social). Their framework guides teachers (and others) to ask a range of questions about each app's affordances and features concerning how well they can support the development of a child with disabilities. This framework could be adapted for and used by librarians who wish to recommend apps to parents of children with disabilities. Because they align with UDL principles, apps selected using this framework will be developmentally appropriate and customizable for children within a range of development, including both typical and atypical children. This framework would be a good starting place for librarians and others who wish to ensure that the apps they select for their library's tablets and storytimes are as inclusive as possible.

Aronin and Floyd (2013) share examples of how iPads can be used within inclusive preschool settings to promote STEM learning. They discuss the importance of small-group interactions with the iPad and stress that some children will require repeated opportunities to develop the motor skills needed to interact with the apps they recommend. However, since the selected apps are "play-based," they believe children's motivation to engage will be high. The examples given include a math app, a tangram app, a weather app, two building apps, and a robot construction app. They also believe that, for children with fine motor difficulties, iPad apps often provide the motivation to continue with the activities therein even if they are difficult for them. This app play serves a dual purpose: players gain STEM knowledge as well as fine motor skill practice. Since librarians are also interested in supporting STEM in early childhood, this article provides a clear rationale for including such apps in library iPad collections and programs for young children.

Jowett et al. (2012) studied the efficacy of an iPad-based video modeling package to teach numeracy to a child with autism spectrum disorder (ASD). Clear gains in five-year-old Jack's ability to identify, write and comprehend numerals were evident after the short intervention program concluded. Interestingly, the researchers chose to exploit Jack's interest in the iPad app game Angry Birds™. His ASD notwithstanding, this five-year old boy's preferred popular media was very effectively harnessed to help him acquire numeracy skills. Tied together with what other researchers have implored regarding the importance of allowing popular media into educational settings (Dyson, 2003; Marsh, 2005; Wohlwend), young Jack's passion for Angry Birds makes him perhaps more like his non-ASD peers than was previously assumed.

McClanahan, Williams, Kennedy, and Tate (2012) report on the use of an iPad in a facilitated reading improvement strategy for a fifth-grade boy named Josh who is labeled with attention deficit hyperactivity disorder (ADHD). Pre-and post-testing demonstrated that Josh had gained a year's reading growth within the six-week intervention. Although the authors make no claims as to the generalizability of this iPad-based strategy for all struggling readers who have ADHD, they surmise that the higher levels of sensory stimulation may have allowed Josh to engage in the literacy learning tasks in ways that were different from his typical classroom environment.

In a recent Technology Voices column of the newsletter of the Family Center on Technology and Disability (2012), iPads are discussed in terms of their perceived therapeutic benefit. The authors state that "devices intended for a mass market are almost always cheaper and more accessible to users" (p. 1). They go on to explain that the app market provides children with disabilities ways to strengthen their "communication, executive planning, learning, daily living and social functions" (p. 1). With this range of applicability accessible from one relatively cheap device, it is little wonder that parents of children with disabilities are turning to tablets for help to support their children's learning in the early

years. The article then describes iLearn, a program offered by the Lakeside Center for Autism, that grew out of parents' requests for help with their children's new iPads. The program is essentially a parent-child workshop for parents and their children (with autism). Echoing the concerns of many librarians, the program facilitators emphasize the importance of interaction: parents, siblings, peers, teachers, and others are all involved in the iPad-based learning offered to the target children. While the iPad has been observed to be motivating for children, this piece cautions that "the iPad is a tool, not a silver bullet" (p. 3). Children and their families and other caregivers must be both taught and supported in order for the iPad's maximum benefits to be realized. The focus remains on the child and what he or she is learning, not the device itself.

Finally, Dixon (2011) states that "…the iPad is simply cool. It has the potential to be a powerfully inclusive tool." Like many other researchers, Dixon emphasizes the importance of continued research to ensure the continued development of evidence-based tools for both speech and communication (and, this author would argue, literacy development) within the tablet arena.

Arya's First App: An iPad Case Study

Arya[2] is four and has a global developmental disability that impacts her motor, language, and cognitive development. She has recently been introduced to the iPad, and currently she plays some games with her sisters that involve her "scratching" at the screen to create and move objects of different shapes and colors. However, both her mother and her speech-language therapist believe this device has the potential to allow Arya to begin to learn how to communicate with others by using assistive speech apps that speak her words for her through the device. The speech therapist recently showed Arya's mother how to download a simple, free iPad app called Sounding Board™ that can be programmed with words (recorded by anyone), pictures ,and sound files that will "speak" the word when the screen is touched.

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[2] name has been changed

Arya's mother and therapist discussed the fact that the short term goal is for Arya to begin to understand that when she presses a picture on the screen, she hears a word that goes with that picture. Basically, she will have to learn to press something on the screen to indicate her choice.

Once the app was downloaded and some sound files added by the speech therapist, Arya was able to try out the *Sounding Board* app while her mother sang "Old MacDonald" to her and held the device right in front of her. Arya responded by smiling and moving her arms and legs, and while she needed physical support on her arm to succeed in pressing on the animal shown on the screen, she stayed engrossed throughout the song activity. After this activity, her speech therapist suggested that, when used as an assistive technology tool with an appropriate app, the iPad may eventually provide Arya with a way to speak. However, she also noted to Arya's mother that the iPad can double as a mainstream device upon which Arya can have fun and learn alongside other children her own age. This view echoes the sentiment from the recent review by Burne, Knafel, Melonis and Heyn (2011) regarding the convergence of assistive technology with mainstream technology, which are sometimes separate, sometimes one and the same.

Conclusion

Developments in assistive technology, including augmentative and assistive communication (AAC) and mainstream technology in early childhood, can support children with disabilities to further both their communication and early literacy development in new ways (Burne et al., 2011). As iPads (and other mainstream digital gadgets) are seen as everyday items, it is important to consider their place in inclusive settings where diverse groups of children learn literacy alongside one another using all the tools at hand. A nonverbal child (like Arya) who talks with her or his iPad may demonstrate literacy skills to the verbal children who are still learning that print or other symbol systems carry meaning. Although not reflected in the available empirical research to date, qualitative research and experience encourage the view that

inclusive digital early literacy is not just for early childhood classrooms. Libraries should also harness the inclusive early literacy learning opportunities made available by mainstream technology such as the iPad. By building on what we already know about how children learn, and drawing on emerging evidence from early childhood education literature such as those referred to in this chapter, children's librarians can begin to use tablet technology to enhance the accessibility and inclusiveness of their current early literacy offerings in public libraries.

References

Aronin, S., & Floyd, K.K. (2013). Using an iPad in inclusive preschool classrooms to introduce STEM concepts. *TEACHING Exceptional Children, 45*(4), 34-39.

Bradshaw, J. (2013). The use of augmentative and alternative communication apps for the iPad, iPod and iPhone: an overview of recent developments. *Tizard Learning Disability Review, 18*(1), 31-37. doi: 10.1108/13595471311295996

Burne, B., Knafelc, V., Melonis, M., & Heyn, P. C. (2011). The use and application of assistive technology to promote literacy in early childhood: a systematic review. *Disability and Rehabilitation. Assistive Technology, 6*(3), 207-213. doi: 10.3109/17483107.2010.522684

Christakis, D.A. (2014). Interactive media use at younger than the age of 2 years: Time to rethink the american academy of pediatrics guideline? *JAMA Pediatrics*. doi: 10.1001/jamapediatrics.2013.5081

Danby, S., Davidson, C., Theobald, M., Scriven, B., Cobb-Moore, C., Houen, S., . . . Thorpe, K. (2013). Talk in activity during young children's use of digital technologies at home. *Australian Journal of Communication, 40*(2), 83-99.

Dixon, D. (2011). The future of apps in the classroom: for children or teens walking into schools this year, as well as for

adults, the iPad is simply cool. it has the potential to be a powerfully inclusive tool. *ASHA Leader, 16*(12), 30.

Dyson, A. H. (2003). "Welcome to the Jam": Popular culture, school literacy, and the making of childhoods. *Harvard Educational Review, 73*(3), 328-361.

Ennis-Cole, D., & Smith, D. (2011). Assistive technology and autism: Expanding the technology leadership role of the school librarian. *School Libraries Worldwide, 17*(2), 86.

Family Center on Technology and Disability. (2012). Autism and the iPad: Finding the therapy in consumer tech. *Technology Voices*(130), 1-13.

Farmer, L.S.J. (2013). *Library services for youth with autism spectrum disorders*. Chicago: ALA Editions, an imprint of the American Library Association.

Feinberg, S., Jordan, B.A., Deerr, K., Langa, M.A., & Banks, C.S. (2014). *Including families of children with special needs: A how-to-do-it manual for librarians* (Revised ed.). Chicago: Neal Schuman.

Guernsey, L. (2012). *Screen time: How electronic media—from baby videos to educational software—affects your young child*. New York: Basic Books.

Hetzroni, O.E., & Schanin, M. (2002). Emergent literacy in children with severe disabilities using interactive multimedia stories. *Journal of Developmental and Physical Disabilities, 14*(2), 173-190. doi: 10.1023/A:1015271531459

Jeffs, T., Behrmann, M., & Bannan-Ritland, B. (2006). Assistive Technology and Literacy Learning: Reflections of Parents and Children. *Journal of Special Education Technology, 21*(1), 37-44.

Jowett, E.L., Moore, D.W., & Anderson, A. (2012). Using an iPad-based video modeling package to teach numeracy skills to a child with an autism spectrum disorder. *Developmental neurorehabilitation, 15*(4), 304-309. doi: 10.3109/17518423.2012.682168

Klipper, B. (2014). *Programming for children and teens with autism spectrum disorder* Chicago American Library Assocation.

Levy, R. (2008). 'Third spaces' are interesting places: Applying 'third space theory' to nursery-aged children's constructions of themselves as readers. *Journal of Early Childhood Literacy, 8*(1), 43-66. doi: 10.1177/1468798407087161

Marsh, J. (2005). *Popular culture, new media and digital literacy in early childhood*. London ; New York: RoutledgeFalmer.

McClanahan, B., Williams, K., Kennedy, E., & Tate, S. (2012). A breakthrough for Josh: How use of an iPad facilitated reading improvement. *TechTrends, 56*(Generic), 20-28. doi: 10.1007/s11528-012-0572-6

McNaughton, D., & Light, J. (2013). The iPad and mobile technology revolution: benefits and challenges for individuals who require augmentative and alternative communication. *Augmentative and alternative communication 29*(2), 107.

More, C.M., & Travers, J.C. (2013). What's app with that? Selecting educational apps for young children with disabilities. *Young Exceptional Children, 16*(2), 15-32. doi: 10.1177/1096250612464763

Neider, D. (2013). Uncommon Sense. from http://neiderfamily.blogspot.ca

Neumann, M.M., & Neumann, D.L. (2014). Touch screen tablets and emergent literacy. *Early Childhood Education Journal, 42*(4), 231-239. doi: 10.1007/s10643-013-0608-3

Winters, K.-L., & Vratulis, V. (2012). Authored assemblages in a digital world: Illustrations of a child's online social, critical, and semiotic meaning-making. *Journal of Early Childhood Literacy*, 1-26. doi: 10.1177/1468798412438752

Wohlwend, K. E. *Literacy playshop: New literacies, popular media, and play in the early childhood classroom*.

Chapter Five:
Evaluation of New Media

by Claudia Haines and Carisa Kluver

With more than a million apps on the market, finding and evaluating new media for use in library programs and to share with families or caregivers for use at home can be a daunting task, especially for the new user. The process can seem complex, but understanding how new media, and in particular apps, work will quickly enlarge a children's librarian's storytime toolkit and empower librarians as media mentors to help library patrons, young and old, access information in all its forms.

Since the launch of the iPad in 2010, the diversity of software for kids, especially young children and children with special needs, has been astounding. While there are many curated resources to assist consumers selecting apps, there still is no simple guidebook to navigating the vast amount of content or pace of change that is found in the new media space. As a result, families and professionals searching for quality educational apps for children need to create their own evaluation criteria. In this chapter, librarians, library support staff, and other educators will find the information needed, including a rubric, to thoroughly and successfully evaluate new media and, in particular, apps.

Librarians have unique institutional and cultural knowledge that bridges formats as reading and storytelling evolve. Their natural instinct to be "format agnostic" is well suited to the digital shift, as people consume content in new ways over time. As part of this

shift, librarians will recognize a natural progression from evaluating print picture books to digital picture books. Grounding this process in established evaluative criteria, and expanding from there, can give professionals, and ultimately parents, the confidence they need to become savvy evaluators of apps.

For example, Table 1, adapted from "ECRR 2.0: Using Apps & eBooks in Early Literacy Programs," a LittleeLit presentation at the 2014 annual American Library Association Conference, shows how print evaluation criteria can be built upon when exploring new media.

Table 1: Application of Print Evaluation Criteria to Digital Formats

Criteria Consistent Across Formats	New Criteria to Consider for Digital Formats
High Quality Illustrations	Relevant Digital Enhancements (interactivity, animation, etc.) to Support Narrative
Easy to Read, Large Font	Seamless Integration of Features, Settings & Digital Enhancements
Developmentally Appropriate Content (Length, Reading Level, Topics, Language, Etc.)	No Interference between Audio, Sound Effects and Narration (if present).
Well-written, Chunked & Paced Text for Intended Audience Age/Attention Span	Technical Polish: Stability, Ease & Flexibility of Use, Good Navigation, Clean Design.

High Quality Content (not thinly disguised advertisement for game, movie, food, etc.)	No ads, In-App Purchases or Links that Leave App (unless under restricted parental gate*).
Engaging Content (worthy of many return visits by intended audience)	Clearly Identified Content Creators (author, illustrator, developer, publisher, etc.)
Ways to Extend Experience Beyond the Book	Quality Games or Extras (if present) That Do Not Interrupt Narrative or Reading Comprehension

*A parental gate is an app feature that functions as a "parental precaution before linking outside of the app" (Akemann, 2013). Examples include completing math equations, pressing and holding the screen for a certain length of time, and swiping the screen in a specified direction.   © Carisa Kluver, 2014

Developmental Considerations

Developmental needs for young learners of different "ages and stages" (Child Development Institute, n.d.) can also be considered as a general guide for families and professionals evaluating apps for children. Some things to consider, age by age, include:

- **Age 0-3** – Focus is on relationship with caregivers, so look for apps that connect/engage children with a caregiver, but use judiciously. Don't forget to consider the caregiver's engagement as a way to enhance any of the 5 early literacy practices.
- **Age 3-6** – Focus is on relationships, including peers. Look for engagement with others, dialogic reading opportunities, turn-taking, etc., as well as literacy supports like highlighting word-for-word in eBooks & apps.
- **Age 7-11** – Focus is still on relationships, but it is also important to consider engagement with subjects the child

enjoys. This helps to foster a love of learning and reading, essential at this age when many avid readers become reluctant. Finding apps that go deeper into non-fiction topics, or support socio-emotional development, is ideal. School-aged app selection can also be guided by common core, but home use should be child-driven as much as possible.

- **Age 12+** – Adolescents are developmentally tasked with the "Four I's" (independence, identity, integrity, and intimacy) but they are also "icebergs" (i.e., much goes on below the surface, often expressed in a need of privacy). Give plenty of choices from quality content that builds on these skills. Apps that teach how to protect themselves and manage their own digital citizenship are also good choices. Content creation for self-expression is particularly important for this age group.

Digital Media: Special Considerations

The process of matching an app to the desired use (or educational need) and to the age and ability of the potential user is an intuitive process that will be familiar to most librarians, teachers, and even parents. However, apps and other new media can have surprises in store for anyone who grew up in the 20th Century. Popular media stories abound about pitfalls, like children who make large, unintended purchases or discover inappropriate content while unsupervised online (Troianovski, 2012).

