Stepping into STEM
*Using Technology as a Catalyst for Early Learning*

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About Erikson Institute

Our vision is that every adult who works with young children or on their behalf will be knowledgeable, aware, skilled, and *alive to the possibilities of each child’s life.*
Follow Fred’s lead...Use tech “with” rather than “instead of”
We have to help give children tools, building blocks for active play.
And the computer is one of those building blocks. No computer will ever take the place of wooden toys or building blocks. But that doesn’t mean they have to be mutually exclusive.

The old and the analog...
Were you born digital...born analog...born BPC

Our narrow bandwidth...
• Born in another time
• Our analog skills are valuable but not sufficient
• Need to confront our technology shortcomings
• 21st century teaching for 21st century learners
• Use tech to learn how to use tech...for leading, managing, teaching, learning, communicating and collaborating
The young and the digital
The old and the analog

Our digital media literacy comes first

Digital media literacy = attitudes, experience, knowledge, competencies leading to fluency

- Intentionally and critically select, use, integrate and evaluate technology
- Gain knowledge, skills and hands-on experience – become fluent
- Increase your confidence and competence – become intentional
- Understand digital citizenship
- Narrow the personal/professional use gap
- Move along the continuum from...

consumer > adopter > adapter > creator
Digital obstacles
Teaching analog adults new digital tricks

Do you preach...
...what you practice?

“It keeps me from looking at my phone every two seconds.”
What’s wrong with these pictures?

What are the concerns?

- Too much passive, non-interactive use
- Exposure to inappropriate content
- Commercial messages and in-app sales aimed at children
- Negative impact on social-emotional development – socially isolating, interrupts adult-child relationship
What are the concerns?

- Displaces / replaces “ECE essentials” like hands-on, creative and open-ended play, construction, small manipulatives...
- Reduces outdoor time, decreases physical activity / Increases obesity
- Increases sleep disruptions
- Adult media use, misuse, over use and “always on” tech – background TV

Imagine the screen is a window and a mirror

- Imagine the child looks into and through a window – a pass-through to something beyond
- Imagine the child sees a mirror that reflects his/her interests and individuality
- Would we count minutes of window-time or mirror-time and place the same limits as we do with screens?
- How would teachers use technology differently?
- How would parents use digital windows and mirrors instead of screens?
- We need to reflect on our educational window of opportunity?

_Every window – architectural or electronic – is a gateway to adventure, inquiry, fantasy, storytelling, self-discovery and learning._ David Kleeman, PlayVangelist
The perfect storm

• Zero to Three, Setting the Record Straight

• Common Sense Media, Early Connections: A Parent Education Toolkit for Early Childhood Providers

• Technology and Digital Media in the Early Years: Tools for Teaching and Learning

The perfect storm

RAND Corporation Reports

• Using Early Childhood to Bridge the Digital Divide

• Moving Beyond Screen Time: Redefining Developmentally Appropriate Technology Use in ECE

• Getting on the Same Page: Identifying Goals for Technology Use in Early Childhood Education

• How Much and What Kind? Identifying an Adequate Technology Infrastructure for Early Childhood Education

• Getting Early Childhood Educators Up and Running: Creating Strong Technology Curators, Facilitators, Guides, and Users

• Families, Powered On: Improving Family Engagement in Early Childhood Education Through Technology
The perfect storm

New research

- Quality of Words, Not Quantity, Is Crucial to Language Skills, Study Finds
- For Toddlers It’s Quality Not Quantity of Screen Time
- What Really Counts in the Word Gap Count?
- Is E-Reading to Your Toddler Story Time, or Simply Screen Time?
- Skype Me: Socially Contingent Interactions Help Toddlers Learn Language

It’s not just how many words, but the quality of those words and the relationships in each child’s life that makes a difference.

What are our goals for tech in ECE?

