

Week 9

Upcoming events

- Trick or Research (CS research fair and poster session)
 - November 2, 4-6pm, Siebel Center
- Mental Health Fair
 - Tuesday, October 25, 1-3 pm, Illini Union I-Rooms.

Colleen Lewis
Computers and Education

Computers and Education

Intro in CS100

<https://tinyurl.com/Lewis2022-10-21>

Colleen Lewis

University of Illinois at Urbana-Champaign

@CSTeachingTips

ColleenL@illinois.edu



Computer Science



I applied for a lot of
schools and jobs
I didn't get!



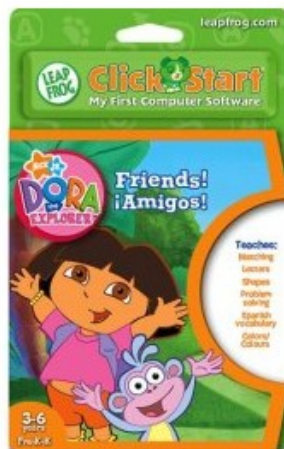
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Avg. Guest Rating: ★★★★★

Availability :

Usually ships within 24 hours.

This item is available online and in stores.

Prices, promotions, styles and availability
may vary by store and online.

Leapfrog ClickStart Dora the Explorer: Amigos Software

\$17.89

Quantity:



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Didj

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Games

All Items

Didj™ Custom Gaming System

Appropriate for Ages 6 Years to 10 Years



Didj™ Custom Gaming System

Introducing Didj™ - the first-ever gaming handheld that lets you customize both the gaming and learning.

Designed for grade schoolers aged 6 to 10 years, the Didj system offers the action-packed, high-resolution gameplay that kids expect, combined with the robust learning you trust LeapFrog to deliver. But the Didj handheld also connects to the computer to offer something no other system has offered: truly customizable gameplay and curriculum.

Kids can play and learn anywhere with characters from SpongeBob SquarePants, Star Wars and more popular shows, and then go online to trade the points they've earned for more modifications to the game worlds, moves, sound effects, music and more. They can even create their own Didji characters in the online Didjerator.

Kids and parents can also shape the learning online by choosing the math and spelling skills they'd like the games to focus on. Multiplication hard to master? Kids can choose to be quizzed on specific times tables, such as the 6s, 7s and 8s tables. Spelling a stumbling block? Create a custom spelling list from the 10,000-word database and practice for next week's test. Didj delivers all this, plus the personalized tutorials and self-leveling learning that are signature to LeapFrog gaming systems.



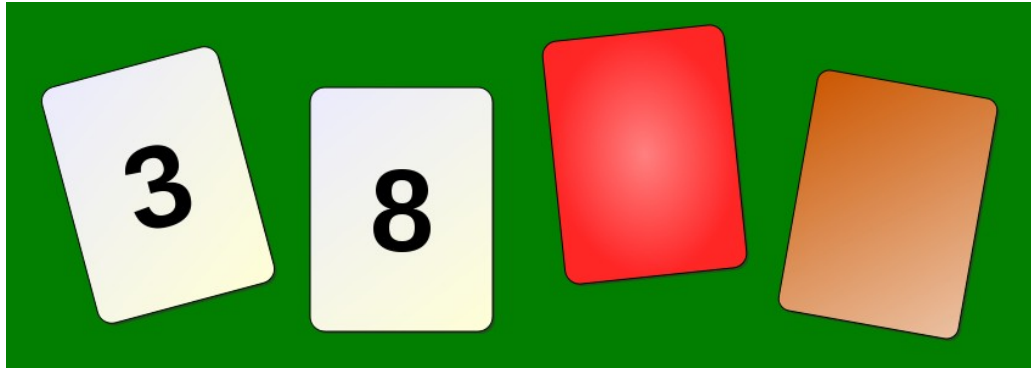
Computers and
Education includes
AI + Education



What makes
learning hard?

What makes this hard?

Each card has a number on one side and a patch of color on the other.
Which card(s) must be turned over to test the idea that
if a card shows an even number on one face, then its opposite face is red?



[en.wikipedia.org/wiki/
Wason_selection_task](https://en.wikipedia.org/wiki/Wason_selection_task)

Wason (1968)



What makes this hard?