Librarians, as 21st Century digital docents, can provide invaluable guidance to anyone along the path of app discovery. Not only can they draw parents' and educators' attention to signs of quality, they can also reveal these new dangers for kids, hidden in a very attractive package. These dangers include things like:

- **Coercive monetization** – In-app purchases are not all created equally. If present in apps for children, then they should be under a parental gate and in content for older children, not disguised in any way to confuse or encourage purchases.
- **Links** – Especially in apps for young children, any links that leave the app without a parental gate should be avoided

whenever possible. Most mobile devices can be set to "airplane mode" to disable online access, and many also include advanced settings to lock a device into a single app (called "guided access" on the iPad).

- **Advertisements** – Ads, even for other apps in a series, should be tucked away under a parental gate, especially in content for ages 8 and under.
- **Privacy** – Apps are not allowed to collect or share identifiable information from children under 13, so look for basic COPPA (Children's Online Privacy Protection Act) compliance and a posted privacy policy.
- **Poor Quality** – In the self-publishing environment, watch out for apps with grammatical errors, poor translations, clunky interfaces, and other technical glitches. Aggressively test apps and all their features.
- **Updates** – Digital apps are updated regularly for free, including the addition of features and content. Parents, teachers, and librarians can be thrown off by changes in the app's content or navigation, especially when the addition is unwelcome (like ads or new in-app purchases). Regular operating system (OS) updates for most mobile devices also can change the way an app functions, especially if the app is not well supported with stability updates by the developer.
- **Aging Apps/App Rot** – Over time, digital content can become unstable or even, in rare cases, removed from an app store entirely. Some content is removed by the publisher for business reasons, but most content that is removed is simply unsupported by the developer. This means that any content that is not currently installed on a device may not be able to be reinstalled unless the device is being regularly backed-up onto a computer.
- **Easter Eggs** – Some surprises in digital are meant to be pleasant, like the "easter eggs" or hidden enhancements that many developers put into their digital content. For instance, Pat the Bunny includes literal Easter eggs hidden within the pages, during the weeks leading up to Easter in an update that is seasonal.

Evaluation Rubric

Based on current research and evaluation practices used for print media, an app rubric like the one provided in Tables 2 through 4 of this chapter will help both experienced and new librarians alike to determine if the app in question is best suited for a particular family or program. The rubric is divided into two parts: the technical/user experience criteria applicable to both story and toy apps (Part 1) and then the content criteria specific to either story apps or toy apps (Parts 2.1 and 2.2). For each type of app, there are essentially twenty-two questions to consider. This may seem time consuming at first, but over time these questions will become intuitive and the evaluation process will be less arduous.

As an app is evaluated for technical and content elements, a point is awarded for each question answered with a "yes." While a perfect score is ideal, 11/11 technical elements for example, some apps may not get a perfect score but still have a valuable place in a program or a child's learning experience. It may be helpful to consider Lisa Guernsey's 3 C's—Content, Context and Child—along with this rubric when evaluating apps for children (Guernsey, 2012).

As with other program tools, an app may be appropriate and engaging one on one or in small groups, but may not work well in a storytime setting. Another app may be most valued for its inclusion of multiple languages and a quality story, but may not include other desirable elements.

Part 1: Story and Toy Apps

While different in their designs and goals, both story (book) apps and toy (game) apps should be evaluated according to several similar technical and user experience criteria. About all apps, librarians and caregivers should ask eleven questions (see Table 2).

Table 2: Rubric for Evaluating the Technical/User Experience of Story and Toy Apps

Yes (1)	No (0)	11 Elements Found in High Quality Story *and* Toy Apps (Technical/User Experience)
		1. Is the app's navigation clear for the intended audience? Does it have intuitive way-finding?
		2. Does the app work free of glitches?
		3. Do sound effects, if included, enhance the app experience? Are there settings for turning on/off music and other sound effects, if they are not crucial to the story or play?
		4. Does the app feature a clean, uncluttered display?
		5. Is the necessary equipment available to offer a positive experience? For example, is a large monitor needed to best view the app? Or is the tablet screen appropriate? Does the app require additional physical hardware?
		6. Is the app free of links to social media and the internet? If not, can access be disabled in the app or device settings?
		7. Does the app developer state it will NOT collect data about you or your child within the app?
		8. Are there developmentally appropriate cues for interactivity?

		9. Are there parental tips, restrictions and settings within the app and/or within the device's settings to customize the child(ren)'s experience?
		10. Do the app's technical features encourage joint media engagement?
		11. Is the app free of in-app purchases or in-app ads? If not, are they easily ignored and hard to access by young children? For example, can in-app purchases be disabled in the device settings? Can a password be required for in-app purchases?

Part 2.1: Story Apps

Story apps, or book apps, have unique content and provide specific user experiences. As mentioned above, some of the qualities of story apps are similar to those found in high-quality children's picture books, while some are specific to the digital format. Many book apps are in fact print books transformed for the digital environment. Like the creation of a masterful picture book, a high-quality app is the successful marrying of both artistic excellence and thoughtful technical elements. Story apps, when done well, rely on both. When evaluating story apps, consider these additional questions specific to story apps (see Table 3).

Table 3: Rubric for Evaluating the Content of Story Apps

Yes (1)	No (0)	11 Additional Elements Found in High Quality Story Apps (Content)

		1. Does the app feature a great story with high quality images and a narrative that entices the reader to read again and again? (Repetition deepens a young reader's understanding of the story.)
		2. Is the story original or is it a previously published story that is strongly enhanced in the digital form?
		3. Does the app include accurate information and grammatically correct content?
		4. Are the story's characters culturally and ethnically diverse and include experiences that reflects today's diverse families?
		5. Is the content appropriate for the targeted age group?
		6. Are opportunities to strengthen the Every Child Ready to Read early literacy skills, where appropriate, included?
		7. Does the app include meaningful interactive elements that maintain the story's flow and add to the story instead of being only for interactivity's sake? (Elements should engage the reader and should help the reader better understand the content instead of distract from the story.)
		8. Is the font plain and highly-readable, both of which are beneficial for the learning reader and for groups who are experiencing the app on either a small or big screen?

Yes (1)	No (0)	
		9. Are read-to-me and read-to-myself options available, allowing families to read and listen together? (Narration should be well-spoken and expressive.)
		10. Does the app include multiple language options and a voice record option to foster literacy in home languages?
		11. Does the app's content encourage joint media engagement?

Part 2.2: Toy Apps

Toy apps, also known as game or creation apps, include activities, puzzles, and/or games, usually without the narrative found in a story app. Sometimes these apps are overtly educational and strengthen skills like shape and color recognition. Other toy apps involve imaginative play, drawing or digital painting platforms, or even basic computer programming and coding. Along with the technical and user experience features mentioned above, consider these additional eleven important questions specific to toy apps (see Table 4).

Table 4: Rubric for Evaluating the Content of Toy Apps

Yes (1)	No (0)	11 Additional Elements Found in High Quality Toy Apps (Content)
		1. Does the app offer open-ended play?
		2. Does the app's content encourage joint media engagement and collaboration?

		3. Do the activities, games or puzzles foster creativity?
		4. Is the content appropriate for the targeted age group?
		5. Does the app strengthen one or more of the Every Child Ready to Read early literacy practices, where appropriate?
		6. Are the activities, puzzles, or games customizable depending on the child's interest and experience?
		7. Is the app sufficiently engaging to warrant multiple uses?
		8. Are the app's concepts presented clearly?
		9. Does the app reflect diverse users by including culturally and ethnically diverse characters, environments, and experiences?
		10. Are STEM/STEAM concepts addressed?
		11. Are the images and/or graphic details high quality?

Evaluating apps can be a complex process, especially for the new user. With more than a million apps for children on the market, choosing which apps to start with and then understanding how each of these criteria might look in an actual app can be a daunting task. Consider the following app, and the accompanying evaluation, as an example of the process. The app has been critiqued based on the aforementioned rubric and criteria. Additional evaluations of high quality apps, including both story and toy apps, will also be found in Appendix B of this book. These

apps were selected to coincide with the five practices outlined by Every Child Ready to Read® @ your library® 2nd edition, as well as the early literacy skills they strengthen.

App Evaluation in Action

Felt Board

Developer: Software Smoothie
Audience: 5 years+ (3 years+ with caregiver assistance)
Operating Systems: iOS and Android/Amazon
Cost at time of review: $2.99

Summary: With the Felt Board app by Software Smoothie, children and caregivers design and tell stories with digital felt characters, costumes, backdrops, and other props that reflect a child's own experience or an imagined one.

Technical/User Experience: 11/11
The glitch-free, easy to navigate Felt Board app includes a toolbox on the left, a felt board (called the play area) in the center, and four buttons on the right side. The toolbox includes hundreds of story elements which can be selected by tapping and then dragging on to the backdrop or character. The app includes characters and props for several popular storytime songs, but is free of all sound effects or narration.

To accommodate young users and their developing fine motor skills, clothes fit characters automatically and lock in place when added. Characters and other props can be resized, turned, and moved around the play area. Unused story elements can be discarded by tapping the recycle button and then the giggling element.

A short video tutorial is found by tapping the "?" button. The other buttons include a camera for saving an image of a created felt story to the device's photo gallery, as well as a gallery button which saves the story and all of its pieces for future use to a story gallery, a helpful feature for storytime preparation.

There are no in-app purchases, ads or links to social media or other web content to distract from the intended use. (The video tutorial does not provide access to additional YouTube content.) Software Smoothie includes its privacy policy on its website and does not collect or share personal data.

Toy App Content: 11/11
The richly-colored, digital felt characters and story pieces invite children and caregivers to play with the Felt Board app. They will be inspired to tell their own stories, or retell classics, together because of the wide array of characters, with a variety of skin colors, and a plethora of story pieces that can be added to the digital feltboard depending on user preference.

The open-ended nature of the app encourages repeated exploration. Telling stories about a trip to the zoo, for example, and singing traditional nursery rhymes together using this app, strengthens narrative skills and phonological awareness, both early literacy skills, in a new format. The multi-touch feature (multiple points of contact can manipulate the screen at one time) encourages joint media engagement by offering multiple users the opportunity to collaborate and contribute to the story.
While STEM/STEAM concepts are not a focus of this app's *content*, they could certainly be integrated by the storyteller. However, age-appropriate technology concepts are introduced with this app. In addition to having opportunities to learn how the tablet itself works, storytellers learn to use "drag and drop," a basic gesture common in app technology, as they play.

Conclusion

Ultimately, we are asking caregivers, teachers, librarians, and all adults "on deck" during this digital shift to consider print media alongside alternatives offered by new media when they explore books and other reading materials with young children (birth to five). This introduction needs to be judicious, thoughtful, and limited for our youngest readers, but understanding the world our children inhabit is essential for the adults in this process.

Even if librarians feel reticent about screens and media, being involved with the next generation as they digest changes happening across our cultural landscape benefits everyone. The value for kids who can become astute digital citizens is enormous. They can be the authors of their own lives in the digital age if we give them the necessary tools to explore new media. For anyone in the current generation of kids, authoring and influencing the code and content creation process is a powerful key to future doors that adults today can only imagine opening.

How families respond is individual, but how our community institutions behave has a large impact. Providing solid "reader's advisory" app recommendations in public libraries, alongside ways for teachers to make quality content advice available for parents, is essential. With a vast majority of households owning a multitude of digital devices, we need to treat this space like a bookshelf. It's not the shelf that matters, but what's on display and how it is used. New media is no different from old media in this regard. Our end goal is to see families, communities, and libraries promoting a wide variety of quality digital content in the same way we promoted paper books in the past.

For many of us, the transition is merely about format, but the real power of this digital shift is the ability to reach beyond families that were already on board with reading and regular library visits. For many "digital" families, this may be the first time they have been to a library or found librarians useful—an amazing opportunity for our collective institutions to engage and influence a generation of kids.

Every day children's librarians and educators of all kinds recommend, select, purchase, and share books, audiobooks, magazines, videos, music, rhymes, and even games. Each title is chosen based on professional knowledge about the media itself as well as its early literacy value, childhood development considerations, and the needs and interests of families involved. As the interest in new formats, genres, authors, and illustrators evolves, librarians are responding not just with book recommendations, but as full-fledged media mentors, meeting the

multimedia information needs of their communities. Apps and other new media are many of these things; a new format of a beloved board book for example, thus requiring our interest and informed opinion. But new media is also more than a format and a genre. It is an opportunity.

References:

Akemann, L. (August 20, 2013). How are kids' app developers communicating to parents? Retrieved from: http://blog.momswithapps.com/2013/08/20/how-are-kids-app-developers-communicating-to-parents/

Child Development Institute. (n.d.) Ages and stages. Retrieved from: http://childdevelopmentinfo.com/ages-stages/

Guernsey, L. (2012). Screen time: How electronic media- from baby videos to educational software- affects your young child. New York: Basic Books.

Troianovski, A., Ante, S.E., & Vascellaro, J.E. (June 11, 2012). Mom, please feed my apps! *Wall Street Journal*. Retrieved from: http://www.wsj.com/articles/SB10001424052702303753904577452341745766920.

Stepping Beyond Evaluation: The Creation of the Felt Board — Mother Goose on the Loose App

What happens when youth services professionals, who are experts in early literacy and early childhood development, share their expertise with app developers?

In February 2013, Cen Campbell of Little eLit initiated a conversation between Dave and Mindy Douglas of Software Smoothie, an app development company, and Dr. Betsy Diamant-Cohen, creator of the Mother Goose on the Loose (MGOL) early literacy program. Software Smoothie had developed an app in 2012 that was popular with librarians for early childhood storytimes, called Felt Board. That app had lots of options, but Campbell and Diamant-Cohen had an idea about converting specific content from the award-winning MGOL program into a dynamic, interactive app for young children and their caregivers..

The resulting app, Felt Board – Mother Goose on the Loose, was created as a free variation of Software Smoothie's digital flannel board. The iPad app was released in November 2013 and is intended to be used in early literacy library programs for young children as well as at home. Templates from MGOL were used to create digital felt board pieces, and the app also includes MGOL music. In-app guidance is available for parents, librarians, and educators regarding the intentional and appropriate use of

technology with very young children. The app's features are available in both English and Spanish.

Training in using digital technology as an early literacy tool is provided through MGOL 2.0, created in collaboration with Campbell. The philosophy behind the app is the same as that behind MGOL, and this new media offering includes Diamant-Cohen's thoughtful statement about using tech with young children:

> *"Technology handled with careful consideration, in moderation; in ways that fit in with the program's intent and don't overwhelm, that enhance but don't replace, and that encourage parent/child interaction is appropriate for use in a Mother Goose on the Loose program."*

-Carisa Kluver

*image used with permission from Betsy Diamant-Cohen

Chapter Six:
New Media in Storytimes: Strategies for Using Tablets in a Program Setting

by Carissa Christner, Anne Hicks, and Amy Koester

When libraries and their staff make the decision to mindfully integrate tablet technology into their toolbox of storytime supplies, it can be overwhelming to consider the myriad strategies in which a storytime provider might wield the technology within a program. This chapter seeks to provide detailed examples of ways in which tablet technology may be used in storytimes, including methods of sharing devices with a group and the functions a device can serve in the program setting. Two sample preschool storytime plans that incorporate new media elements will be shared in Appendix C of this book.

Sharing Tablet Technology with a Group

The logistics of using a tablet in storytime depend largely upon the technology equipment available to the library. What equipment is available for use in projecting or sharing the contents of a tablet with the group? Another significant consideration in determining the appropriate tablet-sharing method for storytime is the size of the storytime group; the size of the storytime facility; and the age of the storytime attendees.

