Libraries as a Player in Computational Thinking: Why Should We Care?

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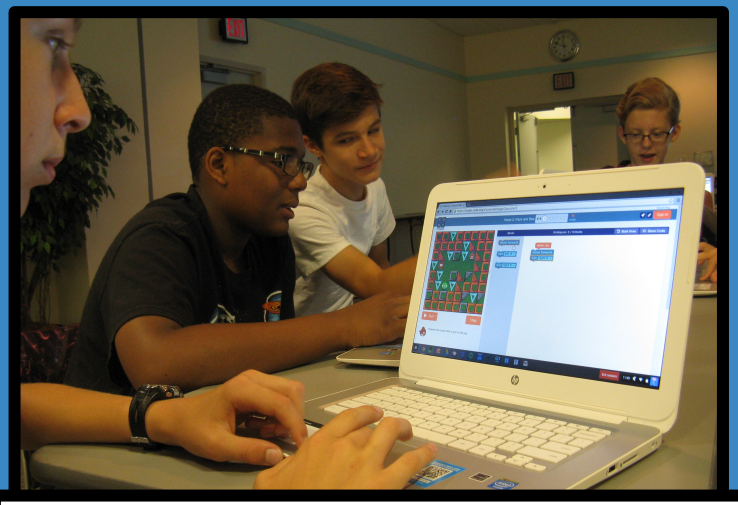
A Bit About Me

Investigate how underserved and disadvantaged young adults use libraries for the development of digital literacy skills essential for STEM learning, and how libraries can play a role in developing and sustaining young adults' interest in STEM.



Hack Health
YOU ONLY LIVE ONCE

Safe Data
Safe Families

SCIDENTITY

YOUTH EXPERIENCE

connected lib

<libraries / ready to code>

Outline of My Talk

- State of the Information sector in the US
- Computational Thinking (CT)
- Libraries are Ready to Code (RtC): Three Examples
- Why libraries for the development of CT?
- Where youth librarians need help?
- Q & A & But, mostly how you can help!

State of Information Sector in the United States

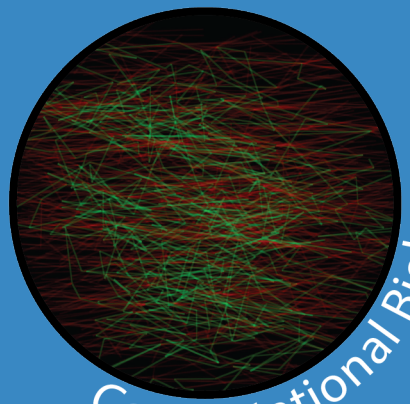
(2016-2026)

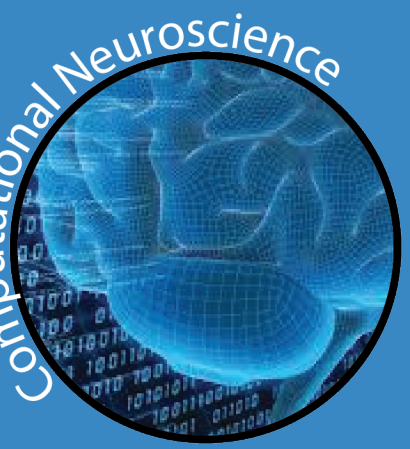
Industries with the fastest growing output (2016-2026)

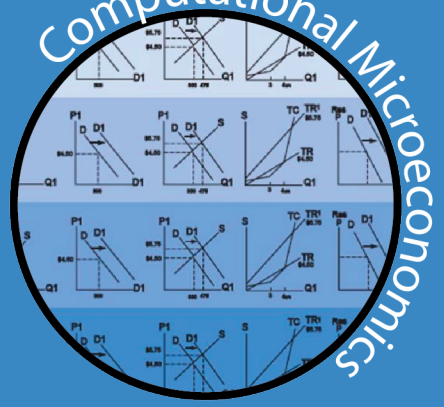
Industry	Sector	2012 NAICS	Billions of Chained 2009 Dollars		Change	Compound Annual Rate of Change
			2016	2026	2016-2026	2016-2026
Other Information Services	Information	519	96.0	167.7	71.7	5.7
Satellite, telecommunications resellers, & all other telecom.	Information	5174, 5179	41.3	68.9	27.6	5.3
Software publishers	Information	5112	225.0	339.5	114.4	4.2
Offices of physicians	Health Care & Social Assistance	6211	481.7	689.4	207.8	3.7
Museums, historical sites, & similar institutions	Leisure & hospitality	712	14.9	21.1	6.2	3.6
Architectural, engineering, and related services	Professional and business services	5413	258.7	339.4	80.7	2.8

