#ReadytoCode

Supporting Computational Thinking and Computer Science from Preschool to High School

Claudia Haines
Rock, Paper, Scissors

Source: Getty Images, Washington Post
Objectives

● Define computational thinking (CT).
● Make connections between literacy and computational thinking skills.
● Learn how CT and computer science skills can prepare youth to be successful problem-solvers, creative thinkers, effective communicators, and lifelong learners in a connected world.
LITERACY IS...

- “the ability to identify, understand, interpret, create, communicate, compute and use printed and written materials associated with varying contexts.”
  - UNESCO
- “the ability to encode and decode symbols and to synthesize and analyze messages.”
  - National Association for Media Literacy Education
EARLY LITERACY IS...

● “what children know about communication, language (verbal and nonverbal), reading and writing before they can actually read and write.” -Supercharged Storytimes, 2016
(MEDIA) LITERACY IS...

● “Media literacy is the ability to **ACCESS, ANALYZE, EVALUATE, CREATE, and ACT** using all forms of communication.”

  - National Association for Media Literacy Education
MEDIA IS...
Libraries [Ready to Code]
An Initiative of the American Library Association

librariesreadytocode.org
What is Computational Thinking?

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

Computational Thinking vs. Computer Science

**Computational Thinking:**
A process that can be used to solve problems or complete a task.

**Computer Science:**
Using the power of computers to solve problems.
Computational Thinking Skills

Image: https://www.bbc.com/education/guides/zxxbgk7/revision/1
**CT: Pattern Recognition**

**Skill:** Identifying and classifying similarities.

Image: Buzzle.com
**CT: Decomposition**

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

**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
CT: Algorithm Design

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

START

ACTION 1 (x4)

ACTION 2 (x4)

ACTION 3 (x4)

STOP

LOOP x 2
CT: Abstraction

Skill: Simplifying ideas to what is essential or important.
Maps

City of Homer
“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
Who participated?

2,010 participants

- 1,428 Youth program participants and mentors
- 331 Grown-up program participants
- 35 Grown-up program mentors
- 216 Summer@HPL CT Challenge participants
Young Children (ages 3-8)
Kids (8-12)
Teens: Near-Peer Mentorship
Diverse Populations & Inclusion

- Reduce roadblocks to access.
- Engage mentors who reflect the experiences of the youth involved.
- Create club-like experiences and offer team-oriented projects to use less resources and grow collaborative skills.
- Provide opportunities for youth-centered design. Diverse youth produce interesting and varied digital projects.
- Inclusion requires creativity, flexibility and collaboration.
- Think outside the box.
CT and Family Engagement

Homer Public Library
How did we do this?

- CT Mindset
- Money
- Staff *plus* VOLUNTEERS
- Community Interest

- Youth Enthusiasm
- Training and Planning
- New partnerships
- RtC Cohort Support
Success!

Homer Public Library
Lessons Learned
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Information on CT and early literacy was compiled in partnership with Paula Langsam at DC Public Library.