Single Tablet

One simple way to integrate apps and ebooks into storytime is to hold the tablet facing the audience in the same manner one would hold a print book. The librarian would do the swiping and tapping as he or she guides the audience through the app or ebook. Due to the relatively small size of a tablet, this method works best for sharing with small groups (approximately 20 people or less). The benefit to this method of using a tablet in a storytime setting is that, beyond the tablet itself, it requires no other equipment or technical knowledge. For those librarians who do not have experience integrating technology into their storytimes, simply holding the tablet for all to see is a wonderful introduction and will allow the practitioner to build up confidence.

Projecting a Tablet

If the library already owns a projector, it is relatively simple to project the iPad screen onto the wall or projector screen. The method with the smallest investment of time and technological knowledge involves purchasing a VGA to iPad adapter (usually Apple branded), or the equivalent for Android devices. Locate the VGA cable on the projector, connect the purchased adapter to the cord, then plug the iPad into the adapter. This method allows the tablet's screen to be projected onto a wall or white screen, which results in a larger viewing size. This method can be useful for storytime groups of any size, but is particularly well suited to large groups.

Potential limitations do exist when using a projector to display the contents of the tablet's screen. Because the tablet is physically connected to the projector by cords, the storytime leader's movements are limited by the length and weight of the VGA cable. Additionally, the connectors can be unreliable; it is worth the library's time to research what connectors will work best for their storytime setup. It is recommended to bring staff in the information technology department, or other staff most familiar with the library's projection technology, into this conversation. It is also worth spending money on high-quality connectors to ensure ease

of use and reliability.

A final limitation is that not all apps that are loaded on a tablet will be compatible with VGA projection. There may be certain apps, or certain aspects of apps, that simply will not project in this method. It is advised that the storytime provider take steps to ensure that desired apps can be projected using this method.

Mirroring a Tablet to a Television

Mirroring a tablet to a television is another way to enlarge the viewing size of a the tablet screen. This method allows the storytime provider to use the tablet with a large group. There are two ways to mirror a tablet to television. One method involves using an HDMI cable and an appropriate iPad adaptor (or Android equivalent for Android devices) to connect the two devices. i.e., the television and the tablet. This arrangement allows the librarian to display the tablet screen onto the larger television screen. Since the tablet is connected to the television via a cable, the storytime leader is limited as to how much he or she can move around the room while still using the tablet.

The second method allows the librarian to wirelessly mirror the tablet screen to the television. This method gives the storytime leader full freedom to move around the room while still using the tablet. To achieve this method, the librarian will need a stable and secure wireless internet (wifi) connection, an Apple TV (or similar streaming device, such as a Google Chromecast), and a tablet. Both the Apple TV and the tablet must be connected to the same wifi network. For those storytime leaders who do not have access to a stable wifi connection, another option would be to use a cellphone as a personal hotspot or to purchase a wireless media hub. Once both devices are connected to the wifi network, the storytime leaders can simply turn on "mirroring" within the tablet's settings.

Fleet of Tablets

Libraries with the purchasing resources and storage facilities may

consider using a fleet of tablets for storytime. This use for storytime allows each attending child and caregiver to share a tablet during the program. The child and caregiver can engage with book apps one on one, exploring stories together at their own pace.

To prepare a fleet of tablets for use in storytime, the tablets should be loaded with a selection of ebooks and book apps. Apps can be chosen to connect to storytime themes, to promote specific early literacy practices, or to meet other specific storytime goals. The storytime provider can direct how and for how long children and caregivers will enjoy tablet sharing time. For example, each pair can be instructed to share a specific app. Alternately, the storytime provider can give instructions for use with any app; e.g., "Choose a book app to share and talk about what's happening on the screen"; "Choose an app to share and say new vocabulary words out loud together"; or "Before moving to a new page in the app of your choice, ask your child what they think will happen next."

Sharing stories and interactive games through a fleet of storytime tablets allows children and caregivers to engage jointly in the media. Joint media engagement is key for using any material together, whether book or tablet; when child and caregiver share tablet time in storytime, the storytime provider can model and give tips on joint media engagement in the context of the program.

Libraries using a fleet of tablets may consider a variety of supplies to use with the storytime tablets. One possible supplementary purchase is protective cases for each device; libraries can choose the style of protective case that will provide the desired level of physical security while the tablets are being used by storytime attendees. Another supplementary purchase is headphones and headphone jack splitters; when a splitter is used, two pairs of headphones can be used on a single device, allowing both the child and caregiver to enjoy the sound of the book apps without creating a large amount of noise in the storytime room. If headphones are used, the library should maintain a plan for sanitizing headphones after use in programs.

Additionally, since the tablets in a fleet will be used directly by library customers, each device should have password-protected security provisions in place. Library staff can determine the appropriate level of security needed for the devices. Essentially, these security restrictions will prevent any changes being made to the devices during use in the program, from purchase or deletion of apps to internet access to in-app purchases. Such restrictions can ensure that the storytime provider maintains control over the content on the tablets.

Tablet as Storytime Tool

Whether the storytime provider uses a tablet as a hand-held device or mirrors the tablet to a projector or television, there are many different ways apps can be used in storytime. All strategies discussed in this chapter are meant to supplement and/or enhance—never replace—successful traditional storytime elements. Beyond reading book apps or ebooks from the tablet, apps can be used as games, conversation starters, and ultimately opportunities for active engagement. Just as we sing songs, use puppets, or do flannel boards in storytime, there are a variety of wonderful apps that can be included in the librarian's bag of storytime tricks.

Tablet as Book

One of the most traditional ways to incorporate apps into storytime is to use a book that has been turned into an app, or story apps created specifically for use on tablets. In the same way that librarians have been using flannelboards, big books, puppets, and other non-standard books to enhance the literacy experience for years, book apps are another platform to share and interpret the written word. The interactive elements can be likened to the moving parts of pop-up books.

Selecting a Book App

Librarians searching for book apps to coordinate with a particular storytime theme may start in the iTunes App Store or Google Play

Store using a keyword search. If the selection is too vast or too sparse, there are a number of online resources that post reviews of apps. One reliable source, especially for book apps, is www.digital-storytime.com. This website is curated by one of the co-authors of chapter five of this book, Carisa Kluver, and the site focuses on books apps for children. Digital Storytime includes hundreds of reviews of book apps, and reviews include qualities that will affect the usability of an app in a storytime setting, such as audio quality, animation, interactivity, and re-readability. This and other review sources make it so storytime practitioners do not have to sift through lots inappropriate apps just to find a handful that will work for storytime.

The selection of book app titles is not yet anywhere near as vast as the selection of print books. Some of the book apps available on the market are translated from print books, while others are original stories written expressly for the app. These original stories are similar to self-published print books. Just as in the world of print, many self-published titles may be less polished than those that go through the traditional publication process. As a practitioner chooses an app to use in storytime, he or she should still apply the same criteria to books that will be read on a tablet as they would to print books (see Chapter Five for a full exploration of evaluation criteria). If the text is poorly written, or the illustrations are unattractive and would not be presented if it were a hardcopy picture book, consider carefully whether the book app is worth sharing with storytime patrons.

Presenting the Book App

Storytime providers should be sure to spend some time with their storytime book apps before sharing them in front of the group. This practice ensures that practitioners know where all the moving parts are, whether a book has any unanticipated surprises, and how long the book will take to read. Whenever possible, it is advised that the storytime leader choose the "read it myself" option or, if that is not possible, mute the device by turning the volume all the way down. This strategy allows the storytime leader to use the book app at his or her desired pace.

If the app will be projected onto a screen, the recommended procedure is to stand up beside the screen and watch the same screen that the audience is watching as much as possible (rather than watching the small tablet screen). Of course, the librarian will have to look at the device to turn pages or to activate some of the motions, but those actions should be kept brief and the majority of eye contact should be with the projected image or the audience. As a result everyone in the room will be looking at the same output and adjustments can be made if necessary.

Other than these minor considerations, reading an app during storytime is quite similar to reading a book. The librarian should still engage the group with questions and comments as the app is read. If, while previewing the app, the moving bits of the book prove to be a distraction rather than an enhancement of the text, simply leave them out and read the book straight through during storytime.

Tablet as Audience Participation Element

Another way to incorporate apps into storytime is through pretend play as a group. The best apps for this purpose allow children to help the storytime leader choose how to build or do something. To facilitate this sort of app sharing with the group, start with a quick verbal introduction to the basic concept of the app, then ask the group to shout out their choices (e.g., "Should we choose a round box or a square one?"). The librarian may choose to use the loudest or calmest suggestion or could ask for a show of hands to provide a quieter atmosphere. Once all the choices have been made, demonstrate most of the salient features of the app (e.g., "You can incorporate your own photos into the app as background or texture."). Then, if there is related gameplay, the librarian can play through one or two rounds, then choose whether or not to invite children and their caregivers to jointly use the app on the librarian's tablet when storytime is over.

Tablet as Story Extender or Activity

The tablet can be loaded with apps that allow the storytime

practitioner to extend stories shared in the program setting, usually through talking and other interactive practices. Talking is one of the five practices outlined in the 2nd Edition of Every Child Ready to Read® @ your library® as a way to develop early literacy skills. Using tablets with children as a story extender or activity is an effective way to promote conversation and increase vocabulary amongst the children in storytime. It also provides the librarian an opportunity to model, to the adults in the room, best practices for sharing digital media with children. Ideal apps for this use will require a lot of conversation.

Tablet as Song Sheet

Storytime providers may find it preferable to use the tablet in place of printed song sheets and signs. Using a tablet and app to display song and rhyme lyrics saves paper—the library does not need to print and make copies of rhyme sheets for all program attendees. Additionally, by projecting rhymes and lyrics onto a wall/screen or mirroring them onto a television, it is generally easier for typical attendees to see the lyrics during the program. This strategy is particularly useful in baby and toddler programs, where the children may grab or become distracted by paper handouts, prohibiting caregivers from reading or singing along in the program.

Two types of apps are recommended for creating and sharing song sheets on a tablet. The first is a slideshow app like Keynote on iOS or Powerpoint on Android platforms. In these slideshow apps, the storytime provider can type the relevant lyrics on an individual slide, which will then be displayed during the storytime program. Multiple rhymes can be entered onto multiple slides, and the slides can be arranged to reflect the order they'll be used in the program. Slides can be reused in multiple programs, and they can be shared with storytime families who want a reference for use at home.

A second app for creating and displaying song lyrics is Evernote. This free app requires the user to create and log in to an Evernote account, which is also free. Evernote allows users to create notes,

which can be tagged with keywords and sorted into notebooks to allow for easy sorting and searching. Essentially, the user can create an entire library of songs and rhymes used in storytime by typing the lyrics into individual notes. When a particular song or rhyme is desired for a program, its note is called up and projected when needed. Storytime providers can access all needed songs and rhymes in the context of a single program by pulling up individual notes. This app is also linked to a web-based interface, so a user can log in online to create and edit individual song and rhyme notes. Updates and additions will be synced to the app when the tablet is connected to the internet.

Tablet as Flannel Board

The tablet can function as a flannel board tool. Based on reviews and testimonials of storytime providers, the most popular flannel board apps are two from Software Smoothie: Felt Board (evaluated in Chapter Five) and Felt Board - Mother Goose on the Loose (evaluated in Appendix B of this book).

The Felt Board app allows for plenty of customization on the part of the user. The user can select the desired felt background, create diverse people dressed in a wide range of clothes and costumes, and insert scenery and objects that feature in many traditional folk and fairy tales and children's rhymes. For example, the user can create a digital flannel story to go with "Five Little Monkeys Jumping on the Bed" or "The Old Lady Who Swallowed a Fly."

The storytime provider can use this app in a number of ways. It can be used in real time, with objects and props in the story being added and removed as the script necessitates. It can be used as a group activity, with children interacting with the storytime provider to decide what elements will be added or removed from the story as it is being told. It can also be used in a more rigid arrangement, in which the story is told through a series of flannel scenes that are captured using the app's camera function or the tablet's screenshot function. These images of static scenes can be loaded into a slideshow on the device and projected in a desired order

during the storytime.

The Felt Board - Mother Goose on the Loose app is specifically designed to work with Dr. Betsy Diamant-Cohen's Mother Goose on the Loose program for young children. The app contains props to visually "tell" a number of common children's nursery rhymes, like Little Miss Muffet and the Itsy Bitsy Spider. This app also includes musical and vocal accompaniment, allowing the storytime provider to share the words and tune to these Mother Goose rhymes with everyone in the storytime program. Many of the rhymes include Spanish-language versions. This app can be used to present nursery rhymes in real time, but it can also be used for free play as children create stories of characters from different rhymes interacting with one another.

Tablet as Puppet Show

The Sock Puppets app allows storytime providers to integrate some basic puppetry into storytime without requiring physical puppets or puppetry expertise. The app allows the user to select one or more sock puppet figures, then record speech for each of the puppets. The tone and pitch of the recorded speeches are altered, so the puppets deliver their speeches in an amusing way.

This app can be used to create pre-made introductions to storytimes or storytime activities. For example, at least one library has used the app to record their storytime rules, which are shared at the beginning of each storytime.

The app can also be used in storytime to create brief, silly puppet shows with attendees. Children can recreate key phrases from stories and rhymes using the sock puppets, creating an engaging and memorable storytime experience.

Tablet as Free Play Time

Tablets can serve as a tool for free play in storytime, especially with a fleet of tablets as outlined earlier in this chapter. To use tablets for free play, the device should be loaded with library-

selected apps that offer opportunities for interactivity and joint engagement for both child and caregiver. Ideally, apps used for free play will be open-ended, or at least self-paced. The goal for using apps as a play option is to allow children to decide how they want to use the app—to create stories, to make silly creatures, to complete puzzles, etc. Apps for free play should allow children to explore and create as opposed to passively consume media.

Tablet as Opportunity for Joint Media Engagement

The term "joint media engagement," coined by the Joan Ganz Cooney Center (Takeuchi & Stevens, 2011), is used to describe the practice of people learning *together* through the use of media. As media mentors, librarians can and should use the opportunities that storytime provides to model to caregivers what appropriate joint media engagement involves. This can be done using any of the methods discussed in this chapter, but the librarian should make deliberate choices about what apps are included in storytime and how they are used. For instance, as the storytime leader uses the Felt Board - Mother Goose on the Loose app, he or she should interact with the children by asking questions, pointing out details on the screen, and requesting that the children sing along to the nursery rhymes.

Conclusion

Whether the librarian mirrors a tablet to a large screen or provides a fleet of tablets during storytime, he or she is creating opportunities for joint media engagement with the children and opening up a dialogue with caregivers about positive media use. Without exception, all use of new media in storytime settings should promote joint engagement between young children and a caregiver—be it a parent, librarian, or other figure.

Reference

Takeuchi, L. & Stevens, R. (2011). The new coviewing: Designing for learning through joint media engagement. New York, NY: The Joan Ganz Cooney Center at Sesame Workshop.

Chapter Seven:
Managing New Media for Youth Services

by Genesis Hansen

As we examine the use of new media in library programs and services for young children, it is important to consider the practical aspects of acquiring, managing, and maintaining the technology involved in delivering these services. As with most technology projects, some thought, preparation, and planning at the outset can prevent many problems in the implementation process. Since new media technology is rapidly and continually changing, this chapter will give a survey of issues to consider and some resources to help in the decision-making process rather than specific recommendations. The chapter will conclude with case studies of two libraries' experiences with managing their new media devices intended for use with young children.

