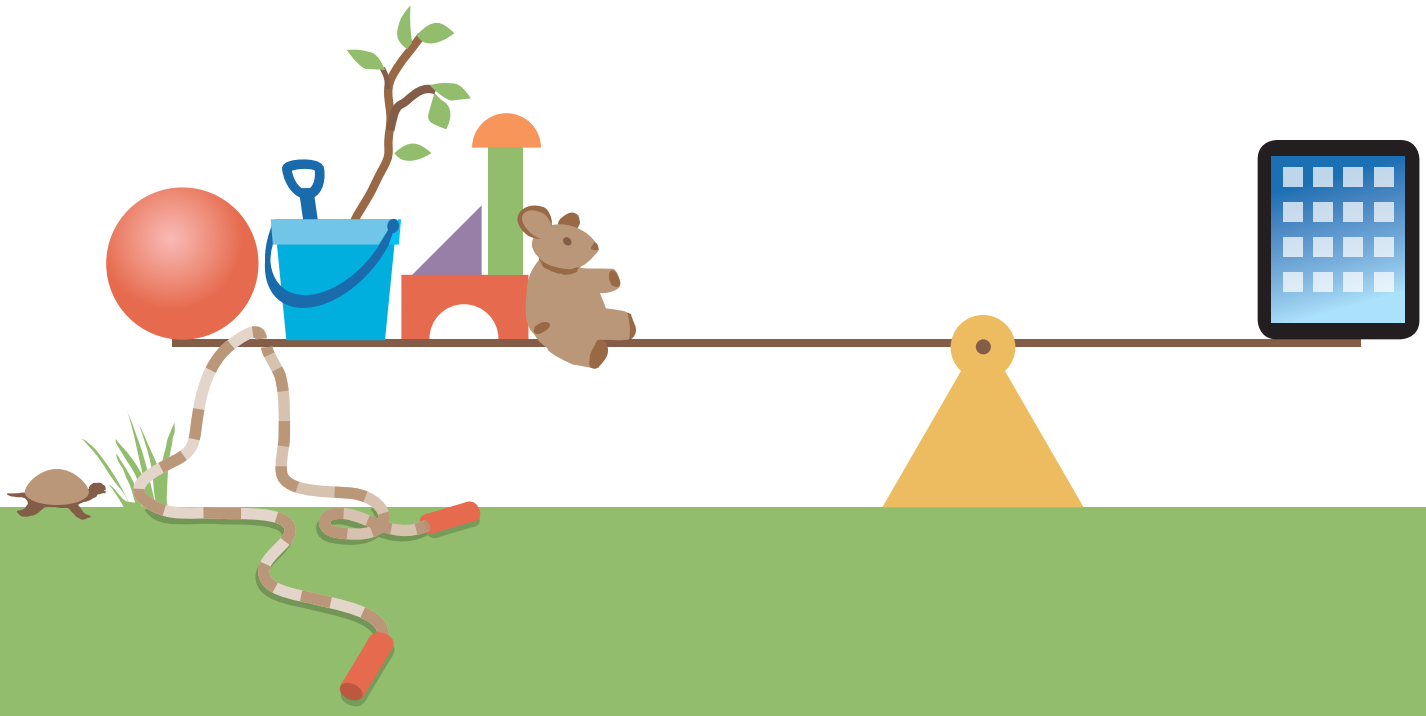
Facing the Screen Dilemma:

Young Children, Technology and Early Education



Campaign for a Commercial-Free Childhood • Alliance for Childhood •

Teachers Resisting Unhealthy Children's Entertainment

Facing the Screen Dilemma: Young children, technology and early education
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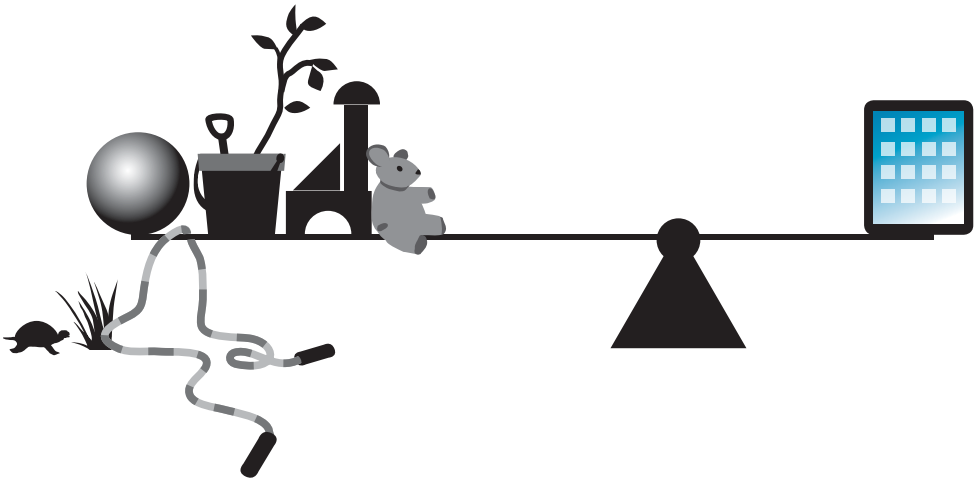

Campaign for a Commercial-Free Childhood

Alliance for Childhood

Teachers Resisting Unhealthy Children's Entertainment

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Foreword

The authors of this guide represent three organizations whose missions overlap in a commitment to the wellbeing of children. We share concerns about the escalating misuse and overuse of screen technologies in the lives of even the very young. We recognize the primary importance of nurturing young children's active and hands-on creative play, time with nature, and their face-to-face interactions with caring adults and other children. We see how screen time can interfere with these and other essentials of early childhood.