Each card has a number on one side and a patch of color on the other.
Which card(s) must be turned over to test the idea that
if a card shows an even number on one face, then its opposite face is red?

What we see	What we need to check
Even Number	
Odd Number	
Red	
Not Red	



What makes this hard?

Each card has a number on one side and a patch of color on the other.
Which card(s) must be turned over to test the idea that
if a card shows an even number on one face, then its opposite face is red?

What we see	What we need to check
Even Number	Opposite face red?
Odd Number	Nothing.
Red	Nothing.
Not Red	Opposite face odd number?



What makes this easier?

Each card has an age on one side and a drink on the other.
Which card(s) must be turned over to test the idea that
if you are drinking alcohol then you must be over 21?



[en.wikipedia.org/wiki/
Wason_selection_task](https://en.wikipedia.org/wiki/Wason_selection_task)

Wason & Johnson-Laird (1972); O'Brien (2004)



Computer Science

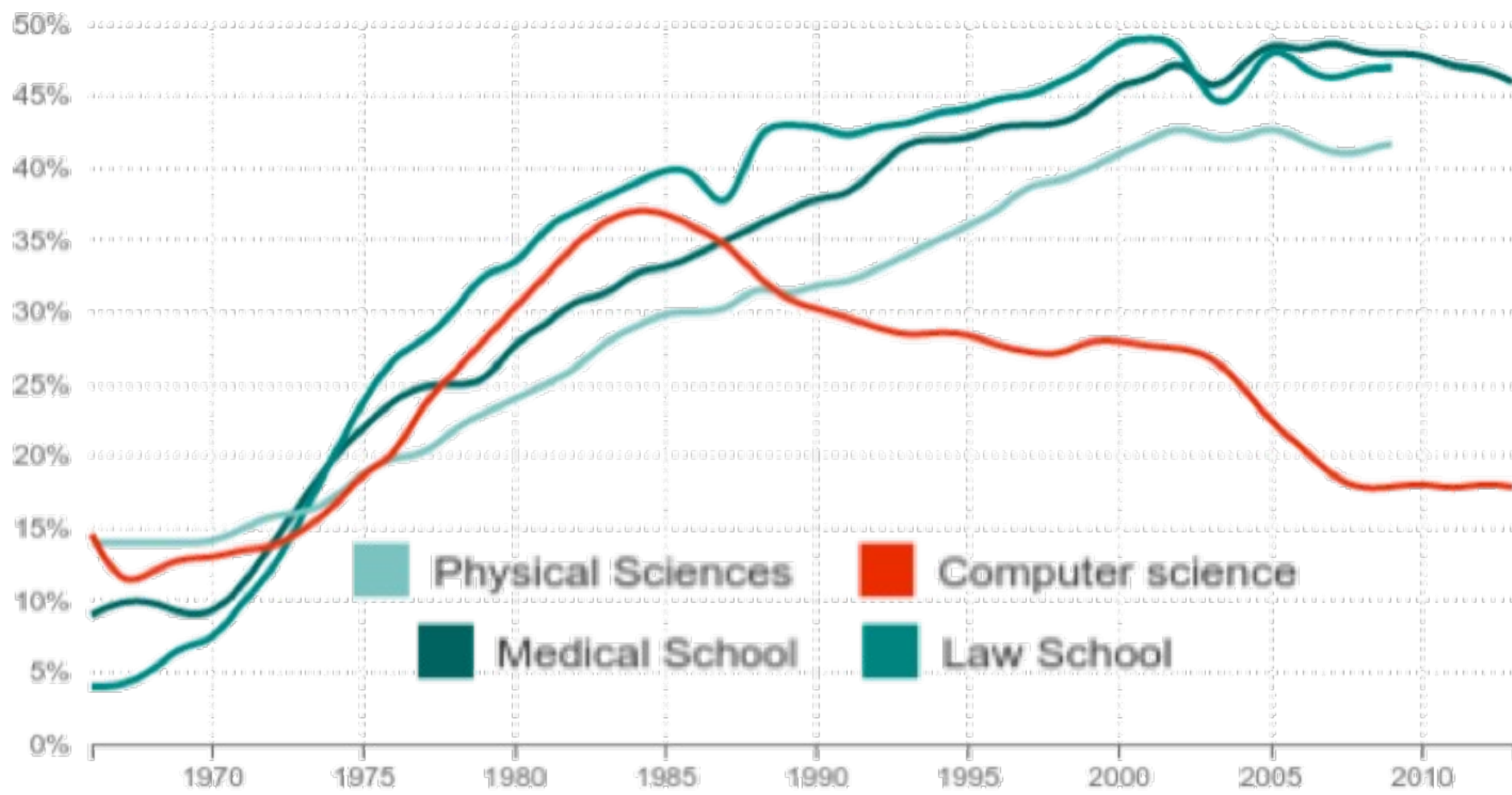
What makes this easier?