Technology Planning

Begin by looking at early literacy and new media technology as part of the larger technology picture for your library. For many youth services staff, technology management is not a primary job responsibility; however, when integrating tablets or other devices into literacy programs, youth services staff may find themselves taking on an integral role in the setup process, or at the very least working more closely with IT staff. Being able to consider the needs of the technology implementation project within the larger

framework of the organization goes a long way toward gaining the trust and cooperation of those who will be helping set up device management solutions, and it makes for a more effective working relationship going forward. Make sure to consult with key technology staff at the library at the outset of any project to add new media technology into services and spaces for young children.

Does your library or organization have a technology plan in place? If your library uses E-Rate discounts, you probably do. Getting an overview of any plans that are already in place will give you useful information (and ammunition) as you make requests to the technology gate-keepers in your organization. An overview of these existing plans can also allow you to make sure that your project priorities and strategies are aligned with the larger organization. An up-to-date technology plan can also be an excellent resource in support of a grant application if you will be seeking grant funding for new media technology.

If your organization does not have a technology plan in place, there are resources available to help you start, including from TechSoup for Libraries and Universal Service Administrative Company (see full resources list at the end of this chapter). Even if you are unable to undertake development of a full technology plan, it is wise to consider some larger questions before jumping into an implementation of digital technology for early literacy.

Intended Use Considerations

Think about short- and long-term goals for your new media implementation. How will devices be used, and by whom? A pilot project seem like a good way to start small; it may be more manageable to start with and make it easier to get buy-in. At the same time, however, you need to think through your ultimate goals and where you want to end up before designing a smaller-scale pilot; this forethought can better ensure a smooth transition as you scale a pilot project into a more comprehensive implementation. For example, if you start with one or two tablets in the library but know you eventually want to have 15, make sure you work toward

a management plan that will accommodate the larger number of devices. It is not necessary to have everything in place at the outset, but you also do not want to have to create a new system for device management every time your inventory changes.

Will you have devices for use by the public, or by staff only? Will the devices be used exclusively in supervised programs, or will patrons be able to check them out? If patrons can check them out, are they for use in-house only, or can they be taken out of the library? All of these decisions have ramifications in terms of how you deploy a technology implementation in the library, and all should factor into considerations of intended use.

Budget Considerations

Deciding on the types of devices to purchase is a balancing act of budget, features, intended use, content, and considerations specific to individual libraries. In the libraries interviewed for this chapter, devices running iOS (i.e., Apple devices) are the most common, followed by Android devices. In terms of cost comparison, Android devices can be purchased more inexpensively than iOS devices, allowing an organization to provide more devices for their budget. The Android app market has surpassed the iOS market in terms of worldwide downloads, although iOS app sales revenue is still significantly higher (Ranger, 2015). Additionally, criticisms of Android app quality as compared to iOS apps still remain. If availability of high-quality apps is a deciding factor in whether to purchase iOS or Android devices, professional app reviews are a good tool in finding quality content for any platform you may choose.

In purchasing devices, make sure to consider repair and replacement costs as well as initial purchase. Beware of making selection by budget alone—perform hands-on testing of any models you are considering for purchase. Ultra-low-budget Android models can sometimes be purchased for well under $100, but these models often have inferior touch screens which make them difficult to use, especially with children.

It is also important to consider accessories and peripherals when thinking about device cost. For circulating devices, sturdy cases are a must. Do you want to have devices available for hands-on use in the children's room without checking them out? A locking case with a wall mount or stand may be a good option. The larger your device collection, the more likely you will want some sort of charging tray or cart to store and recharge devices in the most space efficient manner. If you want to use a device in story time or outreach, you may want to purchase a dongle for connecting to a projector. These relatively small accessories costs can add up quickly, so give plenty of thought to how the devices will be used and plan accordingly.

Security and Access Issues

If your library uses E-Rate, or if your organization's policies require it, you must ensure that devices used by children are in compliance with the Children's Internet Protection Act (CIPA), which means filtered Internet access. There are multiple options available for providing filtered internet on new media devices. Apps such as NetNanny, Mobicip, and others offer a variety of controls for filtering and content monitoring and are available for both iOS and Android. For example, in iOS you can disable the Safari browser and install a filtered browser to use instead.

Another option to limit access to apps or settings on the device is to use a "kiosk" app or the "Guided Access" feature on iOS. This strategy allows the administrator to restrict access on a device to a single app and prevents the user from exiting it. This setup can be a very useful option in a children's library setting—a device can be secured in a locked case, for example, and can be set to display an "app of the day" in kiosk mode. Staff can attend to regular business without needing to closely monitor the device to prevent children from accessing device settings or other content.

Device and Content Management

One challenge of deploying tablet technology for library use is that tablet devices were originally designed for a single user. As the

tablet market has grown, changes have been made to the operating systems and enterprise solutions have become available which address some of these challenges, but the best deployment option for your library still requires planning and thought.

For managing a small number of devices, using one account with iTunes or Google Play to sync content between devices may be a viable option; this method is used by many libraries, especially in the early stages of new media deployment. Depending on the type of content (e.g., app, ebook, music, etc.), you may be able to load one purchased copy onto 5, 10, or unlimited devices. Apple offers a Volume Purchase Program that allows bulk purchase of content like apps, and some discounts are available for purchase of more than 20 copies. Google Play does not currently offer a comparable program for business or government, although they do have a bulk purchase and management option for K-12 schools (Google Play for Education). For larger-scale device deployment, Apple offers a Device Enrollment program that can be connected to an organization's Mobile Device Management (MDM) solution. Alternatively, for Apple devices that will be used by multiple users (e.g., circulating iPads in a library), Apple recommends Apple Configurator for managing devices.

MDM solutions can simplify content and device management across a large number of devices and enable the creation of different profiles or user groups. These solutions can be very challenging to set up initially (at least one library has indicated they would forego using an MDM with their small number of devices were they to begin again), but they generally work well once fully deployed. There are several MDM options that are free (e.g., Configurator, or Cisco's Meraki—free up to 100 users); most can handle devices from multiple platforms. This option can be an excellent solution if you want to have multiple groups of devices. You can set up separate parameters for a staff group and a patron group, or you can create different patron groups by age. MDM solutions allow the administrator to distribute apps to multiple devices at once without having to handle each device individually.

If you plan to circulate devices, it is necessary to think about policies for loss or damage, who is allowed to check them out, etc. Due to the high cost of the devices themselves, some libraries are more restrictive in their lending policies; e.g., limiting circulation to inside the library building, or to adult patrons only. When circulating devices are returned, it is generally a good idea to restore them to a standard profile. This action can be done with an MDM solution or by manually restoring from a backup. This process should be standardized for any staff handling devices and kept as simple as possible. Since Android is an open-source platform, knowledgeable users can customize their own maintenance solutions, as done by the Valley Library at Oregon State University (Nichols, Hussong-Christian, & Ordway, 2014).

Regardless of which solution you choose for your library, it is imperative to have a plan to accommodate app and operating software updates as well as collection management. In talking to several libraries for the preparation of this chapter, it became clear that none had reached the point of having to think about weeding their app collections. However, some apps can use significant storage space, so it is entirely possible to reach a point where you can no longer keep all the apps you own on a given device. Decisions will have to be made about which apps will be loaded on each profile and how often those apps should be changed or rotated.

Most of the libraries consulted for this chapter were still developing their policies and procedures for new media collection development. Some libraries are using a formal rubric for app evaluation (see an example in Chapter 5 of this book), while others are simply applying collection development methods from traditional print and media collection development to new media offerings.

The mission and intended audience for a new media technology implementation also have significant influence on what devices and software will be acquired. At Mission Viejo Library, our iPad collection focuses on use in early literacy contexts, so we

evaluated our app collection primarily around how well each app supports one or more of the five early literacy behaviors (talk, sing, read, write, play). This early literacy aspect is how we share the technology with parents and caregivers.

Because there are many excellent free apps, and many paid apps are typically periodically offered at a discount or for free, it does not take a significant budget outlay to build a good collection of apps to use in library services. Still, it is important to consult review sources and try each app before making it available to patrons.

Legal Disclaimer

As you make decisions about implementing new media technology in your library, always consult the most recent terms of service/end user license agreements for the devices and platforms you are considering. Consult with the legal counsel for your organization to make sure that the library's use is not violating any terms.

Case Study 1: Darien Library (Darien, CT)

Darien Library was a front-runner in using new media for early literacy service at the library. In September of 2011, they launched a set of 6 circulating Early Literacy iPad kits. Today each kit includes:

- iPad 2 loaded with librarian-selected apps and ebooks, in a heavy-duty protective case
- charger
- handouts with information for parents:
    - list of apps on the iPad (also available at: http://www.darienlibrary.org/kids/apps-tech/5880)
    - app evaluation criteria for parents and caregivers
    - information on using technology with children
    - recommended resources and reading on digital literacy and child development
    - download instructions for free library ebooks

- survey form
- liability form (the caregiver fills this out when they check out the kit, accepting financial responsibility for replacement if they damage the iPad)

Apps on the iPads are organized into the five early literacy practices (talk, sing, read, write, play), with approximately 6-8 apps available for each practice.

In addition, Darien Library has mounted an iPad in a locking case on a shelf end-cap in the children's area for daily use by children in the library. They use the Guided Access feature on the iPad to limit access to one app at a time.

Darien did consider other tablets (although the market was much more limited at the time they launched their service), but they chose Apple iPads for several reasons: user experience; ease of use; and availability of quality content (the app market at the time was much stronger for iOS devices). Those considerations are still of top importance when they evaluate devices for future purchases.

Darien librarians reviewed many apps before selecting the ones to load on their circulating iPads. They approached this task much like the process of developing book lists, first developing desired criteria and then searching for apps that fit the profile. They looked for apps appropriate for ages 2 to 5, particularly those that support pre-literacy skills such as letter knowledge, phonological awareness, and narrative skills. They also considered the design of the app, making sure each was aesthetically pleasing, functioned well, and was easy to use. The librarians used a shared Google document to record their evaluations, then pared down the list to make sure they had a diverse group of apps that supported a variety of skills and modes of play.

When a circulating iPad kit is returned to the library, staff wipe and restore it from an iCloud backup of the Early Literacy iPad profile. This process erases any patron information that was stored on the

device and ensures that all of the library's apps are installed; the process takes about 3 minutes. The iPad is then charged and the next hold on the device is processed. By the time the next patron picks up the Early Literacy iPad kit, it is fully charged and ready to go.

Case Study 2: Newport Beach Public Library (Newport Beach, CA)

Newport Beach has 20 iPads which can be checked out for use inside the Central Library: 10 for adults and 10 for children. The loan period is two hours, and iPads can be renewed if there is at least one device still available. Patrons must have a valid library card and must leave their photo ID (e.g. drivers license, passport, or student ID) at the desk for the duration of the checkout period. Patrons are responsible for repair or replacement costs if the device is damaged.

The children's iPads are currently loaded with 34 apps, most of which are ebooks or apps focused on early literacy skills. However, Newport Beach iPads also circulate to older children and there are also some math, science, and history apps that support common school projects and early elementary curricula. App selection is handled primarily by one librarian but with some input from the other children's staff.

Newport Beach uses Apple Configurator to manage their devices in conjunction with two charging stations: one large charging/syncing cart in the adult area, and one smaller charging/syncing tray in the children's area. When iPads are returned, they are plugged into the cart or tray which is connected to Configurator. It restores the iPad to the appropriate profile settings (adult or juvenile) and charges it in preparation for the next checkout.

The IT staff at Newport Beach found Configurator challenging to set up initially. They also found that they were having frequent problems with iPads crashing during the update and restore process, and after extensive troubleshooting made two changes

that resolved the bulk of the issues: 1) they disabled automatic updates, and 2) they switched to a wired configuration for the charge/sync trays that work with Configurator, rather than wireless. These changes greatly improved the reliability and functionality of the device management solution.

Newport's IT staff also evaluate each potential update to determine how valuable and/or necessary the potential changes might be. Rather than update the operating software every time an update is available, they follow user reports to anticipate potential problems and weigh those against the features provided in the update to determine whether or not to implement. IT staff report that they are updating approximately every other time an update is available.

Resources for Further Reading

Technology Planning

- Introduction to the Technology Planning Process, from TechSoup for Libraries: https://www.techsoupforlibraries.org/cookbook-3/planning-and-decision-making/technology-planning-process
- Technology Planning, from Universal Service Administrative Company: http://www.usac.org/sl/applicants/step01/

Device and Content Management Decisions

- Apple Configurator: Transitioning to Apple Deployment Programs, from Apple: https://support.apple.com/en-us/HT202977
- Distribute Android apps in your organization, from Google Apps: https://support.google.com/a/answer/2494992?hl=en
- Google Play for Education access, from Google Apps: https://support.google.com/edu/play/answer/6056739?rd=1

Legal Considerations

- Apple iTunes terms and conditions: https://www.apple.com/legal/internet-services/itunes/us/terms.html

- Apple VPP Terms and Conditions: http://www.apple.com/legal/internet-services/itunes/volume/us/terms.html

- Children's Internet Protection Act, from the Federal Communications Comission: http://www.fcc.gov/guides/childrens-internet-protection-act

- Google Play Terms of Service: https://play.google.com/intl/en_en/about/play-terms.html

Sample Lending Policies

- Fort Worth Library Early Literacy iPad Loan Agreement, from Fort Worth Library: http://fortworthtexas.gov/library/info/default.aspx?id=101914

- Laptop/iPad Borrowing Policy, from Newport Beach Public Library: http://newportbeachlibrary.org/about/policy/laptopipadpolicy

General Device Guidelines for Libraries

- "iPads" in the Library Guidelines & Recommendations, from Mobilary: http://mobilary.wikispaces.com/ipadguidelines

- Lending iPads 101: Steps to Loan from Your Library, from Providence College: http://works.bepress.com/cgi/viewcontent.cgi?article=1027&context=julie_decesare

References

Nicols, J., Hussong-Christian, U., & Ordway, R. (2014). Customizing Android tablets for a shared environment. *Code{4}Lib, 24*. Retrieved from http://journal.code4lib.org/articles/9482.

Ranger, S. (2015). iOS versus Android. Apple App Store versus Google Play: Here comes the next battle in the app wars. *ZDNet*. Retrieved from http://www.zdnet.com/article/ios-versus-android-apple-app-store-versus-google-play-here-comes-the-next-battle-in-the-app-wars/.

Chapter Eight:
Tech Savvy Library Professionals: Competencies, Training, and Development for New Media Library Initiatives

by Jennifer L. Hopwood

As technology advances, user manuals keep getting smaller and smaller; oftentimes new devices come with no manual at all. The user is expected to look at a company's website for information on how to use a device or to figure it out on their own. This is no problem for someone who is tech savvy, but for the novice user this can be a daunting experience. Many members of the communities our libraries serve, as well as some library staff tasked with assisting community members, fall into the category of "novice users" when it comes to new media and other emerging technologies.

Library staff need to be tech savvy in order to be able to address community technology questions; nothing makes an organization look less relevant to community stakeholders than a staff member who says they don't know or can't help. Additionally, library staff must be tech savvy with regard to the library's own internal technology, including projectors, computers, databases, and, increasingly, new media. Staff that work towards building upon their personal technology competence are more productive, successful, and have more opportunity for advancement.

New media and other technology changes at such a rapid pace that what is trending one day might not continue the next. Not only does staff need to be knowledgeable of current technology trends and advances, but they also need to keep up to date on any changes that reflect on their profession or fall within the scope of their duties.

This chapter explores a range of training models, training facilitation practices, and informal learning opportunities as related to developing and strengthening the new media competencies of library staff serving children and families. This chapter draws from the author's professional experiences as a trainer and training facilitator.

What Does New Media Have to Do with Training for Youth Staff?