Each of us has worked with and for young children for decades. Our combined experience includes preschool teaching and preschool management, teacher education, and helping children through play therapy. We each have worked intensively to mitigate the harmful effects of screen media on young children. That said, we are by no means technophobes. Collectively we tweet, text, blog, Skype, and enjoy new technologies in all sorts of ways. Our backgrounds include creating, and performing in, media programs for young children and consulting on their content; helping teachers grapple with the impact of media on children in their classrooms; and working extensively with families struggling with screen time issues.

Based on mounting evidence, we are worried about the harm done to children's health, development, and learning in today's media-saturated, commercially-driven culture. It's clear that both the nature of what children encounter on screens and the amount of time they spend with screens are vital issues. We agree with the American Academy of Pediatrics and other public health organizations that many young children are spending too much time with screens—and that screen time should be discouraged for infants and toddlers, and carefully limited for older children.

In the interests of children's wellbeing, we believe the early childhood community needs to study the issues surrounding screen technologies, make informed decisions about their use in classrooms and child care settings, and work with parents to manage screen time and content in ways that best serve young children.

There's no question that screen technologies are drastically changing the lives of children. As a result, early childhood educators face a complex dilemma.

Susan Linn, EdD
Campaign for a Commercial-Free Childhood (CCFC)

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Introduction

The American Academy of Pediatrics and other public health organizations and agencies recommend discouraging screen time for children under 2 and no more than 1 to 2 hours per day (excluding schoolwork) for older children.

American Academy of Pediatrics Council on Communications and Media (2010).

Smart boards. Smartphones. Tablets. E-books, and more. The rapid influx of new screen devices poses a special challenge for the early childhood community. A child born today will experience wondrous technologies few of us can even imagine. How do we best support children's growth, development, and learning in a world radically changed by technology?

Arriving at a truly child-centered answer to these questions is complicated by several factors. The new technologies are exciting and often equated with progress. They are evolving so quickly that our grasp of how to make and operate them has rapidly outpaced our understanding of the educational, developmental, ethical, and social ramifications of their design and use.

One big challenge is that it's hard to find objective information about whether to use any sort of screen technology in early childhood settings. Much of what's available comes from companies whose profits depend on the sale of these devices or content for them, or from organizations receiving financial support from such companies. There is a dearth of independent research about their impact—and most of what does exist focuses on television. Yet funding for early childhood centers, particularly in low-income communities, is increasingly targeted for digital technology—making its inclusion understandably attractive to cash-strapped programs.

To complicate matters further, the new technologies—such as smartphones and tablets—are marketed as "interactive," as opposed to "old technologies" such as television and video. But these categories are not always accurate. If new technologies merely offer children a choice between a predetermined set of options, then how much true give-and-take do they really allow?

This guide is designed to help you and—with your support—the families with whom you work make informed decisions about whether, why, how, and when to use screen technologies with young children. It provides an overview of the research on screen time and young children. And it offers guidance for those who want their programs to be screen-free, as well as for those who choose to incorporate technology in their settings.

Terminology

For the purpose of this guide, the terms "screen technologies," "screens," "media," and "screen media" are used interchangeably to describe the general category of electronic devices that include screens.

Also, it is important to note that our concerns about technology and young children do not extend to digital photography or programs such as Skype that enable communication with distant family and friends.

What Research Tells Us about Screen Time and Young Children*

Beginning in infancy, screen technologies dominate the lives of many young children, and they have significantly altered childhood.[1 2 3] But how do we best support young children's health, development, and learning in a digital world? To date, research tells us that screen time has no real benefit for infants and toddlers.[4] For older children, the context in which they use media, the nature of the content they experience, and the amount of time they spend with screens are all important considerations.[5]

For children over 3, studies show that some exposure to thoughtfully constructed media content can promote pro-social behaviors[6] and contribute to learning,[7] especially when a caring adult is actively involved.[8]

On the other hand, some screen content can be harmful to children. Games and digital activities that limit children to a predetermined set of responses have been shown to diminish creativity.[9] Exposure to media violence is linked to aggression, desensitization to violence, and lack of empathy for victims.[10] Media violence is also associated with poor school performance.[11]

Even the formal features of media content—the visual techniques used in programming—can affect young children. For preschoolers, watching just 20 minutes of a fast-paced cartoon show has been shown to have a negative impact on executive function skills, including attention, the ability to delay gratification, self-regulation, and problem solving.[12]

Setting limits on the time young children spend with screen technologies is as important as monitoring content is for their health, development, and learning. The new technologies haven't displaced television and video in children's lives—they have added to screen time.[13] Extensive screen time is linked to a host of problems for children including childhood obesity,[14] sleep disturbance,[15 16] and learning,[17] attention,[18] and social problems.[19] And time with screens takes away from other activities known to be more beneficial to their growth and development.[20]

Media use begins in infancy. On any given day, 29% of babies under the age of 1 are watching TV and videos for an average of about 90 minutes. Twenty-three percent have a television in their bedroom.[21] Time with screens increases rapidly in the early years. Between their first and second birthday, on any given day, 64% of babies and toddlers are watching TV and videos, averaging slightly over 2 hours. Thirty-six percent have a television in their bedroom.[22] Little is known about the amount of time children under 2 currently spend with smartphones and tablets, but in 2011 there were three million downloads just of Fisher Price apps for infants and toddlers.[23]

The new technologies haven't displaced television and video in children's lives—they have added to screen time.

* A version of this section first appeared in Linn, S. (2012). *Healthy kids in a digital world: A strategic plan to reduce screen time for children 0-5 through organizational policy and practice change*. A report by the Campaign for a Commercial-Free Childhood for Kaiser Permanente Community Health Initiatives Grants Program. Available at: http://www.commercialfreechildhood.org/healthykidsdigitalworld

On any given day....

29% of babies under 1 year watch TV and videos for an average of 90 minutes.

64% of children 12 – 24 months watch TV and videos averaging just over 2 hours.