Table from: https://www.bls.gov/opub/mlr/2017/article/projections-overview-and-highlights-2016-26.htm

Computational + X





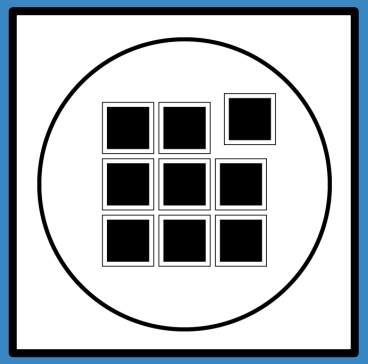


Growing Emphasis on Computational Thinking

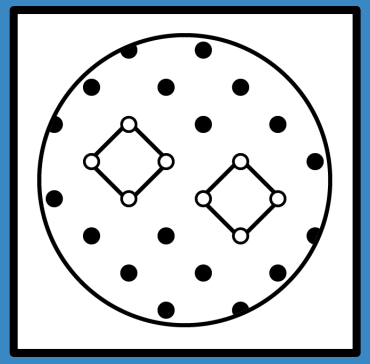
Computational thinking includes a range of mental tools that reflect the breadth of the field of computer science… Computational thinking is a fundamental skill for everyone, not just for computer scientists (Jeannette Wing, 2006, p. 33).

Computational thinking is the thought processes involved in formulating problems and their solutions so that the solutions are represented in a form that can effectively be carried out by an information-processing agent (Jeannette Wing, 2010, p. 1).

Growing Emphasis on Computational Thinking for Youth (CT)