Each card has an age on one side and a drink on the other.
Which card(s) must be turned over to test the idea that
if you are drinking alcohol then you must be over 21?

What we see	What we need to check
Alcohol	Opposite face over 21?
Not Alcohol	Nothing.
Over 21	Nothing.
Under 21	Opposite face not alcohol?



Diversity, Equity, and Inclusion



Prof. Nathan
Ensmenger
Indiana University



NATHAN ENSMENDER

*COMPUTERS, PROGRAMMERS,
AND THE POLITICS
OF TECHNICAL EXPERTISE*

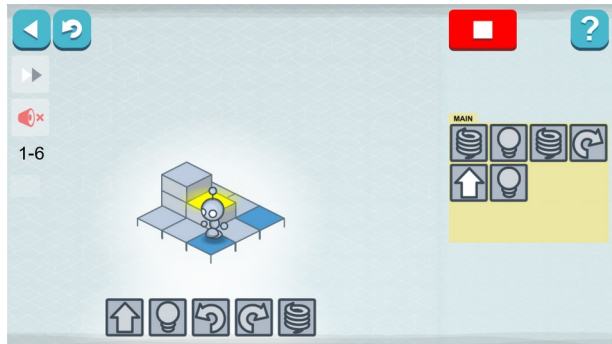


What do you do to
make Illinois CS
the community you
want?

K-12 Education Stuff

CS Learning: Pre-readers

Note:
There are a lot of these!



CS Learning: Pre-Readers + Objects

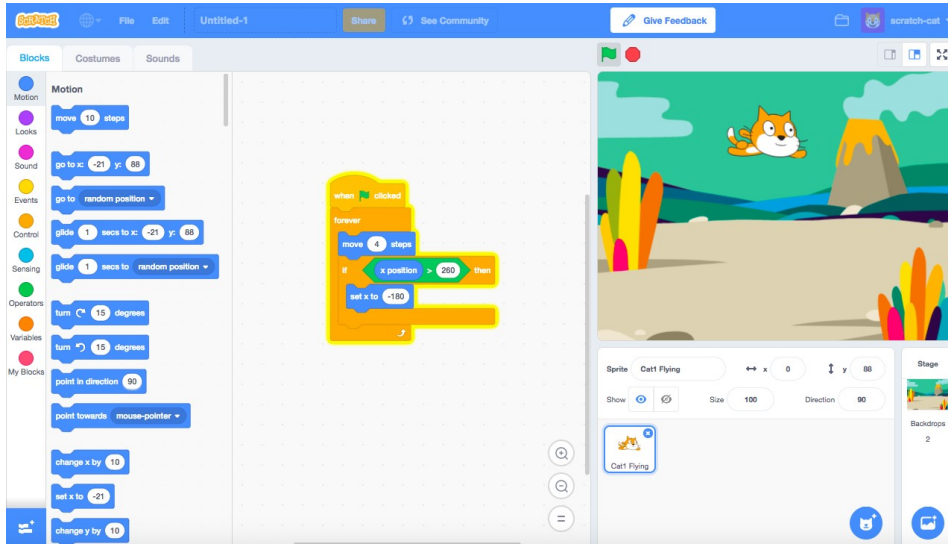


Note:
Physicality seems popular for
pre-readers



CS Learning: Young Kids

SCRATCH



Google
| CS First

CREATIVE COMPUTING

Karen Brennan | Christan Balch | Michelle Chung
Harvard Graduate School of Education

edX

Programming in Scratch

See how easy learning computer science can be. Use Scratch to create games, animations, stories and more.