Data vary on screen time for preschoolers. But even the most conservative findings show that children between the ages of 2 and 5 average 2.2 hours per day.[24] Other studies show that preschoolers spend as much as 4.1[25] to 4.6 hours[26] per day using screen media. As children grow older, screen time increases and they tend to use more than one medium at the same time. Including when they're multi-tasking, 8- to 18-year-olds consume an average of 7 hours and 11 minutes of screen media per day—an increase of 2.5 hours in just 10 years.[27]

More research is needed. There is, for instance, some evidence that, for preschoolers, having limited access to a computer at home may contribute to learning, while access to video games does not. But the researchers did not track what children were doing on the computer. They also found that using a computer just once a week is more beneficial than using it every day—suggesting a little may go a long way, and that too much screen time may interfere with learning for young children.[28]

To get a sense of how and why too much screen time can negatively affect learning, and promote or exacerbate other problems for children, it's important to look first at what young children need for healthy growth and development.

"It's our insides that make us who we are, that allow us to dream and wonder and feel for others. That's what's essential. That's what will always make the biggest difference in our world."

Fred Rogers

Nurturing healthy brain development

Modern science confirms what the early childhood community has known for years—that infants, toddlers, and young children learn through exploring with their whole bodies, including all of their senses. For optimal development, in addition to food and safety, they need love. They need to be held, and they need plenty of face-to-face positive interactions with caring adults. Developing children thrive when they are talked to, read to, and played with. They need time for hands-on creative play, physically active play, and give-and-take interactions with other children and adults. They benefit from a connection with nature and opportunities to initiate explorations of their world.[29]

In the last few decades, discoveries in the neurosciences have made clear why the early years of life are so critical. The basic architecture of the human brain develops through an ongoing, evolving, and predictable process that begins before birth and continues into adulthood. Early experiences literally shape how the brain gets built. A strong foundation in the early years increases the probability of positive outcomes later. A weak foundation does just the opposite.[30]

Babies begin life with brains comprised of huge numbers of neurons, some of which are connected to each other, and many of which are not. As children grow and develop, everything they experience affects which neurons get connected to other neurons. Repeated experiences strengthen those connections, shaping children's behavior, habits, values, and responses to future experiences. The experiences young children *don't* have also influence brain development. Neurons that aren't used—or synaptic connections that aren't repeat-

ed—are pruned away, while remaining connections are strengthened.[31] This means that how young children spend their time can have important, lifelong ramifications. For better or worse, repeated behaviors—including behaviors such as watching television, playing video games, and playing with phone apps—can become biologically compelled habits.[32] In fact, behavioral research shows that the more time young children spend with screens, the more they watch later on,[33] and the more difficulty they have turning off screens as they become older.[34]

Most of the research on screen addiction has focused on television. But studies are beginning to document the addictive potential of computers and video games as well.[35] New neuro-imaging techniques provide biological evidence of the addictive properties of some screen media. Dopamine, a neurotransmitter associated with pleasure, reward, and alertness, is released in the brain during fast-moving video games[36] in a manner similar to its release after the consumption of some addictive drugs.[37] In a survey of children 8 to 18 years old, one in four said that they "felt addicted" to video games.[38]

The impact of excessive screen time on development and wellbeing

Research links many of the health and social problems facing children today to hours spent with screens.

The erosion of creative play and interaction with caring adults: Studies show that the more time infants, toddlers, and preschoolers spend with screens, the less time they spend engaged in two activities essential to healthy development and learning.[39] Screen-time takes children away from hands-on creative play—the kind of give-and-take activities that children generate and control, and that are specific to their interests and abilities.[40]

Screens also take time away from children's interactions with caring adults. Even when parents co-view television or videos with children, they spend less time engaged in other activities with their children.[41] And parents talk less to children when they are watching television together than when they are engaged in other activities.[42] In fact, they talk less to children when television is on in the background as well.[43] Newer technologies may also interfere with parent-child conversations. The so-called interactive electronic books—in which screen images respond to touch with sound effects or words or simple movements—are less likely to induce the kind of adult-child interactions that promote literacy than traditional books do.[44]

For young children, the added sounds and movements associated with many e-books have been linked to lower levels of story understanding and may hinder aspects of emerging literacy.[45] There is little or no research about literacy, young children, and the web. But

For better or worse, repeated behaviors—including behaviors such as watching television, playing video games, and playing with phone apps—can become biologically compelled habits.

Screen time increases as children grow

Data vary on screen time for preschoolers. The most conservative findings show that children between the ages of 2 and 5 average 2.2 hours per day. Other studies show that preschoolers spend as much as 4.1 to 4.6 hours per day using screen media. Including multi-tasking, children 8 to 18 spend 7.5 hours per day with screens.

"At Google and all these places, we make technology as brain-dead easy to use as possible. There's no reason why kids can't figure it out when they get older."

Google executive, Alan Eagle, quoted in Richtel, M. (2011, October 21). *A Silicon Valley school that doesn't compute*. New York Times, p. A1.

it's important to note that studies of adults suggest that attributes of the internet, such as hyperlinks and the rapid introduction of new information, may undermine reading comprehension as well as deep thinking.[46]

Undermining learning, school performance, and peer relationships: For children under 3, research demonstrates that screen media are a poor tool for learning language and vocabulary[47] and suggests that they are actually linked to delayed language acquisition.[48] In contrast, socio-dramatic play has been associated with significant gains in language use and comprehension.[49] By the time children turn 10, every additional hour of television they watched as toddlers is associated with lower math and school achievement, reduced physical activity, and victimization by classmates in middle childhood.[50]

School-age children with 2 or more hours of daily screen time are more likely to have increased psychological difficulties, including hyperactivity, emotional problems, and difficulties with peers.[51]

Given that children's screen time increases as they get older, it's important to note that negative effects continue through adolescence. Time with television and video games has been linked to problems with attention.[52] Adolescents who watch 3 or more hours of television daily are at especially high risk for poor homework completion, negative attitudes toward school, poor grades, and long-term academic failure.[53] Studies of new media are only just beginning to emerge. Even as social networking sites are being marketed to young children, a study by Stanford University researchers has found that girls ages 8 to12 who are heavy users of social media are less happy and more socially uncomfortable than their peers.[54]