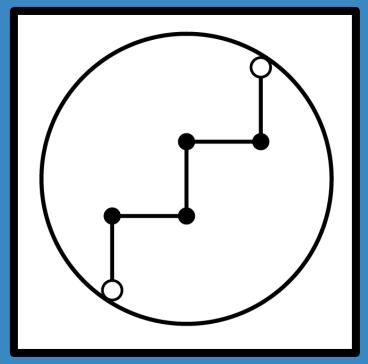


Decomposition

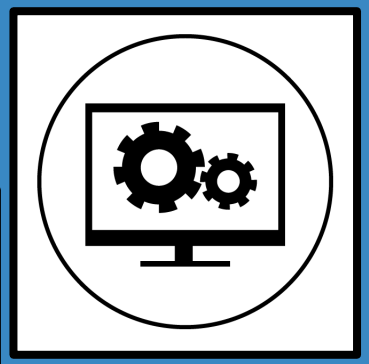


Pattern Recognition

Abstraction



Algorithms



Automation

Icon credit: Olga Zhivov

Libraries are Ready to Code

<libraries / ready to code>

oitp
ALA Office for Information Technology Policy

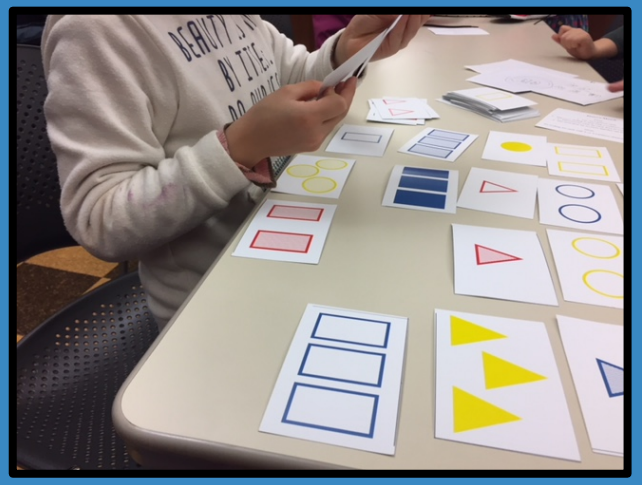
Google

#c4118

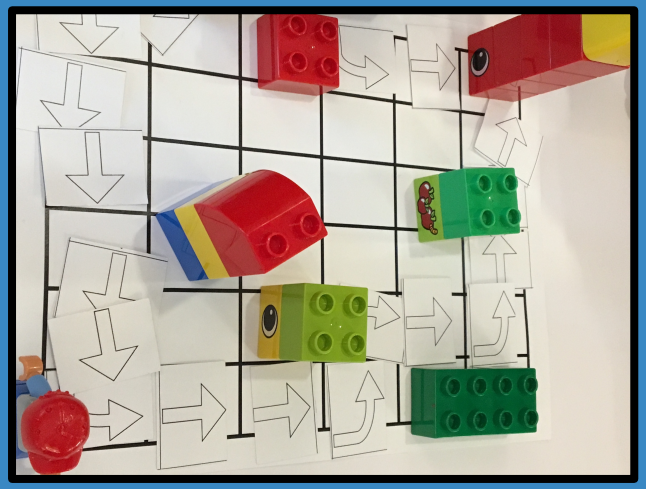
CT in Libraries (Children)

District of Columbia Public Library System

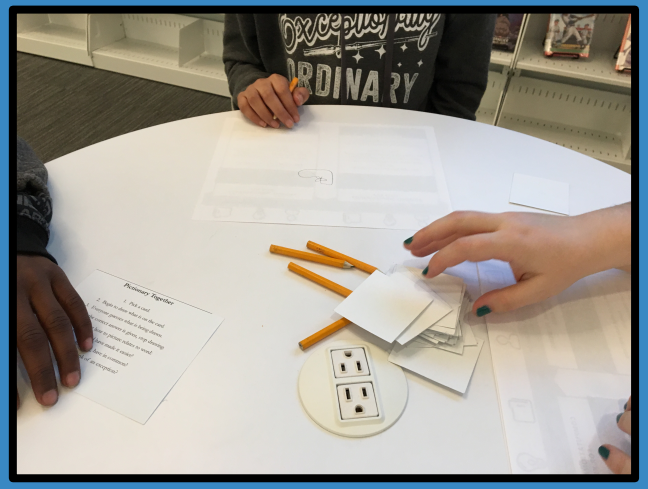
Decomposition



Pattern Recognition



Algorithm Design



Abstraction

CT in Libraries (Children)

District of Columbia Public Library System

Ready, Set, Think

Thursday, January 25, 2018, 4:30 pm

Walk before you run; think before you code. Calling all 5-to-7-year-olds and their families: Come play some games and learn about computational thinking skills. Computational thinking is not thinking like a computer, but understanding how to organize and interpret information in a way that computers can process. These skills are the foundation for coding and problem solving. Each participant will take home activity sets to keep the fun going. This event is limited to the first 16 families and recommended for ages 5-7 with adult.

DC public library

- Technology access @ home
- Socioeconomic status (SES)
- Technology expertise needed
- Partnership availability

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CT in Libraries (Tween)

Homer Public Library

Mini Design Challenge Ideas
(choose one)

1. **Animated Music Video** (music must be your own or Creative Commons)
2. **2D Flying game**
3. **Classic "Pong" game**
4. **Animated PSA** (Public Service Announcement) for something you care about
5. **"Choose Your Own Adventure" app** that takes place in Homer
6. A **game** where the user must **avoid falling projectiles** of some sort

CT in Libraries (Tween)

Homer Public Library

<M2M>
makers2mentors

Technology access @ home

Socioeconomic status (SES)

