When Should We Use Technology with Visitors and How Much?
Research

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Rockman et al

Practice

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Children and Screen Time: Research Overview

ACM Interactivity
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“The modern world has overwhelmed people with information that is confusing and harmful to the mind.”

“Disrupting the balance of young children’s minds.”

“Ruining conversation and the pattern of family living.”
Headlines – How bad is it?

• Screen Addiction Is Taking a Toll on Children, New York Times, 7/6/15

• Screen time Is Making Kids, Moody, Crazy and Lazy, Psychology Today, 8/18/15

• How just two hours’ screen time a day as a toddler can make children more likely to 'be badly behaved or have ADHD'
  • Daily Mail Online, 4/15/19

• Electronic media keeping kids from communicating with parents, Science Daily, 5/27/16

Is our screen-time anxiety more detrimental than screen time? Washington Post, 5/30/16

• It’s ‘digital heroin’: How screens turn kids into psychotic junkies, Dr. Nicholas Kardaras, New York Post, 8/17/16
Headlines – Or is it that bad?

• Children benefit from the right kind of screen time, New Scientist, 3/26/14
• Maybe you’re being too strict with your kids screen time, USA Today 12/18/17
• Screen time for kids is probably fine, FiveThirtyEight, 6/18/15
• Sorry Kate Winslet, some screen time can be good for kids, The Daily Telegraph, 11/4/15
• Parents: Reject technology shame, The Atlantic, 11/4/15
Some statistics

- Average child spends 3 hours per day watching television and 5-7 hours total on screens (NIMH).

- The average age a child first watched a television in the 1970’s was 4 years; in 2012, it was 4 months (Rideout, V. J., & Hamel, E. (2006).

- 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. (Rideout, 2011)

- Among children 8 years of age and younger, 75% use smartphones (Common Sense Media, 2015)
Categories of screen time

- **Passive consumption**: watching TV, reading, and listening to music
- **Interactive consumption**: playing games and browsing the Internet
- **Communication**: video-chatting and using social media
- **Content creation**: using devices to make digital art or music

*The common sense census: Media use by tweens and teens*
V Rideout - Common Sense Media, San Francisco, CA, 2015
What kind of screen time is it?

- Screen time as a sum of all screen-related activities might not be the most accurate and useful measure.
- Computer use and video game play should not be classed as the same type of activity as TV viewing.
- Active screen time
  - Physical and cognitive
  - Physical inactivity and screen time may not be directly linked
- Passive screen time
  - Conflicting evidence on educational and physiological impact
- Extent to which a child actively engages with media may be a function of the child, rather than the specific form of media.

Challenges of studying screen time

- Many studies do not establish firm causality
  - Does media affect children differently in different contexts?
- Few controlled experiments
  - Would parents permit their children to participate in a control group?
- What constitutes screen time?
  - “The research world is so far behind what these different devices and apps can do. It’s difficult to do the studies to even figure out what’s best for kids before the technologies change again,” - Heather Kirkorkian, University of Wisconsin
- Individual differences in how children respond to different media
- Children younger than 1 year old should have no screen time.
- Children ages 2 to 4 should have passive screen time capped at an hour a day.
- Children under five must spend less time sitting watching screens.
- Limits on sedentary screen time do not include:
  - Video chats with relatives
  - Programs that have children actively participating
  - E-books where parents read along

Cooney Center – Families and Media Project (2014)

• Nearly half (44%) of the screen media 2- to 10-year olds considered educational

• Ed. media occurs most frequently with among very young children (2-4 yr. olds)

• Children spend more time with TV than any other platform

• Children still read! An average of 40 minutes per day (29-print, 8-computer, 5-e-platforms)

• As children get older, the amount of time they spend with screen media goes up (from 1:37 to 2:36 a day), and the proportion that is educational goes down (from 78% to 27%)
AAP Position on Screen Time

- Latest report: October 2016
- Shift from previous recommendations
- Well designed media used by parents and children together, could be a tool for social interaction and learning.
- Adopting a more realistic approach
  - Recognizes ubiquity of technology in our lives
  - Toddlers may benefit from new technologies (video chat)
  - Most preschoolers already using tablets and other technology
- Role of parents in interpreting and contextualizing
- Differentiate between entertainment and educational media
NAEYC-FRC Report

- Television shows and electronic resources can serve as powerful tools for teaching and learning, when incorporating what is known about effective reading instruction (Corporation for Public Broadcasting 2011).

- It is the educational content that matters—not the format in which it is presented (Wainwright & Linebarger 2006).
Impacts of screen time

Excessive Screen Time
- Internet overuse
- Excessive gaming

- Sleep Problem
  - Decreased Sleep duration
  - Increased Daytime sleepiness
  - Poor Sleep Quality

- School Ability Affected
  - Lower Grades

- Sending Lifestyle & Unhealthy Eating

- Depression

- Rewiring of Brain
  - Attentional Difficulties
  - Anxiety & Fear
  - Increased Aggression
  - Desensitization and Acceptance of Violence

- Addiction

- Poor Mental Well-being

- Multiple Risk Factors

Cognitive Development
Mental Health
Physical Health
Social Emotional Development
Impacts of screen time

In defense of screen time

Content that introduces computer skills and encourages thinking and problem-solving

Content that supports the traditional educational curriculum

Content mostly for entertainment

CREATIVE
Anything on screen contributed to the child feels here, it includes classic painting programs, also as open-ended content geared toward coding, game design, engineering, and non-guided writing.