Childhood obesity: Starting in early childhood, time with screen media is an important risk factor for childhood obesity.[55] [56] [57] The more time preschoolers spend watching television, the more junk food[58] and fast food[59] they are likely to eat. In fact, for each hour of television viewing per day, children, on average, consume an additional 167 calories.[60]

Studies also show that increased food intake and overweight are linked to video-game use.[61] And while active video games were heralded as a means of encouraging exercise in children, those who own active video games, such as those for the Wii video-game console, do not show an increase in physical activity.[62]

Sleep disturbance: Hours with television are linked to irregular sleep patterns in infants and toddlers[63] and to sleep disturbance in preschoolers[64] and children ages 6 to 12.[65] Time with video games is also linked to sleep disturbance in children and adolescents.[66]

Extensive exposure to harmful commercialism: Since the advent of television, screen media have been targeting children with advertising for a host of products including food, toys, clothing, accessories, and more. With the weakening of federal regulations in the 1980s and the proliferation of media produced for kids, marketing to children has increased exponentially. In 1983, companies were spending $100 million annually targeting children.[67] Now they are spending over $17 billion.[68]

Most screen media for children is commercially driven. And beloved screen characters routinely market products and more media to young viewers—to the detriment of their

health and wellbeing. Childhood obesity,[69] discontent about body image[70] and eating disorders,[71] sexualization,[72] youth violence,[73] family stress,[74] underage drinking,[75] and underage tobacco use[76] are all linked to screen-based advertising and marketing. So is the erosion of creative play.[77] In addition, research shows that, regardless of their commercial content, television and videos are less apt to generate creativity and imagination than books—which require more of children.[78]

For over 30 years, the food, marketing, media, and toy industries have successfully blocked meaningful government regulation of marketing to children. They have many avenues for reaching children, but advertising on screen media is their primary gateway. Reducing the amount of time children spend with screens is one of the few immediately available strategies for limiting marketers' access to, and impact on, children.

Modern science confirms what the early childhood community has known for years—that infants, toddlers, and young children learn through exploring with their whole bodies, including all of their senses.

About the digital divide

Proponents of incorporating new technologies into early childhood settings argue that young children from low-income families must acquire "technology handling skills" or they will fall behind children from wealthier communities.[79] Since many children in low-income communities lag behind in experiences important to learning and literacy, such as early exposure to a rich and varied vocabulary[80] and access to books,[81] it is argued that postponing, or reducing, experiences with new technologies will create another barrier to academic success.

The term "digital divide" was coined in the 1960s to describe inequalities in access to computer technology.[82] By the 1990s, its meaning expanded to include inequality in access to the internet.[83] Inequality in access still exists, but the gap is closing.[84] The meaning of the digital divide has become more nuanced, especially for children. Concern is growing about how they are using the new screen technologies, how much time they spend, and what it's replacing.

According to a survey published in 2011, children ages 0 to 8 from low-income families spend significantly more time with television and videos than their wealthier peers.[85] It also shows that there is still a significant gap in ownership of home computers and mobile devices such as smartphones and tablets.[86]

At the same time, data from the survey showing the relationship between income level and how much time young children spend with new technologies paint a more ambiguous picture. Children from all income levels spend about the same amount of time playing games on digital devices and engaged in other computer-based activities including homework.[87]

Additional information is clearly needed for early childhood educators to make informed decisions about technology and the needs of children from low-income communities. Rapid developments in the availability and pricing of mobile devices will likely affect access and the amount of time children spend with them. As yet, there is no evidence that introducing screen technologies in early childhood means children will be more adept when they're older. That means we can't make an evidence-based comparison to "book-handling skills." And, finally, there is an urgent need for research to determine if adding screen technologies of any kind in early childhood settings will increase or decrease gaps in achievement.

Conclusion

More independent research is needed on the impact of screen technologies on young children. But whether you believe that early childhood settings should include screen time or not, there *is* enough evidence to draw these conclusions: Many young children are spending too much time with screens at the expense of other important activities. There's no evidence that screen time is educational for infants and toddlers, and there is some evidence that it may be harmful. Some carefully monitored experience with quality content can benefit children over 3. But what's most important for children is lots of time for hands-on creative and active play, time in nature, and face-to-face interactions with caring adults. And, regardless of content, excessive screen time harms healthy growth and development.

Based on the available research, the next three sections of this guide contain practical information and suggestions for making your own decisions about using screen technologies with young children.

The American Academy of Pediatrics, the American Public Health Association, and the National Resource Center for Health and Safety in Child Care and Early Education recommend the following guidelines for screen time in early care and early education settings:

- **In early care and education settings, media (television [TV], video, and DVD) viewing and computer use should not be permitted for children younger than two years.**
- **For children two years and older in early care and early education settings, total media time should be limited to not more than 30 minutes once a week, and for educational or physical activity use only.**
- **During meal or snack time, TV, video, or DVD viewing should not be allowed.**
- **Computer use should be limited to no more than 15-minute increments except for homework and for children who require and consistently use assistive and adaptive computer technology.**
- **Parents/guardians should be informed if screen media are used in the early care and education program.**
- **Any screen media used should be free of advertising and brand placement. TV programs, DVD, and computer games should be reviewed and evaluated before participation of the children to ensure that advertising and brand placement are not present.**

American Academy of Pediatrics, American Public Health Association, National Resource Center for Health and Safety in Child Care and Early Education (2011). *Caring for our children: National health and safety performance standards; Guidelines for early care and education programs* (3rd ed.). Elk Grove Village, IL: American Academy of Pediatrics; Washington, DC: American Public Health Association.