Technology expertise needed

Partnership availability

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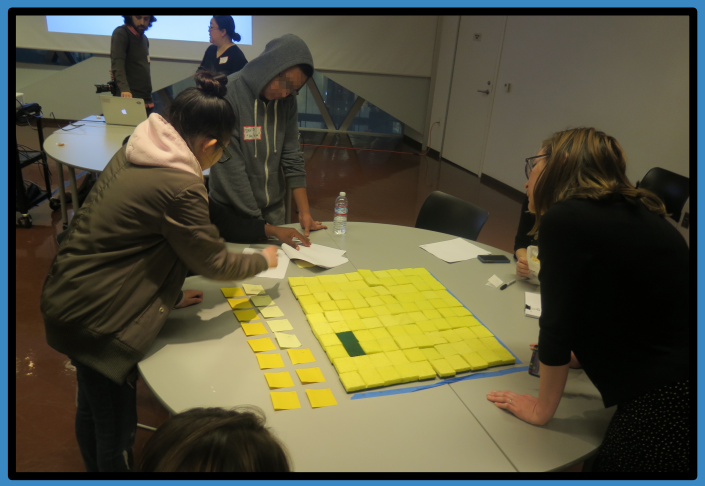
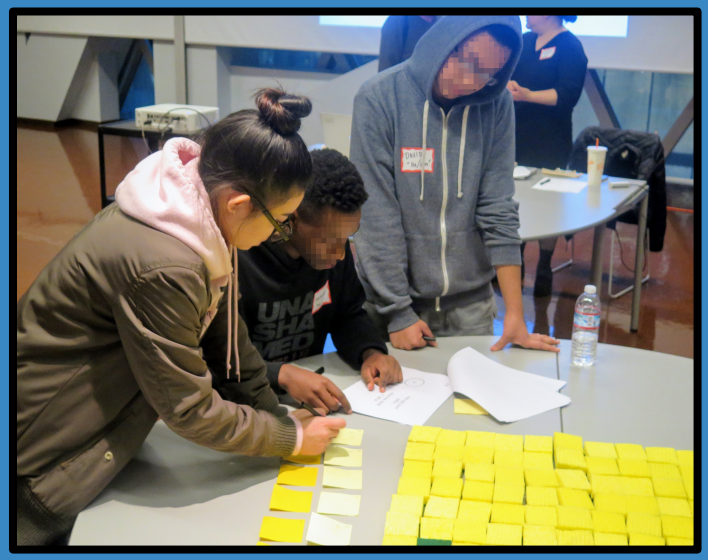
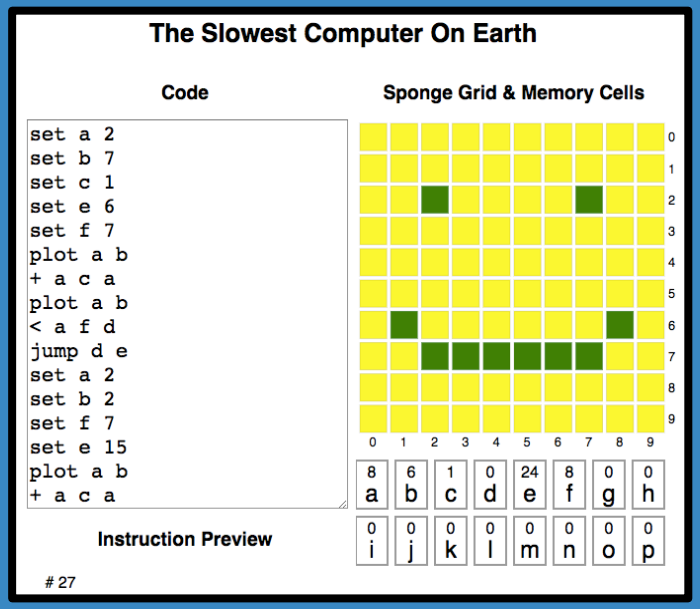
CT in Libraries (Teen)