- Do no harm
- Acknowledge and address the concerns
- Eliminate the false dichotomy
- Explore the intersection of child development, early learning, early literacy, STEM and children’s media
- Apply the NAEYC & Fred Rogers Center Joint Position Statement, DAP, Lisa Guernsey’s 3Cs, and 40 years of children’s media research
- Focus on digital media literacy
- Become 4M educators who know the 3Cs and apply the 5Es
Media literacy for children matters

Media literacy is about helping children develop the life skills they need to become thinkers and makers in the multimedia environment that is their reality...

It is precisely because our culture surrounds us with media that we need to model healthy and productive ways to integrate digital media technologies into our lives.

Faith Rogow

Digital media literacy matters

• Attitudes
• Knowledge
• Experience
• Competencies
• Leading to fluency
• DML for “4M” educators in formal and informal settings, teacher educators, trainers and parents
Technology and Interactive Media as Tools in Early Childhood Programs Serving Children from Birth through Age 8

A joint position statement of the National Association for the Education of Young Children and the Fred Rogers Center for Early Learning and Children’s Media at Saint Vincent College

Keywords

- Tools
- Intentional
- Appropriate
- Integrated
- Balanced
- Interactive
- Quality content
- Joint engagement
- Access & Equity
- Professional development
- Select, Use, Integrate, Evaluate

= Educators as curators and mentors

When used intentionally and appropriately, technology and interactive media are effective tools to support learning and development.
Child development theory matters

• Know about child development and early learning and what is typical at each age and stage
• Know what is individually appropriate
• Understand the family context
• Know what is culturally important


DAP matters

Digitally literate educators who are grounded in child development theory and developmentally appropriate practices have the knowledge, skills, and experience to select and use technology tools and interactive media that suit the ages and developmental levels of the children in their care, and they know when and how to integrate technology into the program effectively.

NAEYC & FRC Joint Position Statement
ECE “essentials” matter

- Creativity, curiosity and wonder
- Open-ended exploration
- Unstructured, active, imaginative play
- Loose parts
- Hands-on materials
- Authentic and deep engagement
- Empowering experiences
- Outdoor play and nature
- Solitary and shared experiences
- Interactions and relationships

Lisa Guernsey’s 3Cs matter

- **CONTENT** How does this help children engage, express, imagine, or explore?
- **CONTEXT** How does it complement, and not interrupt, children’s natural play?
- The Unique **CHILD**: How do we choose the right tech tools and experiences for each child’s needs, abilities, interests and development stage?
Relationships matter

- Young children learn best in the context of interactions and relationships with attentive, responsive, caring adults
- Co-viewing < joint engagement with media – using media together leads to more learning
- Media use to encourage pro-social behaviors and promote social/emotional development
- Use technology as a tool to strengthen relationships with adults and peers

Joint engagement matters
Gather around the screen

“Joint engagement with media” is a digital age phrase but the idea is not new. Think about your childhood and remember a time when members of your family or you and your friends gathered around the TV, radio, stereo, VCR, etc., for a shared media experience.

Listening matters
Context matters

- Children learn best in active environments when they are engaged in meaningful, interactive and social contexts
- The individual child’s development, learning and the family media ecology matter
- Providing access to quality media requires engaging parents and children
  - at home
  - in school, early childhood programs, Head Start, family child care homes
  - in informal “third spaces” – libraries, museums, zoos, nature centers

Creating media matters

- Young children are capable of creating their own messages and expressing themselves through media
- Give children (and their adults) control over what they use and how they use it
- Consuming media > Meaning-making > Creating media
Galinsky’s 7 essential life skills matter

1. Focus and Self Control
2. Perspective Taking
3. Communicating
4. Making Connections
5. Critical Thinking
6. Taking on Challenges
7. Self-Directed, Engaged Learning

Skills and attributes for 21st century learning matter

- Effective oral & written communication skills
- Critical thinking & problem-solving
- Computational thinking
- Agility and adaptability
- Collaboration
- Initiative

- Curiosity and imagination
- Hope and optimism
- Self-regulation
- Grit
- Resilience
- Vision

“The principal goal of education is to create individuals who are capable of doing new things, not simply of repeating what other generations have done.”