Archived: Future Dates To Be Announced

Enroll

☐ I would like to receive email from HarveyMuddX and learn about other offerings related to Programming in Scratch.



CS Learning: Middle School



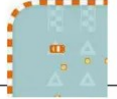



Note:
CSUnplugged.org is a big deal!



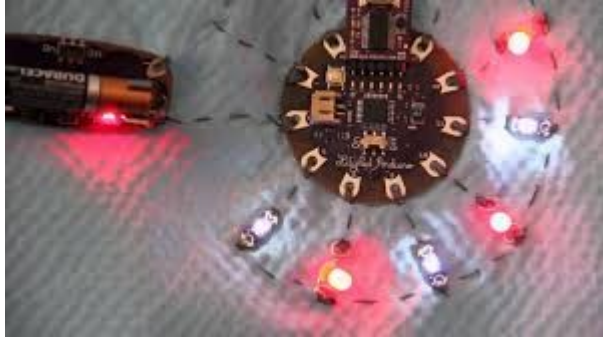
CS in SF: MyCS

Computer Science is for Everyone!

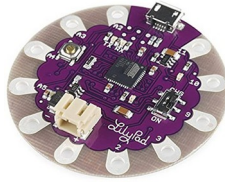


	Problem Solving	The Internet	Programming
Semester 1 Exploration and Expression	Unit 1 Computers and Logic 	Unit 2 Web Development 	Unit 3 Interactive Games and Animations 
Semester 2 Innovation and Impact	Unit 4 The Design Process 	Unit 5 Data and Society 	Unit 6 The Internet of Things 

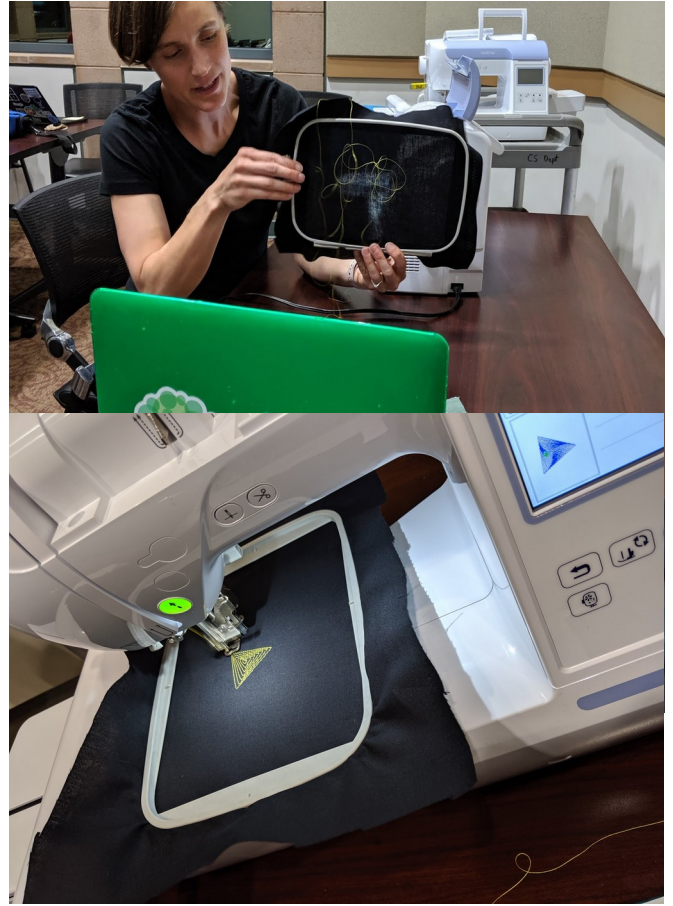
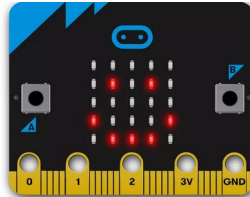
CS Learning: Physical Comp w/o robot



LilyPad



micro:bit



CS Learning: Physical Comp w/robot

Note:
There are a lot of these.