Storytimes are designed to prepare young children for school readiness through the introduction of literacy concepts and socialization. However, schooling has changed since the days of the early children's librarianship pioneers. Many school systems have already begun to incorporate 1:1 device programs and coding classes into their standard curriculum, many of which start as early as kindergarten. SMART Boards are used in classrooms across the country. Parents have already adapted the use of mobile technology into their regular routines. School readiness now includes digital competencies. In order for libraries to help children develop these digital competencies needed for school readiness, library staff serving youth must also possess digital competencies.

Facilitating New Media Training

In a perfect world, library systems would all have designated staff training experts who can devote their time 100% to staff training and nothing else. Unfortunately, we do not live in this perfect world, and training often falls to a range of staff at an institution, many of whom may have little background in training methods.

Even if you are not fully immersed in the taxonomy or pedagogy of adult learning styles or professional development, however, by utilizing the information below, even the training layperson can implement a successful technology training program.

Competencies

In order to prepare staff to be successful when assisting patrons with new media and other technology questions and troubleshooting, or even to use technology as part of their own daily duties, organizations need to develop technical competencies. Competencies are designed not as specific skills or tasks, but as those characteristics that a successful employee needs to be able to perform. By supporting and developing these competencies, organizations can assess where staff have competency gaps—which can also help alert library supervisors to areas in which supplemental training is needed. Competencies assessment also relays to staff those characteristics that the organization considers important to job performance.

Some core competencies for library staff include:

- Technical knowledge
    - Understanding and use of various technology applications and devices
    - Subject matter understanding for the application of the device being used
- Problem Solving & Prevention
    - Reviewing, replicating, and drawing conclusions based on given information
    - Recognizing, exploring, and using a broad range of skills to think logically about a situation
    - Conceptualizing and developing frameworks and practices for best usability and understanding
    - Ability to recognize needed action in various situations
- Communication
    - Communicating information, observations, and conclusions for best understanding and actionability

- Ability to present information orally to achieve intended purposes
- Ability to prepare written material that is appropriate for the intended audience and achieves its purposes
- Ability to gather information from individuals and groups regarding insights on methods and applications
- Accountability
  - Knowing own limitations and recognizing areas needing improvement
  - Continuous education toward increasing knowledge base

Surveying staff is a great way to assess current levels of competence with regard to new media and other technology. This type of survey should ask staff to list their knowledge, skills, and abilities as they relate to specific types of technology. Once you know your current staff competencies, you can begin developing a plan to address the gaps. Some ways to develop these competencies in staff include on the job training, coaching from supervisors, peer to peer discussions, attending conferences, participating in hands-on training, reading about the topic, and watching demonstrations.

Adult Learning Styles

When training adults on how to use new media (or any other technology or skill, for that matter), it is important to take into consideration adult learning styles. Learning styles are the common ways that people learn. Some of these types are:

- Visual - The learner prefers images, pictures, and spatially-based instruction.
- Auditory - The learner prefers spoken word instruction, like lectures.
- Verbal - The learner prefers both spoken and written instruction.
- Kinesthetic - The learner prefers a hands-on approach to learning.

- Logical - The learner prefers reasoning or problem solving-based learning, like puzzles.
- Interpersonal - The learner prefers social situations, like group work.
- Intrapersonal - The learner prefers solitary approaches to learning, like self-study.

As an instructor or trainer, it is best to use a mix of these types of learning styles, as all learners best acquire knowledge and skills at their own pace with their own preferred style. As a learner, it is best to seek out learning situations that best match your preferred style so that you can better retain the learned information.

As a trainer, it is best to develop consistent training programs for both staff and patrons. This consistency can ensure that all learners receive the same information no matter who the trainer is or when they are trained. One way to accomplish training consistency is by developing detailed training scripts or facilitator guides so that all trainings take the same format and include the same information. The script should contain the verbiage a trainer will use in each session right down to the smallest details, like the location of the on/off button on a given device. By including such detailed information, the trainer can guarantee that nothing is left out of the explanation, which is helpful when multiple session run together and trainers may not remember what has already been relayed to trainees in a given session. While ideally trainers will have reviewed and practiced a training script in advance of a session, a good script is such that any staff member can pick up and begin teaching even if they have no experience with the device, system, or service. Additionally, if you opt to use student workbooks in your training sessions, it is a good idea to include excerpts from the workbooks in the scripts.

Project Management

Project Management is a big part of every training session. It is a good idea to develop a list of tasks associated with the training to ensure that no details or elements are accidentally neglected. The

author of this chapter prefers checklists with items in chronological order of which tasks need to be accomplished first.

One of the most important aspects of preparing for any training session is to practice. It is never a good idea to try to improvise or "wing" a training session. Taking the time to review training scripts and to do a full run-through of the training session can make the difference between a session filled with mishaps and a successful training session. It is okay for the trainer to not know the answer to every question posed in a session, but the trainer should be prepared to answer basic questions and to provide follow-up feedback after the session for those questions that cannot be answered right away.

Types of Professional Development Experiences

Training can be delivered in a variety of formats. The type of training utilized by an organization will depend on the content that is being taught. Just as not all media is suitable for all users, training formats are also not one size fits all. The type of training format used will depend on the content that is being taught.

A face to face workshop, sometimes referred to as F2F, is a live workshop with a presenter/trainer on site. Examples of face to face trainings are job shadowing, attending conferences, or seminars. Virtual trainings, in contrast, take place in online environments like webinars or virtual chats. Virtual trainings can be synchronous, which means it is a live environment taking place in a chat room or virtual classroom. Asynchronous classes are ones that can be done at the student's own pace and when convenient for the student. Asynchronous classes often make heavy use of learner discussion boards since learners do not have the benefit of meeting in a live environment. Both synchronous and asynchronous classes use a mix of virtual classroom tools in addition to discussion boards. These tools can be class wikis, electronic mailing lists, blogs, simulators, and other aspects of a learning commons.

Whether the format is F2F or virtual, there are ultimately two types of training: active and passive. Active training is very interactive with group discussion, simulations like role playing, and/or elements of gamification. It is the ideal environment for kinesthetic learners. Passive learning is the more traditional experience when it comes to workplace training. Examples of this type of training are demonstrations, lectures, reading handouts, and panel discussion. An effective training session will have a mix of both active and passive activities to fit all learning types. This variation holds true whether it is a face to face training or a virtual training. It is a good idea to vary activities every ten minutes or so; this keeps the learning fresh and also helps participants stay interested and engaged in the content. Having a mix of different activities is also a good way to make sure that there is something for all learning styles.

Networking for Professional Development

Not all learning takes place in a classroom or workshop environment. These are just one part of the learner's Personal Learning Environment (PLE). A PLE is a combination of tools, places, and other materials that help individuals gain knowledge about a subject that is important to them. There is also substantial overlap between the professional and the personal. Just as the name implies, a PLE is a very personal environment and may be different for each learner. Some learners are more traditional and may include the library, books, and work as part of their PLE. Others may include the use of apps, listservs, and social media like Facebook, Twitter, LinkedIn, and Pinterest.

Just as important as the what and the where, the who is another important part of the PLE. The learner's Personal Learning Network (PLN) is made up of people in their PLEs. In other words, these are the people at work they go to for answers, the Twitter users they follow, or the people in the associations they join.

We as professionals do not exist in bubbles; we should not assume that our learning does either. While it is a great idea to include in your PLN people that are in the same field as you, this

practice can also be very constricting for the innovation of ideas. The cross sharing of information across fields and disciplines can sometimes provide a new aspect of learning or new skills that might not have been considered before. It is a good idea to include a variety of people in your network. You do not need to have met a person in real life for them to be included in your PLN.

Examples of New Media Training Opportunities

In addition to formal face to face and/or virtual trainings in new media as outlined above, many professionals have access to, or can facilitate, a range of other types of training opportunities specific to new media technology and related skills.

Professional Development Book Clubs

Just as you want to network with people outside your particular specialty, you also want to read outside of it. Professional Development Book Clubs are a great way to network with other people, but they are also a good way to build your learning. Most Professional Development Book Clubs focus on reading leadership materials, but they really can be on any subject geared around improving your professional self. This includes reading and discussing books about new media.

To host a professional development book club, identify a core group of potential participants who may be interested in developing knowledge and skills through reading and discussion. Identify books that address some of the desired areas for learning of the group. Schedule a meeting for the book club that allows participants time to complete the assigned book in advance. Discuss the book, its related skills, and its implications for library practice at the meeting.

New Media Unconferences

An unconference is a participant-driven event where the attendees create the agenda at the start of the event. There are no formal

speakers or trainers; anyone in attendance can lead and/or facilitate a discussion. At a New Media Unconference, the discussions would all be centered on the topic of New Media. All attendees are expected to contribute to the conversation in some way, whether it is to ask questions or to offer thoughts and tips from professional experience. It is acceptable to bring presentation materials or to prepare ahead of time to lead a discussion at an unconference, but discussions should be organic. Be prepared for the conversation to lead where the session goes.

To host a new media unconference, first choose a location and date for the event. Share these details with professionals in the area, be it within a library system, a consortium, a regional network, and/or a state association; the earlier the date of the unconference is shared, the more likely area professionals will be able to prioritize attending. Correspond with professionals who plan to attend the unconference to determine their main learning outcomes for the event. For example, in asking participants what topics they want to discuss during the unconference, the facilitator may identify that new media, storytimes, and early literacy skills are the main areas of learning interest among attendees. On the day of the unconference, offer sessions centered around discussing these chosen topics. Designate a session discussion leader (who will guide discussion, keep the session moving, and given all attendees an opportunity to speak) as well as a notetaker (who will capture the information shared in the session) for each session. Share the notes from all sessions with attendees after the unconference.

Digital Petting Zoos

Digital Petting Zoos are opportunities to use a variety of devices and technology in a hands-on environment. It is a chance to see devices first hand and ask questions of other users. A Digital Petting Zoo can also be paired with a larger event as an extension of the learning to allow participants to try out what they have learned.

Libraries can use Digital Petting Zoos as a chance for staff to test new technology and discuss how these devices can be implemented into programming or offering better services. If a large scale event is not possible, having devices that float around the library system for staff use also allows the same opportunities for staff to gain hands-on experience and to appeal to those users that prefer to try something out in addition to watching a video on its use.

Observing New Media in Action

While watching a demonstration at a conference can be a great way to learn how to implement the use of new media into library programs, nothing beats actually observing it being used in a real setting. Many of those who use new media are also advocates and would gladly welcome other library professionals observing their storytimes or other programming. Reach out to your PLN in your area to ask if anyone has plans to host a new media program that you can observe.

Conclusion

While new media is exciting and considered by many to be innovative and a part of the future of libraries, it is important to remember that individual libraries all have different communities and different needs. What works for one library will not necessarily work for all libraries. The same can be said of learners of new media; not all learners possess the same foundation of knowledge or skills and/or comfort of use for new media and other emerging technologies. Having a well-trained, tech savvy staff is the foundation that is needed before any new media project can fully begin. It is important to learn as much as possible, assess the needs of the community and staff, and to implement a training program that best serves both the individual and the institution's goals so that any implementation of new media in the library is both intentional and supported by staff competency.

Resources for Further Reading

Booth, C. (2011). *Reflective teaching, effective learning instructional literacy for library educators*. Chicago, IL: American Library Association.

Fasick, A.M. (2011). *From boardbook to Facebook: children's services in an interactive age*. Santa Barbara, CA: Libraries Unlimited.

Gordon, R.S. (2001). *Teaching the Internet in libraries*. Chicago: American Library Association.

Guerin, L. (2011). *Smart policies for workplace technologies: email, blogs, cell phones & more* (2nd ed.). Berkeley, CA: Nolo.

Houghton-Jan, S. (2010). *Technology training in libraries*. New York: Neal-Schuman Publishers.

Mayo, D. (2005). *Technology for results: developing service-based plans*. Chicago, IL: American Library Association.

McCain, D.V. (1999). *Creating training courses when you're not a trainer: quick course design, development, and delivery for subject matter experts, managers, and other nontrainers*. Alexandria, VA: American Society for Training & Development.

Russell, L. (2000). *Project management for trainers: stop "winging it" and get control of your training projects*. Alexandria, VA: American Society for Training & Development.

Russo, C.S. (2001). *Train the trainer guide*. Alexandria, VA: American Society for Training & Development.

Silberman, M.L., & Auerbach, C. (2006). *Active training: a handbook of techniques, designs, case examples, and tips* (3rd ed.). San Francisco, CA: Pfeiffer.

The complete guide to technical and skills training. (1998). Alexandria, VA: American Society for Training & Development.

Conclusion

by Amy Koester

The topic of new media, young children, and libraries is still in its infancy; it is continually developing and ever-evolving as new technology emerges and libraries determine new and productive ways to wield these tools in support of their mission to serve children and families That is to say, there is no single way to use new media in youth library settings "correctly." As discussed in chapter one of this book, context is key. The ways in which technology is used by libraries to support young children's literacy, or not used, are varied, subjective, and, hopefully, deliberate. To that end, it was the intention of the authors that this book represent an introduction to this topic, rather than a definitive how-to. We are hopeful that the previous eight chapters, as well as the appendices to follow, have given you a broad and nuanced introduction to new media, young children, and libraries.

Upon your completion of this book, we hope that you will join the ever-growing community of library practitioners who are exploring this landscape and moving forward consciously, as informed professionals. We are committed to looking to the resources we have available to us. We are engaged in thoughtful conversations with caregivers. When we utilize new media in the library with young children, we are committed to doing so with specific rationale and goals. It was the goal of this book to accompany professionals on their first, or next, steps into the realm of young children and technology—specifically in the hope that you will become part of this larger cohort and conversation.

We make no claims that the information shared in this book and in other professional forums will remain static over time; in fact, this information—what we know, and how we best use new media in youth library settings—will almost certainly evolve over time.

But now is as good a time as any to start to wade into these waters and better serve young children and families in this digital age.

Appendix A:
Further Reading from Little eLit Contributors & Supporters

by Cen Campbell

The following are books that Little eLit has contributed to in some way, or that are written by partners on our journey to media mentorship. Many thanks to all the authors for the time, effort, and care you put into writing these books. We need these, and we need more.

Born Reading: Bringing Up Bookworms in a Digital Age— From Picture Books to eBooks and Everything in Between, by Jason Boog (Touchstone, 2014)

Jason is a journalist and a dad, and he wrote Born Reading as he began wondering what the implications of mobile devices were for his young daughter, Olive. Jason interviewed a number of Little eLit contributors in his research, and has been an avid library user since he was a preschooler himself.

> "These devices will be a part of your child's life; there is no way to avoid it. Many of the crucial decisions you will make about your child's reading and media usage should be made (or at least considered) before they're even born. In the absence of data, I think we should be more cautious. We laugh about our grandparents' bad parenting decisions now: dry cleaning bags on kids' heads, cigarettes in the

house, letting kids watch 6 straight hours of television. Someday our descendants will roll their eyes at our own parenting decision. What mistakes are we making that we don't even realize yet? We hardly understand the effects of apps on growing brains. but it's an area of robust research, and experts are starting to gather information to share with those of us who want to make up our own minds." (page 5-6)

Diversity Programming for Digital Youth: Promoting Cultural Competence in the Children's Library, by Jamie Campbell Naidoo (Libraries Unlimited, 2014)

Dr. Jamie Campbell Naidoo is an Associate Professor at the University Alabama School of Library & Information Studies, where his research interests focus on the representation of minority populations in media for children and young adults. Dr Naidoo is also the author of the Association for Library Services to Children's white paper *The Importance of Diversity in Library Programs and Material Collections for Children*.