Whether or Not You Use Screen Technology in Your Setting

It is vital for professionals working with children today, no matter what role technology plays in their own setting, to understand how screens can affect children's development and learning, and to take this understanding into account in their work with children and parents.*

1. **Try to determine if and how technology is affecting the performance and behavior of the children in your care, and then work to counteract any harmful effects you identify.** Children's exposure to screens at home and elsewhere will influence their classroom learning and behavior—for instance, their interests, what they know and want to know, how they play, and what they want to play. To address these problems, you can:
   - Help children who are dependent on screen-related content and activities to become deeply engaged with interests and activities in the real world that do not involve following someone else's program on a screen. Promoting *creative play* is one of the most effective ways to do this. Engaging children in real world, hands-on activities such as cooking, gardening, and woodworking is another.
   - Support children's efforts to deal with the *content* they see on screens. For instance, when children talk, play, or make paintings about what they have viewed, they are often looking for ways to understand or work through something that distressed them. Observing how they express this can teach you a lot about the kinds of support they may need to work things out. Helping children feel safe talking about it with you is one key way you can support their efforts to make sense of and *influence the lessons* they may have learned.

2. **Work closely *with* parents on technology issues.**
   - Share with parents *how* you are addressing screen issues and *why* you have decided on your particular approach. And ask them how they use screens at home.
   - Let parents know you are available as a *resource, not as a critic,* to support their efforts to resolve the technology issues that come up in their family life.
   - Use your regular channels of communication with parents to share information about:
     - How electronic technologies can influence development and learning, as well as strategies that support parents who are dealing with those influences.

Children's exposure to screens at home and elsewhere will influence their classroom learning and behavior—for instance, their interests, what they know and want to know, how they play, and what they want to play.

* For more information on implementing many of the suggestions in this section of the guide, go to D. Levin, *Beyond Remote-Controlled Childhood: Teaching Young Children in the Media Age* on how to deal with the impact of media and technology on the children in your classroom or setting. (Washington, DC, National Association for the Education of Young Children, in press.)

- Your specific observations about how you think screens may be influencing their child in your care, and strategies you have developed to respond.
- Help parents make thoughtful decisions about both the *quantity* and *quality* of screens in children's lives.
- As you work with parents and children, make sure you take into account their cultural heritage, economic circumstances, and diverse values.
- Share specific resources to help parents deal with media and technology in their homes. For instance:
  - TRUCE Action Guides (www.truceteachers.org) will help parents deal with screens and promote play in supportive and user-friendly ways.
  - The "Let's Move!" initiative (www.letsmove.gov), created by Michelle Obama, helps parents promote physical activity for children as an alternative to screen time and makes recommendations regarding media.

Help parents nurture screen-free, creative play at home and be aware of its benefits for learning and development. Provide concrete suggestions for inexpensive play activities that can engage young children.

- Strive to create channels of communication *among* the parents of your children so they feel comfortable discussing media issues and supporting each other's efforts. For example, host a screening of the film "Consuming Kids" or "Mickey Mouse Monopoly" (available at: www.mediaeducation.org) as a springboard for discussion among parents.

3. **Consider the *cost effectiveness* of spending money on technology.** Will the expense of the equipment, staff training for its proper use, and maintenance be the best use of the limited budgets of many early childhood settings?

4. **Participate in the annual Screen-Free Week, a national event, when children, families, schools, and whole communities turn off entertainment screen media and "turn on life."**
   - Screen-Free Week provides a wonderful opportunity to enjoy life without relying on screens for entertainment. In addition to being fun, it is a time to reflect on: 1) how screen media affects the lives of children and families, at home and in school; 2) what life is like without screen entertainment; 3) what children and families like to do besides watching screens; and 4) how to use what everyone learns during Screen-Free Week to make long-term changes in screen use.
   - The "Screen-Free Week Organizer's Kit" (www.screenfree.org) will help you begin.

If You Choose to Make Your Center Screen-Free

Offering a screen-free setting is a valid and pedagogically sound choice. Many excellent preschools, child care centers, and kindergartens are choosing this option. Because it is counter to the prevailing culture, however, it can be challenging to explain to parents and others. Parents seek the best opportunities for their children. They may need help in understanding why a screen-free environment will give their child a strong foundation in broad-based learning. So be prepared for questions. You will create your own best answers, but below are some common questions with some key points to help you respond. Sharing information from the research section of this guide will also help to explain your decision.

Why do you place so much emphasis on hands-on learning and play instead of giving kids time to learn with technology?

Longitudinal research shows that experiential learning—where teachers engage young students in physically active, creative ways, combined with ample time for child-initiated play—is essential for children to thrive developmentally in preschool and kindergarten.[88] There is no comparable research showing that screen-based learning is as effective. The content may appear rich. But the actual experience of learning through screens pales for young children when contrasted to learning that involves the mind, the emotions, and the body, including the senses. Also, as the research section in this guide reports, there is mounting evidence of harm related to too much screen time.

Some educators and occupational therapists are reporting that many school children now need special therapy to develop the use of their hands.[89] The issue is gaining increasing attention but needs to be researched. Anecdotally at least, it seems that children are less able to use their hands for creative activities and work-related tasks than has been the case in the past. The hand is constructed for a large variety of complex motions. Increasingly, however, children spend long hours using their hands for a narrow set of skills linked to screens and digital toys.

One elementary school principal explained to *The New York Times* why he hired an occupational therapist to work with all of his students, not just those with recognized disabilities, as would normally be the case.

> "'... in the last five years, I've seen a dramatic increase in the number of kids who don't have the strength in their hands to wield a scissors or do arts and crafts projects, which in turn prepares them for writing.' Many kindergartners in his community, he said, have taken music appreciation classes or participated in adult-led sports teams or yoga. And most have also logged serious time in front of a television or a computer screen. But very few have had unlimited opportunities to run, jump and skip, or make mud pies and break twigs. 'I'm all for academic rigor,' he said, 'but these days I tell parents that letting their child mold clay, play in the sand or build with Play-Doh builds important school-readiness skills, too.'"[90]

"It could be argued that active play is so central to child development that it should be included in the very definition of childhood."