Zane Piper (1994–1995) Swiss cognitive psychologist
STEM STEAM STREAM matter

- **SCIENCE** – Nurture a sense of wonder and curiosity about everyday experiences. Encourage investigation and asking “why”
- **TECHNOLOGY** – Give children tools to explore and discover. Provide tools for inquiry and investigation. Model using tools for communication, documentation and learning
- **ENGINEERING** – Identify a problem, think about solutions, try them out
- **MATH** – Find math in everyday activities like counting, comparing, sorting, identifying shapes. Use words like bigger, smaller, higher, lower.

Fred Rogers' Approach to STEM, Hedda Sharapan
A healthy media diet matters

All screens are not created equal

- Consider screen exposure throughout the day and across settings
- Shift from “how much” they watch to “what they watch”
- Use media “with” rather than “instead of”
- Place limits on passive use
- Avoid inappropriate content/commercial messages

...
Family media ecology matters

- Understand parental influence as the primary media role model
- Be aware of use – when, by who, where, for what and for how long
- Understand that content is as important as length of time
- Find trusted sources of media recommendations
- Place limits on passive use and avoid inappropriate content

TV may be the only appliance that is more useful after it is turned off.

Family media ecology matters

- Avoid background TV
- Limit screen media before bedtime
- No TVs in children’s bedrooms
- Turn off media and digital devices during meals
- Watch together – joint engagement with media
- Be aware of private tech use replacing traditional public use
- Plan for unplugged time

“What can we do when we turn off the screen?”
To review...what matters?

- Position Statement
- Child development
- DAP
- ECE essentials
- The 3Cs
- Relationships
- Joint-engagement
- Context
- Creating media
- Skills and attributes for learning
- STEM / STEAM / STREAM
- Healthy media diet
- Family media ecology

*having said that*

If everything matters...
what matters most?

- 3Cs
- 4Ms
- 5Es
- Relationships
Lisa Guernsey’s 3Cs matter

- Content
- Context
- Child

The 4Ms for digital age educators

1. Manager
2. Mediator
3. Mentor
4. Maker
The 5Es for digital age educators
Martin Blows e-words framework

- Swap traditional practices with ICT
- Deepen learning through the use of ICT
- Engage learners by using a richer mix of media
- Enrich
- Extend
- Change the content, process and location of learning
- Enable learners to take control of their own learning
- Empower

A neighborly reminder...

Feeling alone? Incompetent? Too far behind? Don’t know where to begin? Still conflicted about tech and young children?

You have guidance for confronting your analog obstacles and taking advantage of the digital opportunities to support young children in their multi-screen, multi-touch world.

- Reflect on what you know about child development and early learning
- Identify your best practices as a teacher and with tech
- Apply Developmentally Appropriate Practice
- Follow the NAEYC/FRC Joint Position Statement
- Look to Mister Rogers

Erikson TEC Center
Begin and end with relationships

*Computers can be useful machines, especially when they help people communicate in caring ways with each other...*

Nurture curiosity

*I love hearing teachers ask open-ended questions, like “I wonder what would happen if...” Remember that you don’t need answers to all the questions. When you nurture children’s curiosity, they’ll be interested in learning – by noticing, predicting, exploring, experimenting. Their discoveries might open your eyes, too, to some fascinating things about our world!*

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(erikson

TEC Center)
Keep the child inside you alive

The child is in me still...and sometimes not so still.

I love whimsy, don't you? If you're going to be working for children, you need to do your best not to lose your childlikeness. It's wonderful to be able to just be yourself.

Inspire cartwheels in hearts

My hunch is that if we allow ourselves to give who we really are to the children in our care, we will some way inspire cartwheels in their hearts.
...Let's not get so fascinated by what the technology can do that we forget what it can't do...It’s through relationships that we grow best and learn best.

So... is it a screen...window...mirror?
TEC Curation – Favorite Resources

TEC Curation – Trusted Sources
For slides and resources, visit us at www.teccenter.erikson.edu