Making the Connection

Computational Thinking and
Early Literacy

Objectives

- Learn what computational thinking is, especially in early childhood.
- Be able to make connections between early literacy and computational thinking skills.
- Learn how computational thinking can be introduced in library programs for young children using unplugged and digital activities.
What is Computational Thinking?

A process that can be used to solve problems or complete a task.

“Computational thinking allows us to take a complex problem, understand what the problem is and develop possible solutions. We can then present these solutions in a way that a computer, a human, or both, can understand.” – Jeannette Wing (2006)

History of CT

1960s
Jean Piaget

1980
Seymour Papert

2006
Jeannette Wing

2016
Marina Umaschi Bers
Why Young Children?

“A computational thinker sees computation as more than something to consume; computation is something they can use for design and self expression. A computational thinker sees computation as a medium and thinks, I can create and I can express my ideas through this new medium.”

Karen Brennan & Mitchel Resnick

Early Literacy is...

“What children know about communication, language (verbal and nonverbal), reading and writing before they can actually read or write.”

Katie Campana, Liz Mills & Sara Ghoting
Making the Connection

Breakdown of CT for Young Children

CT: Pattern Recognition

Skill: Identifying and classifying similarities.
Practice: “Simon Says.”
**PR... in the library**

**Share:** Lost. Found. by Marsha Diane Arnold and Matthew Cordell

**Design:** Quiet Blocks Building Challenge

---

**PR... at home**

**Share:** Round is a Mooncake by Roseanne Thong and Grace Lin

**Explore:** Go on a color or shape scavenger hunt! Look for a specific color or shape, red or triangles for example, in different places you visit around town.

---

**CT: Decomposition**

**Skill:** Breaking larger actions into smaller, easily completed steps.

**Practice:** Singing and clapping words to break them down into syllables.

---

Twinkle, Twinkle, Little Star

Twinkle, twinkle, little star
How I wonder what you are
Up above the world so high
Like a diamond in the sky
Twinkle, twinkle, little star
How I wonder what you are
Decomposition... in the library

Share: I Got the Rhythm by Connie Schofield-Morrison and Frank Morrison

Tinker: Make music with playdough and a Makey-Makey

Decomposition... at home!

Share: The Red Hen by Rebecca Emberley and Ed Emberley

Make: Put a lunch together! Talk about the different parts of the meal you want to share. For example, will you include a sandwich, soup, fruit or a specific drink?

CT: Algorithm Design

Skill: Following a specific order of actions to complete a task.

Practice: Share sequential stories like Go Away Big Green Monster, Tickle Monster, Dog's Colorful Day, or Lola at the Library with props.
AD... in the library

Share: Tap the Magic Tree by Christie Matheson

Design: Pick your favorite song and create a dance to match the rhythm. Teach the order of the steps to others. Think about when you want to start moving and if you want to repeat steps.

Dance Break

START

ACTION 1

ACTION 2

ACTION 3

STOP

LOOP x 2

AD... at home!

Share: Fort-Building Time by Megan Wagner Lloyd and Abigail Halpin

Build: Build a fort at home, inside or outside, and talk about what steps need to happen in what order. Is some part of the design not working? Debug and fix it! Or explore seasons with Scratch Jr.
CT: Abstraction

Skill: Simplifying ideas to what is essential or important.

Practice: Retell stories like The Three Little Pigs, Lion Lessons, Little Red and the Very Hungry Lion with movement and props.

Maps

Abstraction... in the library

Share: Dreaming Up: a celebration of building by Christie Hale or Fire! Fuego! Brave Bomberos by Susan Middleton Elya and Dan Santat

Designing: Choose a favorite story and share it through different medium: act it out with movement; write reader's theatre scripts, retell it with your own words and pictures.
Abstraction... at home!

Share: How Raven Got His Crooked Nose: An Alaskan Dena'ina Tale by Barbara Atwater, Ethan Atwater and Mindy Dwyer

Create: Re-purpose household or found materials to make a raven mask. Talk about what a beak does, what characteristics it needs and what it should look like.

CT Mindset

CT with families in Washington D.C.

Take Home Packet
Everyday materials ready for family engagement
CT with families in Homer, Alaska

Contact info

Paula Langsam
DC Public Library
@showmebooks
paula.langsam@dc.gov

Claudia Haines
Homer Public Library
@claudiahaines
chaines@ci.homer.ak.us

#ThinkingSidewaysPLA

Early Math and Computational Thinking