American Academy of Pediatrics

A center without technology seems so old-fashioned. Won't my child lag behind if she is not introduced to digital technologies?

There is no evidence to support the popular view—heavily promoted by companies that sell electronic media—that children must start early if they are to succeed in the digital age. And as smartphones and other new technologies become less expensive, more and more very young children are already spending too much time with them at home. Great innovators in the computer industry like Bill Gates and Steve Jobs did not even experience computers until they were about 12. But both had wide experiences with hands-on learning when they were young. Gates was a Cub Scout, and Jobs spoke of his love for tinkering with the inner workings of radios and televisions as a boy.

Developing children thrive when they are talked to, read to, and played with. They need time for hands-on creative play, physically active play, and give-and-take interactions with other children and adults. They benefit from a connection with nature and opportunities to initiate explorations of their world.

Tinkering, a creative form of hands-on exploration and play, has been found to be of great importance for later problem solving in engineering and other fields.[91] Because such hands-on experiences foster creativity and constructive problem solving, they are especially important for young children whose lives are dominated by screens. Research suggests that, as a society, our creativity is declining,[92] yet it is central to leading a meaningful life and to success in the workplace. A global survey of 1,500 CEOs found that they named creativity as the number one attribute for leadership.[93]

Andreas Schleicher is an educational analyst for the Organisation for Economic Co-operation and Development (OECD), an international organization that manages the PISA test.[94] This is a highly regarded test for teens given in the wealthiest countries. Schleicher visits classrooms in the best performing countries to find out what they are doing right. He finds that the successful systems seem to "place their efforts primarily on pedagogical practice rather than digital gadgets."[95]

My preschooler is so smart. At home she does amazing things on any touch screen. Shouldn't we be encouraging this kind of intelligence at school as well?

Technological know-how is one kind of intelligence. But there are many other forms that need to be developed in early childhood, including physical skills, social-emotional learning, the cognitive development that stems from active exploration and problem solving in a child's own physical environment, oral language skills, and the creative use of a wide variety of play objects. These take time and often some adult support if they are to develop fully. In early childhood settings, children also have a unique opportunity to work with other children on projects, to build structures together, and to develop play scenarios that are rich and meaningful. We share books and stories that require children to actively exercise their imaginations to bring the sounds and images to life, unlike high-tech versions that do the work for the children. At our center, we focus on the development of all these abilities.

Aren't screen technologies just another tool? Why not just consider them to be one more tool among many in the early childhood environment?

Electronic screen technologies are tools, but these very powerful devices were designed primarily with adult needs and adult capacities in mind. Throughout history human beings have used tools, which have helped shape our lives. It's a great help if children can learn to use basic tools first—such as hammers and nails, and cooking and gardening tools—that are objects they can fully manipulate and control themselves.

Screen technologies hide the real work from our eyes and hands. Their workings are inside, determined by far-distant programmers. Children like to know how things work. They typically take things apart and put them back together, but that's not possible with computers.

Because changes on a screen happen so quickly and because screens are so compelling, children can become passive, content to let the technologies set the parameters, rather than exercising their own skills and curiosity.

Also, because digital technologies are powerful tools, they require mature judgment to know when and how to use them well—and how to avoid the pitfalls of misuse. There are ways to prepare children so they can later make mature judgments based on their own ideas and internal direction. Simply putting advanced tools into the hands of very young children shortcuts important steps in the learning process and can lead to an over-dependence on what others offer them.[96]

The new technologies are exciting and often equated with progress. They are evolving so quickly that our grasp of how to make and operate them has rapidly outpaced our understanding of the educational, developmental, ethical, and social ramifications of their design and use.

What are the differences between passive and interactive screens? Wouldn't it help to just provide young children with interactive technologies and curtail passive technology, such as television and videos?

The term "passive media" is often used by proponents of new technologies in early childhood settings to describe media that children watch, such as television and videos. "Active media" describes devices such as touch screens that allow children to influence what's on the screen. But it's a distinction that doesn't really make sense. Thoughtfully made television and video programming for children over 3—and books, for that matter—can be interactive when they encourage children to wrestle with ideas and feelings, or when they prompt children to try new activities later. An app or any activity using new technologies can be "passive" when it promotes only imitation or programmed responses, or presents preset choices for how to respond. These products actively engage children's finger-tips but not their minds and emotions.

As Lisa Guernsey writes in *Slate* magazine:

> "Child development specialists say young children learn best when they are fully engaged and imbued with a feeling of control. They encourage parents to seek out more open-ended games and toys in which children could explore and create at their own pace. Yet at the moment, not many apps are built with this approach in mind."[97]

She goes on to cite an Australian study that examined the 10 best-selling apps for young children in each of three countries: Australia, the United States, and the United Kingdom. The researchers found that only 2% of the 30 programs could be considered open-ended, creative programs, while 78% were essentially drill and practice programs. The remaining apps offered several choices from a limited set of options.[98]

But no app or other digital media is as responsive and interactive as a live teacher, parent, or playmate can be.

I want to work with parents on reducing screen time at home. They frequently ask me for a guideline on how much is too much. Can you advise?

The answer to your question is complicated. The public health community provides guide-

lines that discourage screen time for children under 2 and limit it to 1 to 2 hours per day for children 2 and older. But many teachers find that even that much screen time can interfere with the ability of some young children to develop their own ideas in play, or to develop self-control and other needed skills.

One way to help parents is to ask them to take stock of how much time their children spend with screens. When does screen time take place? How hard is it for them to stop? Has screen time become a focus of family struggles? Encourage parents to choose content carefully. Help them come up with a plan that works for their family. Some may decide to cut back, or limit screen time to weekends. Others may decide to eliminate screen time altogether.

Behavioral research shows that the more time young children spend with screens, the more they watch later on, and the more difficulty they have turning off screens as they become older.