PASSIVE
The child watches content in this category with no real level of participation. It’s a predefined space where parents need not be present, but it’s sometimes hard to not see the beauty in these easy tools. At best, there are high-quality options.

INTERACTIVE
This category requires real-time input from the child in order to participate. Most of the titles here are mobile apps. Many introduce skills and concepts that are expanded upon in the creative categories, which is good for older users.

LUMINOUS
Encourages quick thinking

EXPERIENCE
A range of experiences, from VR to AR, to immersive storytelling.

ADVENTURE PUZZLER
Tony there's what you're doing; objects must be found and objects released to achieve the end goal.

BAD PRINCE
Angry Birds concept for kids.

BADMINTON
Learning math while playing badminton.

BASKETBALL
Firing games that allow you to use a virtual basketball to score points.

DR. PANDA
A series of child-friendly character games ideal for the early years.

MARIO BROS
The world's most famous video game.

TETRIS
A classic puzzle game.

INTERVIEW
Interview with a parent about their child's screen time.

SHARPERNESS
Sharpening skills through puzzles.

MATH MUSICALS
Music-based games targeting math concepts.

WORDS WITH FRIENDS
A word game where players compete.

ESCAPES GAMES
Solving puzzles to escape.

ESCAPES ALPHABET
A game that encourages learning the alphabet.

LEGO
A favorite among children and adults.

NATIONAL GEOGRAPHIC
Educational content that combines entertainment.

NO CODES ACADEMY
Learn coding through games in a step-by-step format.

WOLFRAM ALPHA
A powerful calculator for math and science.

SCIENCE LAB
A game that involves scientific experiments.

LEARNING LAB
A tool for learning various subjects.

DREAMS OF MATH
A game that teaches math concepts.

DRAWING PRO
A tool for creating drawings.

FIRE SOCCER
A soccer game that also helps with problem-solving.

FARM GAMES
Games that teach about farming and agriculture.

PRIDE
A game that teaches about diversity and equality.

SHIRTCOUPLE
A game that teaches about relationships.

SNAP
A game that teaches about coding.

WILLIAM FAULKNER
A game that teaches about literature.

SCRIBBLENAUTS
A game that teaches about drawing.

CONSIDERED
A game that teaches about science.

SNIPER SHOOTER
A game that teaches about accuracy.

MINECRAFT
A game that teaches about building and strategy.

DESIGN A SPACE SHIP
A game that teaches about engineering.

PHOTOSHOP
A tool for editing images.

MOBILE WORLD
A game that teaches about space exploration.

MINIGAMES
A variety of mini games.

CREATE
An open-ended game that allows for creativity.

BUILDING SIMULATIONS
A game that teaches about city planning.

SHARING
A game that teaches about sharing.

APPRENTICE
A game that teaches about apprenticeship.

LITTLE BIG PLANET
An open-ended game that teaches about creativity.

RUBIK'S CUBE
A game that teaches about problem-solving.

SHUTTERFLY
A game that teaches about photography.

SCHOLARSHIP
A game that teaches about scholarships.

SCHOLARS V.
A game that teaches about scholars.

WIRE FRAME
A game that teaches about wireframes.

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Children and screen time

- Preschoolers can and do learn from high quality educational media (Fisch & Truglio, 2001)
- Children under age 3 struggle to learn from a screen, but some features can support learning
  - Repetition (Barr et al., 2007)
  - Familiar characters (Lauricella et al., 2011)
  - Social contingency
Impact on cognitive development

• TV watching is correlated with poor language development. Two or more hours per day of screen time before the first birthday is associated with a six-fold increase in language delay. (Aamodt & Wang, 2011)

• Live interactions between a child and an adult conducted over a digital device such as a tablet or smartphone enable children to learn new words (Roseberry, 2013)

• Violent content and evening media use were associated with increased sleep problems for children aged three to five years. (Garrison, 2011)

• Interactivity and adult modeling help children to learn a task better than passive viewing of the same material (Lauricella, A. R., et. al. 2010)
Link between research and recommendations

- Evidence cited is overwhelmingly from quantitative sources, especially for risk-focused advice (harm reduction is often the starting point).

- Positive visions of screen time tends to be crowd-sourced (i.e. self-reported experiences of parents), advocated by industry (e.g. Apple), or claimed as ‘common sense’ with no links to evidence.

- The organizations with the closest links between evidence and recommendations are those that commission their own research. (e.g. Common Sense Media)

- Children’s ages, interests, developmental abilities and gender are intrinsic parts of media use, however very few recommendations acknowledge these differences.
Parents, children and screen time

• Parents’ own digital skill level determines how, and with what results, they mediate their children’s digital media use. (restrictive vs. mediation; Livingstone, 2015)

• Parental values around digital media can be as influential as parents’ skill levels in how they approach media in the home and in their children’s lives.
  