> "When using new digital media with children and families in library programs, it is important to remember that new digital media are meant to supplement not replace print books, songs and hands-on activities usually found in the children's library. Rather, digital apps and digital picture books should enhance and extend the learning ongoing in library programming, providing a highly interactive multiliteracy experience. It is important to progressively add digital content to children's programming and consistently update your knowledge of the various options available. Equally important is selecting the best digital media to inspire learning."

The Power of Play: Designing Early Learning Spaces, by Dorothy Stoltz, Marisa Conner, and James Bradberry (ALA Editions, 2014)

Dorothy Stoltz is the Community Outreach & Programming Coordinator at Carroll County (MD) Public Library and sits on the Little eLit Advisory Board. Marisa Conner is the Youth Services Coordinator at Baltimore County (MD) Public Library and also serves on the Little eLit advisory board. James Bradberry is the founder of James Bradberry Architects, designer of Storyvilles, and writer of mystery novels.

> "Does a computer program undercut the ability of a child to play, by reducing him or her to a mere spectator? Many electronic media applications (apps) are designed for a certain level of interaction. Does an app or computer program become an avenue for play that uses imagination and thinking skills? Does it offer an open-ended activity to engage the child and lead them to higher thinking—or a closed-ended activity that where, once the button is pushed and the red dot gets bigger, there's no more thinking involved? Can Toca Tea Party, or a similar app, occupy young visitors during busy times in the library until the play kitchen is free for their use?

> "A computer or a tablet or a smartphone is—when all is said and done—a tool. As with any tool, children must be introduced to computer technology with caution. The key is two-fold – to offer e-books and apps that are age appropriate and high quality, and that appeal to children, and – to enhance the child's play and learning experience through interactions between grown-ups and young children using technology."

***STEP into Storytime: Using StoryTime Effective Practice to Strengthen the Development of Newborns to Five-Year-Olds*, by Saroj Ghoting & Kathy Klatt (ALA Editions, 2014)**

Saroj Ghoting is an expert in the field of early childhood literacy and has over 35 years of experience as a children's librarian. I've had the opportunity to work with Saroj on a few occasions and the depth of her experience and the enthusiasm for her area of expertise is refreshing and invigorating. Kathy Klatt is a children's librarian and program manager in Broomfield, Colorado, but I haven't had the chance to meet her in person yet.

> "There are many ways to include technology in storytimes… [but] there is much research yet to be done on the ways to best support young children's interests and learning. We can use as our guidance our overarching goals to share good books with children in engaging ways and to support adult interactions around books and reading with young children...Libraries are beginning to incorporate digital media into their storytimes for many reasons, the most important of which is modeling healthy media behaviors for parents and caregivers… In our ever-changing society, modeling multiple ways of sharing stories and information serves families well. Showing engaging interactions around reading and other language activities, in digital or print formats, is the key to successful storytimes." (page 89-90)

***Technology & Digital Media in the Early Years*, edited by Chip Donohue (Routledge, 2014)**

Chip Donohue is a Senior Fellow at the Fred Rogers Center and Director at the Technology and Early Childhood, and has been an advisor and friend to Little eLit since its beginning.

> "Why are children's librarians ideal media mentors?

Children's Librarians are the ideal media mentors for young children, parents & educators because they:

- Are experienced in the curation and evaluation of different types of media, including emergent media
- Have expertise in the development of regular, free, ongoing early literacy and early learning programming
- Are dedicated to the core values of promoting a love of reading, providing resources to support lifelong learning and equity of access
- Have access to captive populations within their facilities; parents and caregivers choose to come to the library with their children (unlike schools or child-care centers where children are dropped off)
- Have relationships with numerous community organizations (including other public entities and nonprofit and for-profit organizations) and are ideal partners for collaborative technology-based projects" (page 237-238, from chapter 16: Access Content & Engagement: How Children's Librarians Support Early Learning in the Digital Age by Cen Campbell & Carisa Kluver)

Appendix B:
Reviews of Apps with Early Literacy Connections

by Claudia Haines

High quality apps, including both story and toy apps, were selected to extend the practices outlined by Every Child Ready to Read® @ your library® 2nd Edition and the early literacy skills they strengthen. Each has been reviewed using the new media evaluation criteria discussed in Chapter 5 of this book.

ECRR2 Practice: Reading

Story, or book, apps are an obvious choice for the ECRR2 practice of reading. Reading high quality story apps with young children, in addition to print books, fosters an interest in and enjoyment of books which will later help make learning to read fun. Reading story apps also supports children's letter knowledge and print awareness. Look for story apps that are either successful transformations of paper books to digital apps or high quality stories created for the digital environment. The digital format of the story app offers families additional opportunities to enjoy their favorite titles as well as stories that may have been overlooked by traditional publishers for the print book market.

App 1: Moo, Baa, La La La! - Sandra Boynton

Loud Crow Interactive, Inc. (Story by Sandra Boynton, Narrated by Keith Boynton)

Suggested age: 2+
iOS: https://itunes.apple.com/us/app/moo-baa-la-la-la!-sandra-boynton/id431302275?mt=8
Google Play: https://play.google.com/store/apps/details?id=com.loudcrow.moobaa&hl=en
Amazon: http://www.amazon.com/Moo-Baa-La-Boynton/dp/B005K1RIZE
Cost at time of review: $3.99
Summary: A comedy of errors for toddlers and preschoolers, this whimsically-illustrated board book-turned-story app features a herd of silly animal characters that say the usual sounds...most of the time.

Technical/User Experience: 9/11
This easy to navigate app resembles its popular board book counterpart. The home screen features the familiar board book cover along with items that make it appear as if the app is a book on a table. This may appeal to some readers, but the effect makes the text and images appear small on a tablet size screen. To insure visibility in a group setting like storytime, this app is best displayed on a large monitor. The board book feel does reinforce the turning of pages right to left, among other things, which is an important skill for kids reading print books (part of the ECRR skill Print Awareness).

Interactive elements, including the moo-ing puppet on the home screen, are found through exploration. Tapping on the book cover opens the story, and tapping or sliding animals on the interior pages causes action related to the text. One animation element is labeled with text: a chicken hanging on a sign that says "pull." Following the sign's direction makes a curtain recede, and three pigs are revealed who sing when tapped to exemplify the action related in the story.

The app includes two reading options: "I Want to Read it Myself" or "The Big Guy Reads it," which is the narrated option. The reading options are in fact an interactive drawing pad next to the book cover. When the narrator, Keith Boynton, reads, text is

highlighted as each word is read aloud at an easy-to-follow tempo. If read without the narrator, readers can tap on each word to highlight it and have it said aloud. In either case the readers must swipe the page to advance the story, allowing readers to explore the page at their own pace after the text is read. Original background music can be turned off and on with a sliding button.

While there are no parent tips, there is no need for a parent gate since there are also no in-app purchases or links to social media.

Content: 9/11
The short, well-paced, rhyming tale is well-suited for reading aloud. The entertaining story offers many opportunities to strengthen phonological awareness. Readers can imitate the animal sounds made by the cow, the pigs, or even the rhinoceroses. It also provides opportunities for practicing the names of animals and counting.

The animation and interactive elements are well-suited for the story and appropriate for toddlers and preschoolers. The high quality illustrations are whimsical and each animal is easy to identify. There are no games within the app, letting readers focus solely on the story. Simply tapping or dragging animals on each page animates them slightly as they say "snuff," "ruff," "quack," or "neigh." On one page, tapping a duck causes another duck to appear, and this is repeated until eleven ducks and one duckling join the flock to face off against an innocent-looking horse on the opposing page. In response, the horse's mane and tail flutter as if pushed by the wind created by the duckling's assertive "quack."

The app does not include an option to record narration and languages other than English are not currently supported. People are not part of Moo, Baa, La, La, La! so multi-ethnic characters do not exist, but the silly characters and their antics will appeal to a broad audience.

App 2: Alphabet of Insects

Oceanhouse Media and Smithsonian Institution
Suggested Ages: 3-8
iOS: https://itunes.apple.com/us/app/alphabet-of-insects/id827981292?mt=8
Cost at time of review: $2.99
Summary: In alphabet book form, twenty six insects and their correlating alphabet letters are explored in rhyming text.

Technical: 10/11
Alphabet of Insects is generally a technically sound and age appropriate app. The story app's main screen includes three, mostly discreet, links: the Bookshelf app which organizes all of the OceanHouse Media apps on the device; Bestselling apps section; and the Info section. While a parent gate does exist for information on using the app, copyright, and OceanHouse Media news, there is no gate blocking access to the Bestselling apps section (and the OceanHouse Media privacy policy) or the Bookshelf. Once in those sections, readers are blocked from accessing individual apps, however. Both effectively advertise the developer's other apps, but like all advertising, they would be better suited for the content area behind the parent gate.

Once in the story more settings become available. On the bottom of the screen, a small arrow icon appears. Tapping on the icon reveals multiple settings and the ability to browse pages, return home, record narration, change reading mode, turn on/off the nature sound effects, as well as turn on/off the read alerts and the effect of tapping a picture and hearing its name said while the word appears on the screen temporarily.

The animation is gentle and provides the reader with a change in perspective as the view moves from a close up of the detailed insect illustration to a broader view, providing more context. Tapping the name of the insect provides further details about the individual insects, and tapping the alphabet letter narrates the name of the letter, both of which add to, instead of distract from,

the information. No insect animation exists, but sound effects are an option.

An interesting aspect of this story app is that, while swiping from right to left as if turning a print book transitions the story from the beginning of the alphabet towards the end, the screen actually appears to progress by the "page" flipping up, similar to a wall calendar. This doesn't correlate to a print book and may confuse some kids, but a blue hand demonstrates how to navigate through the app by swiping one side or the other, or the top or bottom, depending on which direction the reader wants to move in the app.

The white background and the easy-to-read text make this app suitable mirrored on a large monitor for use with larger groups as well as with a small group using only a tablet screen.

Content:10/11
Alphabet books in their entirety aren't usually appropriate storytime reads. This is the case for the Alphabet of Insects too, but its rhyming text and vast array of included insects ensure that selected pages or letters would tie in nicely with other storytime elements. The accurate and interesting insect information will draw families back to the app, either reading sections at a time or in its entirety. Young children are curious about the world around them, including insects and the natural world, and this app will satisfy their interest while building early literacy skills.

Like many non-fiction books and apps, Alphabet of Insects offers excellent opportunities to strengthen children's vocabulary and letter knowledge. Each page features an uppercase and lowercase version of the associated alphabet letter as well as the insect's name in the same color as the featured letter, for example "C is for Cricket." The remainder of the page includes the insect and a plant from its environment plus a couple of lines of rhyming text. Tapping on the alphabet letter causes the recorded name of the letter to be said allowed. Tapping on the name of the insect

initiates a text box to appear with additional information about the insect's natural history.

Informational texts are a large part of the widely adopted Common Core State Standards and many school curricula. The Smithsonian Institution, who developed the app along with Oceanhouse Media, is a trusted source for scientific information and non-fiction material, so this title would work well in a library, museum, or school setting.

Like many of Oceanhouse Media's apps, this one offers "read to me," "read it myself," and "autoplay" options as well as a record feature allowing an adult or child to record their voice reading or narrating the app. The narrator reads at an appropriate pace with just the right amount of enthusiasm. English is the only language option, but the record feature allows other home languages to be recorded.

App 3: Hairy Maclary from Donaldson's Dairy

Penguin New Zealand Pty Ltd (story and illustrations by Lynley Dodd, narrated by David Tennant)
Suggested Ages: 3+
iOS: https://itunes.apple.com/us/app/hairy-maclary-from-donaldsons/id383481759?mt=8
Google Play: https://play.google.com/store/apps/details?id=com.kiwamedia.android.qbook.hairymaclary&hl=en
Cost at time of review: $4.99/$5.56
Summary: A rhyming story about Hair Maclary, a small black dog, and his goofy canine friends. A ferocious cat abruptly interrupts their carefree adventure around a small village and sends them home again to hide under their beds.

Technical: 11/11
This landscape-oriented app opens with a basic title page. A swipe of the finger from right to left starts the story in the read-by-myself mode. Sliding the small tab in the top left corner reveals a full featured settings menu which includes a home button, a book button (which takes readers back to the story), a paintbrush button

(which leads to coloring pages), a play button (starts auto-play), a sign language button (which displays a sign language drop-down menu), a microphone button (to record own narration or select a narration), a parent/child button (which links to notes and tips for parents and caregivers about using sign language), and a settings button (which includes an on/off switch for the background music and additional access to the buttons already mentioned).

The settings menu may not be intuitive for young children until used with another reader, but exploring the story at its basic level by swiping the pages will be. Even without the narration, a reader can tap each word on the screen to hear it read aloud, useful for the emerging reader. There are no in-app purchases, ads, or links to the internet or social media to distract the young reader, so solo reading would be worry-free.

This app would be best mirrored on a large screen if being shared with a storytime group, or could be explored with a small group on a tablet screen.

Content: 11/11
Many librarians choose to read story apps aloud in storytime, but the Hairy Maclary app has added elements that make it a good candidate for using with the read-to-me option. The Hairy Maclary app includes multiple languages, including the sign languages NZSL, ASL, and Auslan. The narrators for these additional languages are excellent and not only narrate the story, but bring additional expressive animation to the story. Voice narration can also be recorded, extending the app's cultural relevancy.

Beyond the narration, the app features expressive images that work collaboratively with the text to create the whimsical story featuring a diverse cast of characters from a scrappy Hairy Maclary to Bottomley Potts, the dalmatian. As each new, lovable dog joins the wandering pack, its name is added to the repeated roll call in lively, descriptive language. The rhyming text helps strengthen phonological awareness, while the ability to tap on a word and see it highlighted as it is read aloud develops print

awareness. Additional literacy opportunities exist within the images, for example house numbers which, when discussed, strengthen awareness of numbers and not just letters throughout the app.

The text is kept to the right side of each screen with black font on a white background and the colorful images are concentrated on the left. Movement throughout the story is expressed in the images by wagging tails, shaking fur, and blinking eyes; just enough to enhance the story, but not enough to distract the readers.

ECRR2 Practice: Writing

As children begin to recognize that shapes or marks on a page have meaning, they begin to create their own. Writing apps, similarly to writing or drawing with chalk, shaving cream, or in a container of sand, encourage young children to practice drawing and writing, sometimes even before they are able to hold a pencil or crayon. These activities build narrative skills as children use the marks to tell their own stories.

App 1: iWriteWords

Giggle Lab
Audience: 4 years+
iOS: https://itunes.apple.com/us/app/iwritewords-handwriting-game/id307025309?mt=8
Cost at time of review: $2.99
Summary: Writing app that teaches handwriting in a game format. Drag crab along ascending numbers with a finger to form the different parts of a letter or number, learning both how to shape the letter or number and strengthening counting skills.

Technical/User Experience: 11/11
The clean display of this glitch-free app makes it easy for the young writer to focus on the job at hand. While there are no tips for using the app, the screen includes six clearly marked, color-

coded navigation buttons with a musical note (which leads to the music and lyrics for the ABC Song); numbers (to write numbers); an upper and lowercase ABC (to write simple words); and an upper and lowercase A (to write individual letters of the alphabet). Once an activity is selected, the letter or number to be written is centered on the screen with only minimal buttons to distract from the job at hand. The buttons include: stop, which takes the user back to the home screen; play, which demonstrates how the letters are drawn; and a sliding button, which increases or decreases the size of the letter.

There is no background music, but a drumming sound accompanies the appearance of numbers on a new section to be traced, and a voice recites the name of the letter or number when it is completed. Words of encouragement are said when the completed letter, now small and outlined in a square, is dragged to the twirling circle in the bottom right corner. Multiple languages are available.