My child has disabilities and benefits greatly from assistive technologies. Do the same recommendations for limiting screen time apply to her?

There is always room for individual responses to the needs of children, both at home and school. Assistive technologies are extraordinarily helpful to many children with disabilities. At the same time, whenever possible, it is also important for children to develop skills and capacities that don't require technological support. In general, the wider the range of abilities that a child can develop, the better.

I work in a screen-free setting that serves low-income families. If it were up to me my classroom would remain screen-free, but we've received a donation of tablets. I'm under pressure to use them, but I don't want them to dominate our work with the children. Any suggestions?

You're in a difficult situation. Research is sorely needed to determine whether introducing screen technologies in early childhood settings has any impact on the achievement gap. But if the decision to use the tablets is irrevocable, there are helpful suggestions in the section of this guide entitled, "If You Choose to Incorporate Screen Technology in Your Setting." Key among them are: be intentional in making choices, establish rules and routines, and choose screen activities carefully. You can still make sure that your children spend most of their time engaged in the kinds of hands-on and active play, and experiential learning that are so central to their development. Whenever possible, carve out class time for being outdoors.

The public health community has set guidelines for all early care and education programs: Screen time "should not be permitted for children younger than two years. For children two years and older... total media time should be limited to not more than 30 minutes once a week, and for educational or physical activity use only."[99]

Finally, help parents nurture screen-free, creative play at home and be aware of its benefits for learning and development. Provide concrete suggestions for inexpensive play activities that can engage young children. Simple household materials like a sheet thrown over a table to be a cave or house, or cardboard boxes for hiding in, can often keep children busy for long periods of time.

If You Choose to Incorporate Screen Technology in Your Setting

If you decide to use screens with children, then it is important to do so in ways that do not increase problems associated with screens, and that promote their active engagement with developmentally appropriate, hands-on experiences and learning.

Be intentional: Have a carefully thought-out *rationale* for the technology you choose. This includes answering such questions as:

- Will this technology accomplish something that I could *not* do just as well or better without it? If so, what?
- How exactly will this technology *enhance or expand* what I am already doing to help meet my learning and development goals for the children?
- Does it *connect and build* onto regular, real-life curricular activities already going on in the classroom? If so, how?
- How do I ensure that the children use the technology in ways that enrich and deepen their current knowledge and skills?
- Can I provide clear boundaries for screen activities so that they do not increasingly creep into classroom life? How?
- How can I ensure that screen activities will not make children more dependent on screens and lure them away from real-world, hands-on activities?

Establish technology *rules and routines.* The more you think things through in advance and then involve children in this process, the less stress, conflict, or creeping escalation of technology you will have. For instance, work with the children on:

- What specific technology is being used?
- When can it be used and when *not*? Specific *time limits* are important. Having screen activities with obvious *end-points* can help a lot with time limits.

Actively facilitate children's involvement and learning before, during, and after any screen activity.

- *Observe* and *document what the children do.* Focus on such things as: What are they using? How are they using it? What differences do you see in what individual children do? Are there gender, race or class differences in the screen activities children choose to do and not do? How does what they are doing connect to your goals for the activity? Do things happen that you didn't expect? How can your observations inform what you do next with children and the activity? Are there negative aspects of the activity that you had not anticipated?

The more you think things through in advance and then involve children in this process, the less stress, conflict, or creeping escalation of technology you will have.

To date, research tells us that screen time has no real benefit for infants and toddlers. For older children, the context in which they use media, the nature of the content they experience, and the amount of time they spend with screens are all important considerations.

- *Discuss* the activity with the children afterwards. How do they think and feel about what they did? What connections can they make with their real-world experiences, including the hands-on curricular activity which the screen activity may have been intended to enrich? How can they use what they learned to inform their non-screen activities?
- *Keep track* of what children do when the screen activity is over. Do they have a hard time stopping? How do they handle the transition back to non-screen activities? How do they bring what they did on the screen into other activities?

Choose screen activities carefully. The questions below will help you make appropriate choices:

- What is the *nature of their content*? Avoid content that contains: racial or ethnic stereotypes, violence, highly gender-divided behavior, or brand licensing (i.e., using popular media themes and characters to *promote* the sale of products).
- What will the content contribute that non-screen activities cannot? Are there negative ways it can affect children? If so, how?
- Does the content promote *positive social interaction and play* among children? If so, how? Or does it undermine play and/or promote anti-social behavior?
- Will the screen activity *interfere* with the regular hands-on curriculum—e.g., will it be *hard to end* because there are no obvious end points, or because it is so "exciting" and fast-paced that everything else can seem boring? Is it likely to influence children's interactions with other children, and if so, how?
- Is it likely to influence children's social interactions, and if so, how?

Think carefully about *where screens are located* and try to minimize their prominence. For instance:

- Have them in a *clearly designated place* where small groups of children can use them without distracting children involved in other activities.
- When not in use, avoid the distraction screens can create for children by covering larger ones and placing small screens out of sight.

Conclusion

There's no question that screen technologies are drastically changing the lives of children. As a result, early childhood educators face a complex dilemma. How do we best support children's growth, development, and learning in a culture increasingly reliant on screens?

We hope the information in this guide will help you address some key questions: Should screen technologies be included in a center's activities for children? If not, why not? If so, then why, how, when, and how much?

Whatever you decide, we hope that you will reach out to parents, helping them make thoughtful decisions about both the time children spend with screens and the content they experience. Finally, we hope you will continue to provide children with what they need most—active and hands-on creative play, time in nature, and lots of quality, screen-free time with caring adults.

RECOMMENDATIONS

about Screen Technologies in Early Childhood Settings

1. Early childhood professionals need to be well-informed about the implications of screen technologies for young children. It's important for individual settings to develop internal policies based on available evidence. Whether or not you use technology in your setting, we recommend the following:

Advocate for courses and professional development programs that help teachers and caregivers actively examine the pros, cons, and implications of screen technologies for their work with children.