CS Learning: Early HS

Note:

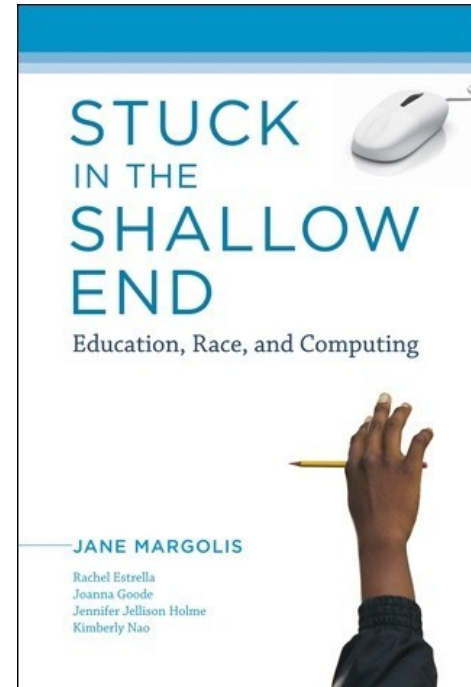
Jane Margolis is a leading author RE: equity in CS

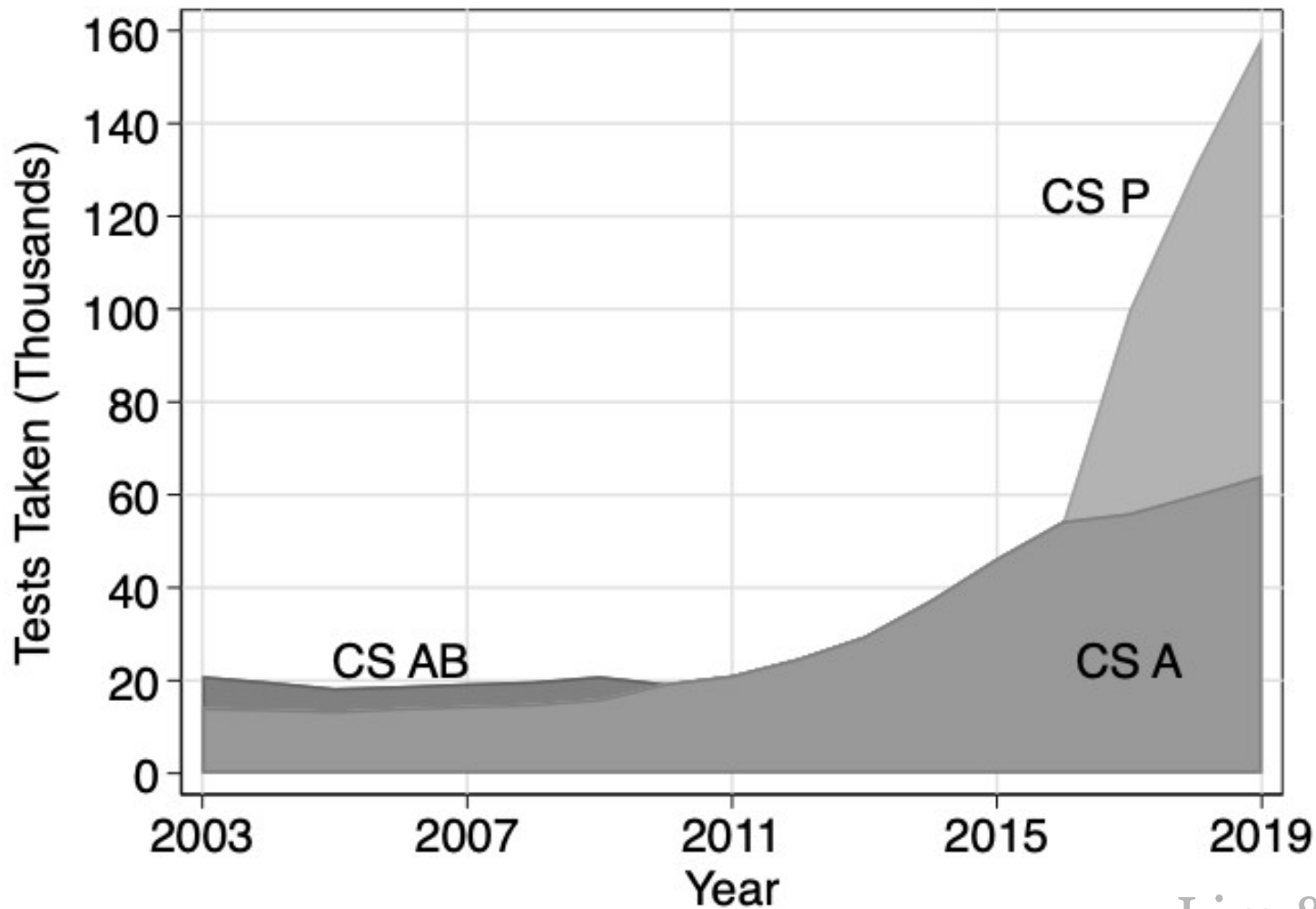


Ucla

REAL-CS

Researching Equity, Access,
& Learning in CS Education





**AP
CS**



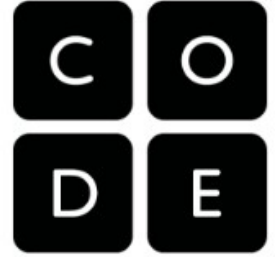
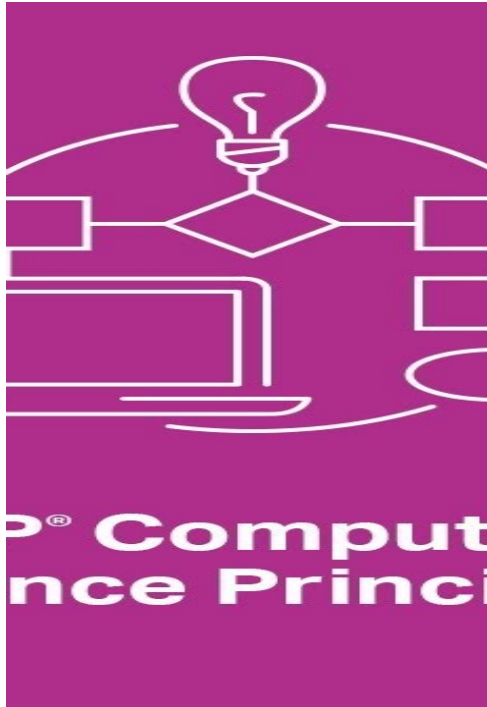
**College
Board**

Lim & Lewis (2020)

CS Learning: Mid HS

