Computer Science Education

www.codeintheschools.org

gretchen@codeintheschools.org
@gretchenlegrand
@codeintheschool
Overview

- What is CS education?
- Why is it important?
- How do Libraries fit in?
Computer Science Vs. Technology
What is Computer Science?
What is Computer Science?
Why is CS important?

1,000,000 more jobs than students by 2020

$500 billion opportunity

1.4 million computing jobs

400,000 computer science students

Computer science is a top paying college degree and computer programming jobs are growing at 2X the national average.
Why is CS important?

The job/student gap in computer science

Jobs
- 60% Computing Jobs
- 40% All other math & sciences

Students
- 98% All other math & sciences
- 2% Computer science students

Less than 2.4% of college students graduate with a degree in computer science. And the numbers have dropped since last decade.
Why is CS important?

Exposure to CS leads to the some of the best-paying jobs in the world. But 75% of our population is underrepresented.

Of this group, only 15% are women, and only 8% are Hispanic Americans or African Americans.

Source: College Board
Why is CS important?

Why are the numbers so bad?

9 out of 10 schools don’t even offer computer programming classes.
Where do libraries fit in?
Electrical Engineering

- Squishy circuits
- Developed at University of St. Thomas
- Good for small hands
- Teach simple, series, and parallel

Supplies:
- Play dough
- Modeling Clay
- 9V Batteries
- 9V Battery connection
- LEDs
**Electrical Engineering (cont.)**

- **Paper Circuits**
- **Supplies**
  - Paper
  - Copper foil tape
  - LEDs
  - Photo resistors
  - Push/switch buttons
  - Coin Cell Batteries
  - Glue
Electrical Engineering (cont.)

- Soft Circuits
- Supplies
  - Conductive thread
  - LEDs
  - Coin cell Batteries
  - Needles
  - Felt
  - Sparkfun
Electrical Engineering (cont.)

• Snap Circuits
• Sold by Elenco Electronics
  • Jr. kits ($35) or educator kits ($200)
  • Everything in between
Soldering

- Elenco Learn to Solder and practice kits
- Soldering irons are inexpensive
- Soldering is easy!
Programmable circuits

- MaKey MaKey
- Integrates with Scratch
- Plug and Play

Derek with a MaKey Makey powered full-body controller playing Sonic
Arduino

- Development board for microcontroller
- Arduino IDE uses C based language
- Endless tinkering and coding
Lilypad Arduino

• Make wearable E-Textiles
• Programmable soft circuits
Raspberry Pi

- Build a basic computer
- Raspbian OS
- Scratch and Idle 3