  • Digital media use offers opportunities for parents and children to share expertise and to learn from one another, if both are open to doing so (Fletcher and Blair (2014).

• The gender of both parent and child influences parental mediation.
  
  • Studies have shown that girls tend to be monitored and restricted more than boys, even when they are the same age (Eastin et al. (2006); Kirwil (2009); Livingstone et al., 2016: forthcoming).

• Parents of young children are more likely to engage in all forms of parental mediation, including technical restrictions, social restrictions, active mediation and monitoring. (Pasquier et al. 2012).
Conclusions

• Media use is no longer an optional extra

• ‘Screen time’ cannot be homogenized as a uniform or inevitably problematic activity.

• Heavy focus on risk with little exploration or recognition of opportunities creates the dominant message to parents that their main responsibility is to limit and control.

• Heavy focus on restrictions leaves parents unsupported in finding opportunities for children and parents to learn, connect and create together using digital media.
Scott Burg

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Think ahead about technology use in your museum, share one hopeful and one concerning statement?
Children’s Creativity Museum
San Francisco, California

Dr. Carol Tang
Executive Director
To nurture creativity and collaboration in all children and families.
Zeum opened in 1998

Get creative in our multimedia playground!

what will you create?

zeum
san francisco's children's museum

221 fourth street @ howard • san francisco, ca 94103 • www.zeum.org • 415.820.3320
Strategic Plan: Theory of Change

Intentionally Designed Activities + Mindful Adults + Time = Creative Confidence
Strategic Plan: Theory of Change

- “Sticky” for 20+ minutes
- Repeatable
- Serve children through ages and stages
Strategic Plan: Theory of Change

- People-facilitated
  - Model good behavior with technology
  - Sharing and re-iteration

Intentionally Designed Activities + Mindful Adults + Time = Creative Confidence
The Children’s Creativity Museum’s (CCM) approach to using technology stems from its unique location in San Francisco—blocks from some of the most famous internet companies in the world—and also from its origin as an art and technology studio for underserved youth.

When CCM was founded as “Zeum” in 1998, relatively few low-income children or teenagers had access to computers and other digital media. That has changed, but digital arts continue to be an important part of CCM’s identity. Even when Zeum became the Children’s Creativity Museum in 2011 (in response to changing neighborhood demographics such as more residential housing, more young families with young children), it did not abandon its core digital arts exhibitions such as the ClayMotion Studio and Music Studio. Along with the name that “getting in the flow” is an important element for creativity and skill mastery. Thus, all of our experiences aim to be fun yet challenging enough to keep a child’s attention.

All activities must have an element of collaboration and/or sharing. For videos and films, we email finished projects home so that family members can review and discuss the stories and the creative process soon after their museum visit. We also encourage sharing with grandparents and on social media to build children’s creative confidence. We encourage children to play each other’s video games during our workshops. They are also able to share their playable video games with a virtual online community created by Bloxels (in compliance with online child safety laws).

Activities built around screens should most often be situated in separate rooms, al-
Empowering children to be producers of digital media, not just passive consumers

- Technology can unlock creativity
  - Story-telling
- Hide Screens
- Digital + Analog
- Social Component
The Children's Creativity Museum is a hands-on multimedia art and technology experience designed to build creative confidence in children ages 2-12. We advance our mission, to nurture creativity and collaboration in all children and families, by providing opportunities for creative expression, innovation and critical thinking.

First Floor
Be sure to visit SketchTown in our Community Lab!

Inspiration Studio
Drop-in for a variety of activities including special workshops and Early Childhood classes.

AGE VARIES

Animation Studio
Tell your own story creating clay characters and using digital technology for a stop-motion movie.

AGES 5+

Community Lab
Visit SketchTown, an immersive technology experience that allows for real-time creation and collaboration in the digital realm.

ALL AGES

Imagination Lab
Build, sculpt, perform and set your imagination free. Augmented Reality Sandbox: Construct landscapes to learn about natural environments.

AGES 5 AND UNDER

Collaboration Studio
Located adjacent to the entrance, this space offers special programs and activities in collaboration with other organizations.

AGE VARIES
SketchTown
Augmented Reality Sandbox
Animation Studio
Make Your Own Video Game Workshop

Story-telling
• Characters
• Rules
• Plot Twists
• Pitfalls
• Happy Ending
Making Music Studio
Imagine, Create and Share with Us!
#celebratecreativity

www.creativity.org
carol@creativity.org
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Does the digital technology engage or distract?
Technology as just another tool.
Is it about the **technology** or the **experience**?
How quickly will the technology become outdated?
What’s the **digital culture** in our local community?
Thank You

Ali Jackson, Director of Partnerships
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<tr>
<th>Carol</th>
<th>Scott</th>
<th>Ali</th>
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<td>Funder or board request to add new technology to the floor.</td>
<td>The museums is planning an exhibit with a lot of technology, how do you evaluate it?</td>
<td>Dealing with digitally distracted children and parents or caregivers.</td>
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Thanks!

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