The language setting, as well as many others like level of difficulty, left- or right-handed letter formation, and the sound effects switch, are found in the device settings away from the eyes and hands of the young writer. In-app email can also be turned off in the settings. No in-app purchases, in-app ads, or links to social media are included in the app. Giggle Lab does not collect personal data, as stated on its website.

Content: 9/11
While the handwriting task is not open-ended in this educational app, the app offers an engaging game-style activity that will appeal to new writers. For young learners needing fewer distractions, this app focuses on writing letters and numbers. A cheerful crab is led from one number to the next in ascending order as the writer draws parts of a letter or number. Only one segment of the letter or number is numbered at a time, simplifying the process of forming the shape. When a word is drawn correctly, a child-drawn picture of the word is revealed and the narrator says the name of the letter and words of encouragement, reinforcing

the writer's letter knowledge. If the writer's finger strays too far off the line, the line jiggles and the crab returns to the starting point indicating it is time to try again. Diversity is fostered in iWriteWords as demonstrated by the international artists who drew the word objects and the multiple supported languages.

App 2: Touch and Write

Fizzbrain, LLC.
Audience: 4 years+
iOS: https://itunes.apple.com/us/app/touch-and-write/id504319132?mt=8
Cost at time of review: $2.99
Summary: Dynamic writing app that offers simple tracing activities with a variety of environments and simple rewards for motivation. Both letters and number are included, building letter knowledge and early math skills.

Technical/User Experience: 9/11
The home screen includes a variety of options to focus the writing practice, providing easy navigation. Some young writers and adults may not know what the different buttons mean, but the info button gives detailed tips for how to select the best option. Once an activity is selected, the "write" button is tapped and writing can begin. On the writing screen there are buttons labeled with images for choosing a writing tool and "paper," revealing/hiding the monsters' cupcakes, turning music on/off, and turning phonics on/off. The multiple buttons may distract some writers, but they allow customization of the app. Users can let the app advance automatically or bypass a letter or number with the arrow button on the bottom of the screen. Users can also return to the home screen to change activities. All adjustments for the app are on the home or writing screens. There are no additional device settings.

No parent gate exists, but it is not necessary in this glitch-free app. There are no in-app purchases, ads, or links to social media. The developer does not mention its policy on data collection within the app or on its website.

Content: 9/11

Letters of the alphabet, numbers, sight words, and even a custom word list are traced with a finger following monsters as they eat cupcakes. Letter or number tracing is broken down into one line at a time to help young writers focus on good writing technique. When the writing is complete, the narrator says the name of the letter or number or the letter's sound (if the "phonics" button is tapped). English is the only supported language in this app, but separate apps feature other languages. The simple reward at the end lets the writer dip and turn the iPad to help the monster collect cupcakes or join his/her monster friends.

To further customize the writing experience, digital version of writing tools can be chosen from one of the several buttons on the writing screen. These tools include many classic tools used with young writers like shaving cream, paint, syrup, and chalk, without the mess. A variety of digital papers can also be chosen, but some of them may be too busy, camouflaging the letter or number to be drawn and distracting the writer.

ECRR2: Playing

Play is something young children do well and easily. It is not only fun, but has long term benefits for children, especially when they play with others regardless of age. "Play encourages healthy brain development while fostering exploration skills, language skills, social skills, physical skills and creativity" (Nespeca, 2012). Playing is how children learn about the world around them and how they practice problem solving, social skills, and being members of their community. Like playing with physical blocks, new media can create that same "I did it!" reaction from kids (Christakis, 2013). Play is so important that the United Nations High Commission for Human Rights determined that play is a right of every child (Ginsberg, 2007).

App 1: Toca Hair Salon Me

Toca Boca
Suggested ages: 4+ (designed for ages 9-11)
iOS: https://itunes.apple.com/us/app/toca-hair-salon-me/
id730873197?mt=8
Google Play: https://play.google.com/store/apps/details?
id=com.tocaboca.hairsalonme&hl=en
Cost at time of review: $2.99
Summary: Photos are uploaded into the app and then hairstyles and accessories are added to give the star of the photo a new look.

Technical/User Experience: 11/11
The first screen of this app has elements to consider before playing for the first time. One is the "For Parents" section, which is accessed via a parent gate and contains thoughtful details about how to play, tips for taking pictures, and what to talk about while app users play together. The second element is a small badge in the bottom right corner that is an ad for another Toca Boca app accessed by a parent gate. Both of these options can be hidden in the device settings for the app to decrease distraction while kids are playing, but the parent information is worth reading at least once. Toca Boca's privacy policy is not included in the app but it is posted on its website.

The first time the app is used, permission to access the device's photos must be given. The app allows the player to take a photo within the app or use a photo from the camera roll. In the device settings, saving all photos or saving just makeover photos can be selected.

Once the photo is added to the app, head shape is chosen along with eye and mouth shape and placement. This is used to add animation to the selfie while playing. For example, when the hair dryer is used, lips wiggle as if being blown by air.

Once the few initial technicalities are taken care of, it's time to play. There are seven sections of the salon, each with different

tools. Swiping the tool area to the right or left smoothly changes the salon section. Tapping on a tool selects it. Applying a tool to the hair or face is done with a tap, swipe, or drag, depending on the tool. Salon sections include eyeglasses, mustaches, hair straighteners, hair color, hair cutting tools, and a washing station. The other section is a photo booth for capturing a photo of the finished product. Here the app user can change the background and the initial t-shirt color before saving to the device's camera roll.

The music heard in the introduction cannot be turned off, but it lasts only as long as it takes to start the app and take a selfie photo. Once inside the salon, only sound effects can be heard and are appropriate to the actions and tools. Alternatively, the volume on the device can be turned off, but sound is part of the app experience.

Content: 10/11
Toca Boca's apps are intentionally designed to be inclusive and open-ended. This toy app is no exception and exemplifies how kids can play while exploring an app and strengthening early literacy skills all at the same. This app has an additional feature that is noteworthy: it introduces content creation, a major benefit of new media. In the app, users take selfies within the app, which are then modified with a variety of hairstyles and colors or facial hair. Blow hair to make it spiky, buzz it all off, make it pink or black, and add a mustache, no matter what face you're using. The background can even be customized.

There are an endless number of possibilities in this intentionally text-free app that engages kids and families across languages, cultures, genders, and nationalities. Kids and adults will find it hard not to talk while playing with this app, so narrative skills, and even vocabulary, will be strengthened easily. There is no end goal, leaving success, or the end, up to the children holding the tablet. This open-ended app warrants repeated exploration.

App 2: My PlayHome Stores

PlayHome Software Ltd
Audience: 3-7 years
iOS: https://itunes.apple.com/us/app/my-playhome-stores/id683942610?mt=8
Google Play: https://play.google.com/store/apps/details?id=com.playhome.stores&hl=en
Cost at time of review: $2.99
Summary: Explore four different community stores in this digital play world.

Technical/User Experience: 10/11
Way-finding in the digital play town is intuitive. Yellow arrows show possible directions. For example, a yellow arrow on the sidewalk tells the player that it is possible to walk in the direction of the arrow; a yellow arrow leading into the clothing store means the player can walk into the store.

While not a glitch, dragging items to the characters may not always produce the intended effect, especially for young users with less developed fine motor skills. For example, clothes can be dropped on the floor instead of into the bag, or an item from a shopping bag may be inadvertently dragged to a new spot—the checkout stand, for example—instead of the item the user wanted to move.

The app has no time limits, badges, or points. There are no in-app ads, purchases, links to social media, or links to the internet.

The app sound effects include a cash register sound, music that can be turned on and off, electronic doors opening, and smoothie machine sound effects. They add to the app experience and are initiated by a player's touch.

The My PlayHome Stores app is integrated with the developer's other apps, My PlayHome and My PlaySchool, so items purchased at a store can be brought home if two My Play apps are owned on a device.

Content: 10/11
The open-ended, digital world is played by selecting characters from a wide array of ages, ethnic backgrounds, and genders. Single characters can be played with, or players can create families or groups of friends. Characters can be moved around the town to eat, drink, shop, or socialize. Items can be "purchased" or "consumed" by dragging from store shelves to the hands of the characters, shopping carts, or shopping bags. For example, a smoothie made at the fruit and vegetable market can be held and drunk by the customer, or clothes can be purchased and put in a shopping bag and taken to the next store. Just like paper dolls, these digital characters offer a customizable play experience and are engaging enough for multiple uses. While the screen only offers single touch capability, playing together is easy. Taking turns manipulating the characters, narrating their actions, and giving them voices in conversation would make the experience more valuable and fun.

ECRR2 Practice: Talking

Telling stories and understanding how stories work are valuable early literacy skills. Oral storytelling is an important tradition in many cultures and is something that young children can appreciate and practice even before they can read or write. Talking strengthens narrative skills and phonological awareness, builds vocabulary, and fosters social relationships. The introduction of new media, when used jointly with a caregiver, provides a new way to engage and create stories using digital tools. Story apps with limited text can help adults and children tell stories of their own creation, as can toy apps that offer tools for expression.

App 1: So Many Stars

Andy Warhol Foundation and Bugaboo International B.V.
Audience: 5 years+

iOS: https://itunes.apple.com/us/app/so-many-stars-andy-warhol/id723659356?mt=8
Cost at time of review: $.99
Summary: The story app So Many Stars is an interactive adaptation of Andy Warhol's board book by the same name. It invites readers to discover what realistic objects can do in Warhol's magical world.

Technical/User Experience: 10/11
So Many Stars is easy to navigate with its left or right screen change. Swiping on the left or right side of the screen produces a half-circle with an image from the next screen. Tapping the image changes the screen. Not every screen needs to be explored in one sitting to enjoy the app, but the app lacks the ability to choose screens individually.

The app includes music, but it can be turned off or on with the tap of a button located on the home screen. Also on the home screen is a link to the parent page, which provides information about the developer and Andy Warhol, although there is no mention of privacy or the collection of personal data. No parent gate is available, and it is not necessary because there are no in-app purchases or ads and no links to external content.

This story app's value lies in its subtlety. The images entice the reader to explore the app with only limited cues. Touching swimming fish is hard to resist. Shaking the high wire below the acrobats on a bicycle is inevitable. The accompanying sound effects, including "oohs" and "awwws" and a drum roll, add to the page's experience.

Content: 7/11
Well-designed for inquisitive preschoolers and toddlers, this story app offers high quality images created by the iconic modern artist Andy Warhol and works much like a wordless picture book. The app's image-rich screens give readers freedom to create their own story, or narrative, and build vocabulary as they touch, explore, observe, and wonder. Its minimal text gives just enough of a

prompt to guide storytelling. For example, one screen includes a blue cat on a red background with nothing else. Swipe over, or pet, the cat and the word "purr" appears on the screen. An accompanying purring sound is heard with each swipe. Dialogic reading techniques would work well with this story app, encouraging a conversation about the cat. "What makes the cat purr?" Or, on another screen, "Where are the slow slugs going?" Each screen is a story starter, making repeated exploration likely.

The app features a variety of creatures and objects including strawberries, a bowl of spaghetti, birds, stars, and people lacking color or distinct features. However, the men and women included in this whimsical app are not noticeably diverse (the one girl of color has blond hair). While diversity is not addressed in this app, the last screen called "So there you are" includes a square which is transformed into a camera when the reader wipes away the red color. The screen includes a blue rectangle that pulses, inviting the reader to tap on it. When tapped, the device's camera takes a picture of whatever is framed in the square, and it is placed in a digital frame emblazoned with Andy Warhol's signature. This feature offers a personal touch to the app and brings the reader even further into the experience, one purpose of diversity in children's media.

A few of the app's features are not relevant because of the app's nature. There is no read-to-me or read-to-myself option, and there is no opportunity to record narration. The English-only text is black on a solid background, but will likely be difficult to read for preschoolers because it is in cursive. Most preschoolers are not familiar with cursive letter formations. These factors do not detract from the app experience.

App 2: Sock Puppets

Smith Micro Software
Audience: 4 years+
iOS: https://itunes.apple.com/us/app/sock-puppets/id394504903?mt=8
Cost at time of review: Free

Summary: Tell stories by creating lip-synched videos using a varied cast of digital sock puppets.

Technical/User Experience: 6/11
Along with Sock Puppets' content features, many of the technical components are well-designed and the app is glitch-free. The app's uncluttered home screen includes options for creating a new video, opening a saved video, learning about the app, and adjusting voice settings. The "about" button leads to tips for using the app, a video tutorial, and the developer's other apps through the device's web browser. None of these links are accessed via a parent gate. Easy access links to Facebook and YouTube for sharing created videos also do not have a parent gate, although a Facebook or YouTube login is required to upload a video. The iPad's Guided Access feature could be used to keep app users inside the app and prevent them from accessing other apps or the internet accidentally.

The Sock Puppets app does not include any sound effects beyond what is recorded by the user, and the recorded sound enhances the app experience. Puppet voices and sounds can be manipulated on the settings screen before recording occurs. Multiple puppet voices can be recorded during one session.

The puppets and buttons are easy to operate and navigate for most ages, and the storytelling nature of the app encourages joint media engagement. The app is at its best when multiple puppets are part of the action.

Content: 11/11
Creating a story with the Sock Puppets app requires only a few steps, and the app offers multiple options for customizing the story. The first step is to select characters from the cast of sock puppets, some of which are cartoon puppets and some which are realistic, digitized socks similar to the traditional sock puppet. Then choose a background, or stage, for the puppet show from the provided samples, or use a image from the device's photos. A variety of props are also available. Once all of the pieces are

selected, a tap of the next button reveals a screen with the stage, props, and puppets ready for narration. A record, back, and home button are found at the top of the screen. To record the story, the actors or narrators tap the circle, or record button, and begin speaking. A small red arrow indicates which puppet is being narrated. A tap is all that is needed to switch puppets. Puppets can also be moved sideways while narration and video are being recorded. To stop recording, the small square button is tapped and the video, including narration, can be played back, redone, saved to the device, or shared on Facebook or YouTube. Saved videos can be embedded in projects using iMovie or other platforms.

This app works well for many reasons. Its open-ended nature allows for customization and repeated use. The app encourages early literacy practices and skills by offering a fun environment in which voice actors talk, build vocabulary and narrative skills, and express themselves as they add voice to the story they create or retell. Encouraging kids to not only view new media, but also create new content, is an important digital literacy skill. Additionally, the record and lip-sync features encourage content creation in multiple languages which could be used successfully in language preservation efforts or multilingual environments.

ECRR2 Practice: Singing

In English, along with many other languages, the written language records the sounds of the spoken language (Yopp, 2009). Being able to hear the smaller sounds in words is a stepping stone in early literacy. Singing breaks down words into syllables and slows down our talking so that children can more easily hear those individual sounds.

New media provides the opportunity to share music and inspire storytime families to sing together. Sometimes using music apps that are designed solely to play digital music on tablets or smartphones (with additional speakers), such as the Apple Music App (to play songs from iTunes) or the SoundCloud app, is the best option. Other times, playing a YouTube video (with the video

or just the audio) will compliment a storytime program. There are also high quality apps designed for kids and families that include singing prompts, opportunities to create music, or even lyrics to traditional songs.

App 1: Feltboard- Mother Goose on the Loose

Software Smoothie
Audience: 3 years+
iOS: https://itunes.apple.com/us/app/felt-board-mother-goose-on/id734913054?mt=8
Cost at time of review: Free
Summary: Designed by the developers at Software Smoothie and based on the work of Betsy Diament-Cohen, this digital feltboard app was created to compliment the Mother Goose on the Loose® early literacy program for 0-3 year olds.