AP CS Principles is a CS breadth class

Walden



UTeach Computer Science

*The Beauty
and Joy
of Computing*



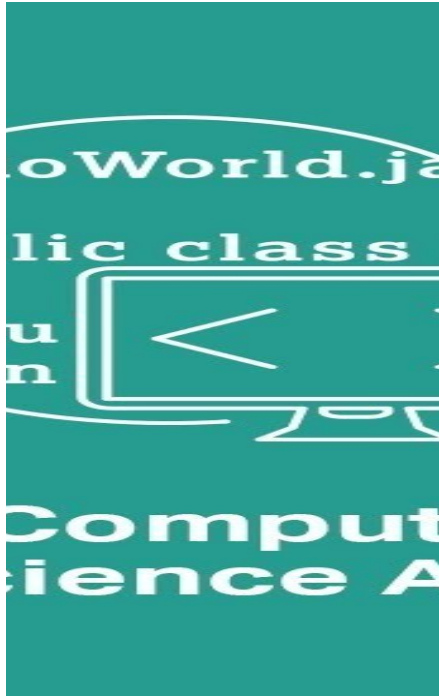
mobile
CSP



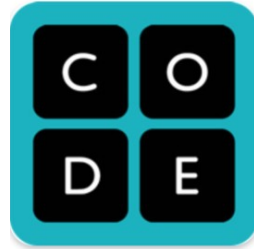
CS Learning: Late HS

AP CS A often allows students to skip an intro CS class in college

Fullstack



CS★awesome



Code.org



CodeHS

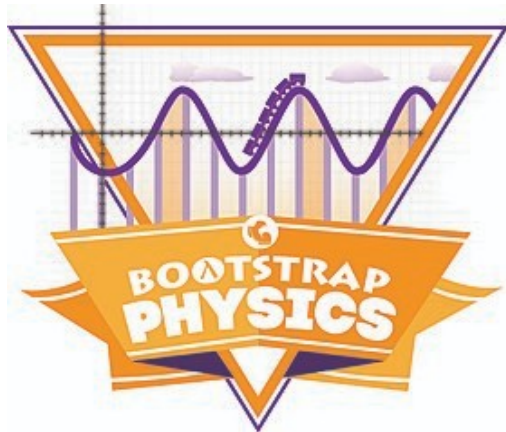
ANACIVA

New course
coming soon:

:

Integrating Programming + X

Bootstrap Algebra (original course)
24 hours of instruction



After School Clubs/Courses



Podcast for kids



EPISODE 22: ASK US ANYTHING DIVERSITY & INCLUSION EDITION



WE ANSWERED **YOUR** QUESTIONS !

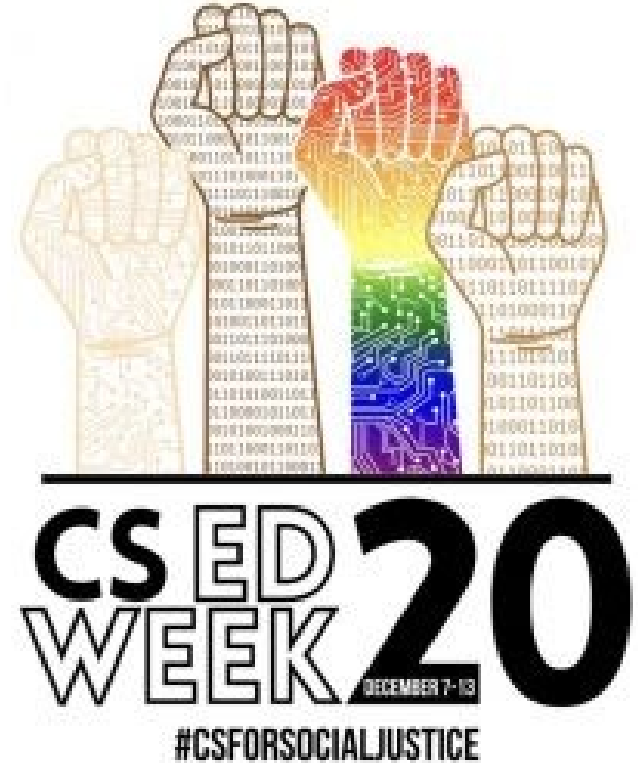


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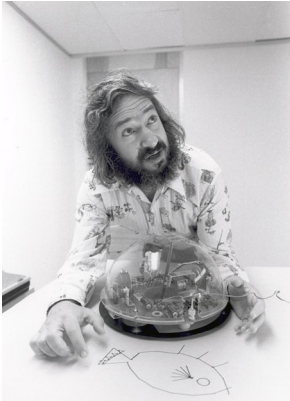


Initiative to Introduce CS to schools

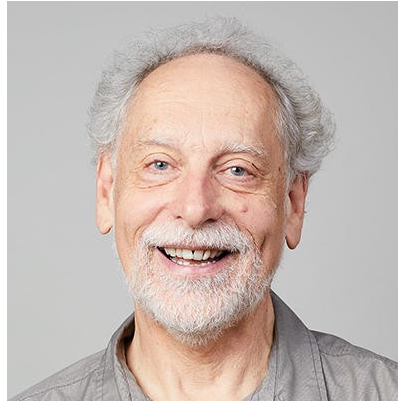


Computational Thinking (CT)

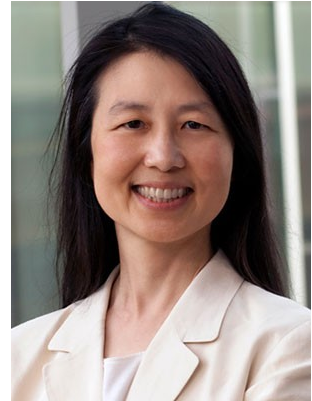
Seymour Papert
1980



Andrea
diSessa
2001



Jeannette Wing
2006



CS Standards: K-12



K-12 CS Framework released Oct 2016
Other standards are based upon that.
Overlaps with NGSS



Mohammed El-Kebir
Bioinformatics and Computational Biology

See separate pdf slides