Approach the claims made about the benefits of new technologies with lively interest and an open mind, but also—as you would with any sales pitch—with healthy skepticism. Are the claims based on research by independent, reputable researchers? Does the person or organization advocating for a product stand to profit from its sale or depend on funding from its manufacturer?

Support the development of best practices that are evidence-based. Advocate for more independently funded research that examines the potential positive and negative effects—especially long-term effects—of screen technologies on young children.

2. Make intentional decisions about technology. If you use technology in the classroom, understand why and what you hope to accomplish with it. If you do not use it, understand why you are making that choice. Weigh the costs and benefits carefully. New technologies can be expensive. Count on investing in professional development, as well as purchase price, maintenance, and replacement costs. Given limited budgets, before buying screen technologies, assess both what your program would gain and what alternative opportunities would be given up.

3. Keep in mind that choosing to be screen-free is a viable option. As with all your classroom decisions, what you decide about technology should be based on what your particular children really need. While the use of technology in early childhood settings is increasingly common, choosing a screen-free, play-based setting for young children remains a pedagogically sound choice.

4. Work closely with parents. Knowing how much time children spend with screens at home—and the nature of the content they are experiencing—is central to making an informed decision about screen technologies in your classroom. Understand why and how children are using screens at home. Help parents develop fun, affordable alternatives to screen time and set limits on how much screens are used. Regardless of content, children are harmed when a significant portion of their time awake is spent in front of a screen. Help those who allow screen time at home to understand the importance of selecting content carefully. No matter how few hours they spend with screens, children are harmed by violent, sexualized, stereotyped, or commercialized content.

5. Remember to keep settings for infants and toddlers screen-free and to set developmentally appropriate time limits for older children. There's no evidence that screen time is beneficial for children under 2 and some evidence that it may be harmful. When setting time limits for older children, consider total screen time—including time at home and time in the classroom. There is scant evidence that screen time is beneficial for children under 3, so total screen time for 2 to 3 year olds should be minimal at most. For young children over 3, the public health recommendation of no more than 1 to 2 hours a day is more than enough for total screen time.

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About the Authors

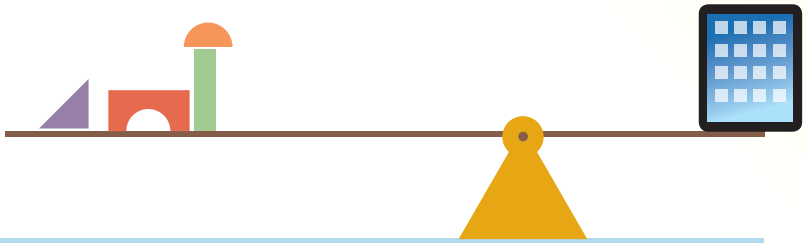
Susan Linn, EdD, is founder and director of Campaign for a Commercial-Free Childhood, research associate at Boston Children's Hospital, and instructor in psychiatry at Harvard Medical School. She has written two books and numerous articles about creative play and the effects of media and commercial marketing on children. A psychologist and an award-winning ventriloquist, she and her puppets appeared on Mister Rogers Neighborhood and in numerous videos helping children cope with difficult issues ranging from racism to parental depression. In 2006 she received a Presidential Citation from the American Psychological Association for her work on behalf of children.

Joan Wolfsheimer Almon co-founded the Alliance for Childhood in 1999 and served as its director until 2012 when she became director of programs. She oversees the Alliance's campaigns to restore play in childhood, play-based learning in preschool and kindergarten, and the overuse of screen time in childhood. Joan began working with young children in 1971 and became a Waldorf early childhood educator. She taught in Maryland for nearly 20 years and then traveled extensively as a consultant to schools in Africa, Asia, South America, and Europe. She enjoys telling fairy tales to children and enlivening them through marionette shows.

Diane E. Levin, PhD, is professor of early childhood education at Wheelock College in Boston. Her teaching, writing, and advocacy focus on how various forces in society—such as war and conflict, economic crises, media, marketing and toys—affect children's development, learning, behavior and play; and, what parents, teachers and the wider community can do to counteract the harm and promote the positive. She has written or co-written eight books. Formerly, Diane taught kindergarten and emotionally disturbed preschoolers. She is a founder of Teachers Resisting Unhealthy Children's Entertainment (www.truceteachers.org), Defending the Early Years (www.deyproject.org) and the Campaign for a Commercial-Free Childhood.

Facing
the Screen Dilemma:

Young Children, Technology and Early Education



Smart boards. Smartphones. Tablets. E-books, and more. The rapid influx of new screen devices poses a special challenge for the early childhood community. How do we best support children's growth, development, and learning in a world radically changed by technology?

Facing the Screen Dilemma **is designed to help early childhood educators make informed decisions about whether, why, how, and when to use screen technologies with young children. It provides an overview of the research on screen time and young children. And it offers guidance for those who want their programs to be screen-free, as well as for those who choose to incorporate technology in their settings.**

The Campaign for a Commercial-Free Childhood supports parents' efforts to raise healthy families by ending the exploitive practice of marketing to children. We hold corporations accountable for egregious marketing practices, promote policies that limit advertisers' access to children, and advocate for commercial-free schools. CCFC is also home to National Screen-Free Week.
www.commercialfreechildhood.org

ccfc
Campaign for a Commercial-Free Childhood

The Alliance for Childhood promotes policies and practices that support children's healthy development, love of learning, and joy in living. Current campaigns include the restoration of play in children's lives and of experiential, play-based learning in preschools and kindergartens; and the development of the Decade for Childhood: 2012–2022.
www.allianceforchildhood.org

Alliance for Childhood

Teachers Resisting Unhealthy Children's Entertainment is a grassroots organization that prepares action guides to help teachers and parents deal with the harmful impact of media and commercial culture on young children's play, behavior and school success.
www.truceteachers.org

TRUCE
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