Technical/User Experience: 10/11
The glitch-free app includes information for parents and librarians in a parent section accessed by pressing and holding a static button found on the top right of the screen in each story collection. In addition to tips on how to use the app, the parent section also includes the other apps available from Software Smoothie, including the original Felt Board app that includes endless possibilities for storytelling. These small ads do not interfere with the app and are only found in the parent/librarian section of the app, but there is no parent gate to prevent App Store or internet access beyond the press and hold function. There are no in-app purchases or links to social media. Software Smoothie includes its privacy policy on its website and does not collect or share private data.

Content: 11/11
Children and caregivers play together with digital felt characters and story pieces to tell stories independently or while singing along with included traditional children's songs and rhymes such as "Two Little Monkeys" and "Little Bo Peep." Characters and story pieces are organized by story or song but can be added to the digital feltboard depending on user preference. Related songs

and rhymes appear as buttons on the right side of the screen and can be listened to while free-moving pieces are played with on the screen. Another button has musical instrument sound effects, which can be played along with a song or rhyme. For example, the "Little Bo Peep" collection has a shaker sound. These songs and sounds enhance the app experience and will be a valuable resource for caregivers.

The open-ended nature of the app encourages repeated exploration, and new stories can easily be told with the digital felt pieces. Telling stories and singing together using this app can strengthen narrative skills and phonological awareness in a new format. The multi-touch feature encourages joint media engagement.

"Eensy Weensy Spider," another popular song included in the app, can be heard in both English and Spanish. All of the included songs as of 2014 are English traditional, and the thoughtfully designed app would be improved by including traditional songs and rhymes from other cultures to go along with the included ethnically-diverse felt characters, or a record option so families can record their own songs or rhymes.

App 2: Wheels on the Bus

Duck Duck Moose, Inc.
Audience: 1-6 years
iOS: https://itunes.apple.com/us/app/wheels-on-the-bus/id303076295?mt=8
Google Play: https://play.google.com/store/apps/details?id=com.duckduckmoosedesign.bus
Amazon: http://www.amazon.com/Wheels-Bus-Duck-Moose/dp/B006M3K874
Cost at time of review: $1.99
Summary: An interactive, singing book based on the song "Wheels on the Bus."

Technical/User Experience: 9/11
In this app each verse of the popular song, "Wheels on the Bus," is played in a loop until the user navigates to a different screen or the app is closed, which may appeal to some or annoy others. All of the narrators sing "Wheels on the Bus" at a quick tempo, perhaps too quickly for some children just beginning to articulate and hear individual sounds or words. This could be addressed by recording narration using the device's microphone. Those familiar with the song will not have trouble recognizing the tune and verses. Music can easily be turned on and off or changed to instrumental.

There is no way to choose specific screens (or verses) and no way to return to the home screen from another screen.

Advancing to the next screen is similar to turning the page of a paper book. Each digital page is turned by tapping on an arrow in the left or right bottom corner of the screen. Interestingly, if the left arrow is tapped, the page turns from the right and vice versa, which is different than how a print book is used.

Interactive elements are generally logical, but the bus may confuse some children. Any tap of the bus makes the bus move back and forth, although swiping the tires in one direction or the other (reverse or forward) does not correlate in making the bus move in the same direction. Other interactive elements are more intuitive. For example, the wipers swish back and forth and wipe water drops off the windshield.

Other apps are advertised in a small window on the home screen, but are accessed through a parent gate. In-app purchases cannot be disabled, but the parent gate should prevent unwanted purchases. No links to social media exist, and the developer does not collect personal data.

Content: 10/11
Friendly cartoon images, including ethnically diverse people and a variety of friendly-looking animals, illustrate the popular children's

song "Wheels on the Bus" as a narrator pleasantly sings the lyrics in English or one of several other languages. Each screen is focused on a different verse of the song, including both traditional and new variations. Every screen features related, interactive elements that are animated by tapping or sliding as instructed on the home page. The interactivity is intuitive and does not distract from the story. The verse's text is grammatically correct and moves to different locations in each screen, but is easily readable on a small or large screen.

There are multiple language options and a voice record option, which provides an option to personalize the app experience or teach the popular song in a language not included in the app. The music can also be turned off if users want to share the app without narration.

The familiar song will entice children to visit this app again and again, but the story is not particularly engaging and there is no variation. The value of this app is found in the song that it brings to life. Repetition deepens understanding, and children will strengthen their phonological awareness and have fun while they sing "Wheels on the Bus" over and over again.

References

Christakis, Dimitri A., MD, MPH. Interactive media use at younger than the age of 2 years time to rethink the American Academy of Pediatrics guideline? JAMA Pediatrics, 168(5), 399-400. doi:10.1001/jamapediatrics.2013.5081.

Ginsburg, Kenneth R., MD, MSEd, and the Committee on Communications, and the Committee on Psychosocial Aspects of Child and Family Health. The importance of play in promoting healthy child development and maintaining strong parent-child bonds. American Academy of Pediatrics, 119(1), 182–191.

Nespeca, Sue MeCleaf. 2012. The importance of play, particularly constructive play, in library programming. Retrieved from

http://www.ala.org/alsc/sites/ala.org.alsc/files/content/
Play_formatted.pdf

Yopp, H. K. and Yopp, R. H. (2009). Phonological awareness Is
child's play! Beyond the Journal: Young Children on the
Web. January, 2009. Retrieved from: https://
www.naeyc.org/files/yc/file/200901/
BTJPhonologicalAwareness.pdf.

Appendix C:
Sample Digital Storytime Programs

by Anne Hicks

Preschool Program Plan #1: Socks Storytime

Books to Share:

- *New Socks* by Bob Shea
- *A Pair of Socks* by Stuart J. Murphy
- *Duck Sock Hop* by Jane Kohuth
- *Sally and the Purple Socks* by Lisze Bechtold
- *Ducks don't wear socks* by John Nedwidek
- *Socks for Supper* by Jack Kent
- *Martha Moth Makes Socks* by Cambria Evans

Tablet as intro: Sock Puppets by Smith Micro Software

Before your storytime, record a mini-puppet show introducing the theme of the day or reciting the rules of storytime. This free app is a great one to introduce families to since it is so open-ended and encourages such creativity in its users.

Tablet as book: My Sock Monster by Junoberry

In this short story, a little fuzzy white sock-eating monster takes on the color and patterns of the socks he eats. When

the sock pile starts to dwindle, will the sock monster fade away forever?

Tablet as audience participation: Puppet Workshop Lite by Sebastian Bachorzewski

Create your own virtual sock or glove puppet together as a group. The free version has limited backgrounds and add-ons, but has enough variety for a solid demonstration and will give your group a good idea of what the app can do.

Early Learning Tip:

Matching (or discerning what is the "same" or "different") is an early math skill. Play a sock-matching game with your child the next time you do laundry to build those skills!

Preschool Program Plan #2: Zoo Storytime

Books to Share:

- *Polar Bear, Polar Bear, What Do You Hear?* by Bill Martin, Jr.
- *From Head to Toe* by Eric Carle
- *My Heart is Like a Zoo* by Michael Hall
- Zoo Ah-chooo by Peter Mandel
- *Animal Strike at the Zoo, It's True!* by Karma Wilson
- *Dear Zoo* by Rod Campbell
- *Good Night, Gorilla* by Peggy Rathmann

Songs/Rhymes: (use the tablet as a song sheet if mirroring to a television or projector):

<u>Monkey See, Monkey Do</u>
Monkey see, monkey do
Little monkey at the zoo
Monkey, monkey in the tree
Can you _____ like me?

(Fill in the blank with different actions for each verse: jump around, swing your arms, scratch an itch, eat a banana, screech) [credit - http://storytimekatie.com/]

Old MacDonald Had a Zoo
(optional - use flannel pieces in the shape of a monkey, snake, and tiger)
Old MacDonald had a zoo. EIEIO
And in that zoo he had a monkey. EIEIO
With an EEEEEE here, and an EEEEE there,
Here an EEEEE, there an EEEEE,
Everywhere an EEEEE, EEEEE
Old MacDonald had a zoo. EIEIO

Old MacDonald had a zoo. EIEIO
And in that zoo he had a snake. EIEIO
With a HISSS HISSS here, and a HISSS HISSS there,
Here a HISSS, there a HISSS,
Everywhere a HISSS, HISSS.
Old MacDonald had a zoo. EIEIO

Old MacDonald had a zoo. EIEIO
And in that zoo he had a tiger. EIEIO
With a ROAR ROAR here, and a ROAR ROAR there,
Here a ROAR, there a ROAR,
Everywhere a ROAR, ROAR.
Old MacDonald had a zoo. EIEIO

Tablet as a Story Extender or Activity: Feed the Animals developed by Curious Fingers

The app displays an animated image of an animal and three choices of what that animal might eat. When the user drags the food over to the animal, it will either eat the food happily (if the correct food was chosen) or refuse the food (if the incorrect food was chosen). Animals include, a bear, a dog, a monkey, a bumble bee, a penguin,... and many others.

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Tell the children they are zoo keepers that need to help feed the animals. The animals are picky eaters so we need to make sure we give them food they will like. For example, the first animal displayed might be a monkey. Along the side of the screen will be three choices of food (a dog bone, a banana, or some honey).

Ask the children what they think the monkey likes to eat or alternatively you can feign stupidity and feed the wrong food to the monkey. The children will enthusiastically correct you.

Tablet as a Story Extender or Activity (hand-held tablet activity): Animal Sounds - Fun Toddler Game developed by Innovative Mobile Apps

The main screen displays a wide variety of animal photographs. When the user taps on an animal, the screen changes to a large photo of the animal and its corresponding sound is played. Tap on the "rewind" icon to replay the sound.

Ask the kids to listen to the sound and guess what animal it is. Recite the following rhyme before playing the animal sound:

> "Someone escaped from the zoo last night,
> Whoever could it be?
> Someone escaped from the zoo last night,
> Let's listen, then see."

Once the children have guessed the animal, turn the tablet facing the audience to reveal the image of the animal. Continue playing for a few more rounds.

Tablet as a Flannel Board - I Went to the Zoo One Day: Felt Board developed by Software Smoothie

Create a digital felt board by choosing the background

scene and characters you want to include. You can create a scene and then tap the camera icon to send a photo of your scene to the tablet's photo stream. To create a sequence of scenes, make changes to the original felt board scene you created and take a photo after each change. You can then create an album of the photos to swipe through as you present the digital felt board to the audience.

Create a felt board with a different zoo animals on each slide and use the following rhyme to go along with the digital felt board:

> "I went to visit the zoo one day
> Saw a monkey along the way!
> And what do you think I heard him say?"

> (have kids shout out a monkey noise)
> *continue with each animal in your digital felt board*

Early Learning Tip:

Making the sounds of different animals is a vocabulary and speech skill. When we point out different types of animals, we help children learn the names of those animals. Making animal sounds also helps young children practice forming the different sounds that letters can make. Plan a visit to the zoo to talk about the animals you see and build those early learning skills!

Appendix D:
Contributor Biographies

Editor

Amy Koester

Amy is Youth & Family Program Coordinator at Skokie (IL) Public Library. She became active with Little eLit in February of 2013, when she began managing the blog and editing content for the site. She co-authored the white paper *Media Mentorship in Libraries Serving Youth*, which was adopted by the ALSC Board in March 2015. Amy has been active in librarianship through associations such as ALSC and Storytime Underground, and she has written for publications including *School Library Journal*, *Children and Libraries*, and *LibrarySparks*. She served on the 2014 Newbery Committee, and she blogs as the Show Me Librarian. Amy received her MLS from Indiana University.

Chapter Authors

Cen Campbell

Cen Campbell is a children's librarian and the founder at LittleeLit.com. She has driven a bookmobile, managed branch libraries, developed innovative programs for babies, young children and teens, and now supports children's librarians to serve as media mentors in their communities. She was named Library Journal Mover & Shaker in 2014 for her work on Little eLit.

Carissa Christner

Carissa Christner works as a Youth Services Librarian in Madison, Wisconsin. She and her young son love to test out new apps and read books together. She has written for several Collaborative Summer Library Program (CSLP) manuals and has developed training workshops and curriculum to teach other librarians how to use apps in the library. She blogs about her library adventures at http://librarymakers.blogspot.com.

Claudia Haines

Claudia Haines is the Youth Services Librarian at the Homer (AK) Public Library. She designs and leads programs for young people ages eighteen and under and their families, provides community outreach, and manages the library's children and teen collections. She serves on both local and national committees that support early literacy and families. Claudia provides training for other librarians using new media with young children and recently co-authored the ALSC white paper *Media Mentorship in Libraries Serving Youth*. She blogs at www.nevershushed.com.

Genesis Hansen

Genesis Hansen is the Director of Library and Cultural Services for the City of Mission Viejo (CA). Over her library career she has overseen many aspects of library service, including Web Services, Reference, Technical Services, Circulation, and Teen Services, and her passion for service to the public informs all aspects of her work. She is a fellow of the 2008/09 Eureka! Leadership Institute, and returned to the Institute as a mentor for 2010/11 and 2014/15. Genesis loves to play with technology and is always looking for ways that technology can enhance traditional library services and expand libraries' capabilities and reach. Prior to becoming the Library Director, she led the Mission Viejo Library's LSTA grant-funded digital literacy project. As a mom to two young "digital natives," she has a vested interest in supporting healthy ways to improve children's early literacy and media skills and teaching parents and librarians to use technology tools wisely and effectively.

Anne Hicks

Anne Hicks is a Children's Librarian at the Fairport Public Library just outside of Rochester (NY). She has a strong interest in providing patrons of all ages access to technology and promoting early literacy through the use of new media. Anne has spoken on incorporating technology into library services for children at a number of library systems and conferences throughout the country. She is also a training cohort for the Ready to Read at New York Libraries statewide early literacy initiative.

Jennifer L. Hopwood

Jennifer L. Hopwood is the training coordinator for the Southern Maryland Regional Library Association. She is a former youth services librarian, where she conducted STEM programs on a regular basis. Her published works include contributions to the anthologies *How to STEM: Science, Technology, Engineering, and Math Education in Libraries*; *Marketing Your Library: Tips and Tools That Work*; the *Children and Libraries* journal article "Initiating STEM Learning in Libraries"; and the forthcoming *Best STEM Resources for NextGen Scientists: The Essential Selection and User's Guide.* She holds a Master of Science degree in library and information studies from Florida State University.

Carisa Kluver

Carisa Kluver has an MSW from the University of Washington and a BA in Anthropology from the University of California, Berkeley. She worked as a school counselor, health educator, and researcher in maternal and child health for over a decade before founding the picture book app review site Digital-Storytime.com and its companion blog, DigitalMediaDiet.com. She has reviewed over a thousand enhanced book apps, as well as writing and researching about the intersection of literacy, kids, and the evolving digital publishing industry. Since joining Little eLit, she has developed training and other resources for librarians, educators, and families of young children about best practices for using educational technology and parenting in the digital age.

Tess Prendergast

Tess Prendergast is a children's librarian who lives with her family and works in a public library in Vancouver, Canada. She is currently finishing up a PhD in early literacy at the University of British Columbia. Her doctoral research explores the experiences of children with disabilities and their families as well as the work of children's librarians in this area of practice. She hopes to defend her dissertation in 2016. In addition to the chapters in this book, Tess has written many other articles, chapters, and blog posts on various aspects of early learning and children's librarianship, and she presents on these topics at conferences and workshops across Canada and the United States. Tess serves on various committees within the Association for Library Service to Children, and she blogs about her research and topics related to the inclusion of people with disabilities at www.inclusiveearlyliteracy.wordpress.com and about her own storytimes at www.storytimesbytess.wordpress.com.

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