Seattle Public Library

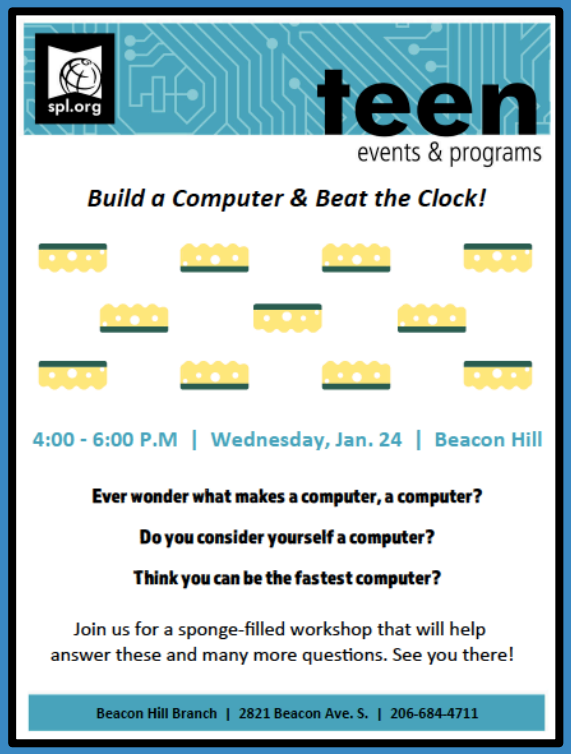






CT in Libraries (Teen)

Seattle Public Library



The Seattle Public Library

- Technology access @ home
- Socioeconomic status (SES)
- Technology expertise needed
- Partnership availability

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Why libraries for the development of CT?

Connected learning in libraries

Allows "learning" and not focused on teaching

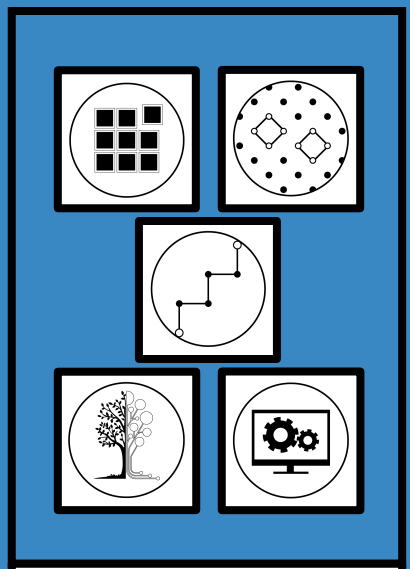
Uniquely positioned for CT at a young age

CS + X

X = Librarians background & library partners

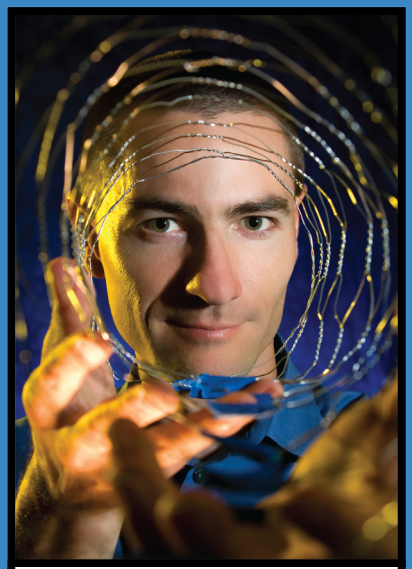
Why libraries for the development of CT?

Where youth librarians need help?

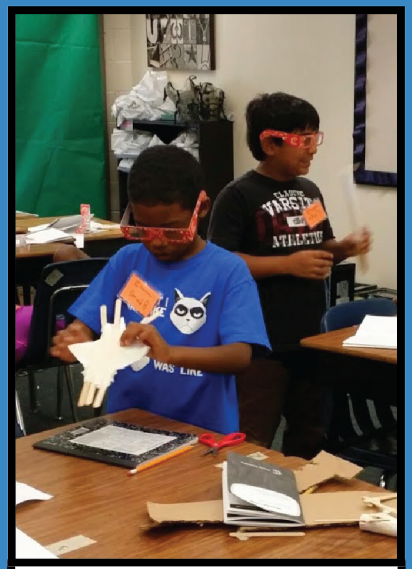


What CT concepts should be facilitated? When?

How to facilitate?

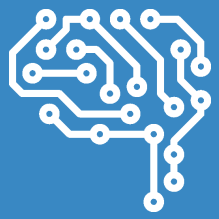


How to find technology experts to help?



How to assess learning of CT?

Acknowledgments



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- Libraries Ready to Code (RtC) team: Marijke Visser, Linda Braun, & Caitlin Martin
- DCPL: Paula Langsam
- HPL: Claudia Haines
- SPL: Juan Rubio
- UMD: Christie Kodama

Thank You

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