A Vision for Computer Science Education
What are the barriers you are facing when trying to develop a computer science program?
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Computer
science is all
around us.
YOU'RE A COMPUTER SCIENTIST

YOU'RE A COMPUTER SCIENTIST

EVERYBODY'S A COMPUTER SCIENTIST
The computer science that fuels our digital world is distant and impossible is accessible to all of us.
Computer science education is...

Redefining Teaching & Learning

Aspirational
Integrated
Long-term
Agenda

1 – What is computer science?
2 – Why is computer science important?
3 – What are important characteristics in a computer science program?
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3 – What are important characteristics in a computer science program?

So, fasten your motherboard because it’s about to get geeky.
What is computer science?

Computer science is the study of computers and computing systems.
Computer Science Covers

Basic Digital Skills — Saving files, logging in, and using search engines

Coding — Designing and building a program for a specific task

Online Collaboration — Communicating with digital systems

Problem Solving — The critical-thinking process used to develop new systems

Policies and Ethics — The social and cultural implications of technology
Create with technology

Be empowered users

Harness advances to redefine our reality
Why is computer science important?

Computer science education is an essential tool for developing future readiness.
Unfilled computer science positions will reach over 1 million by 2020.

- >50% of all new jobs in STEM are in computing.
- 8% of STEM graduates are in computer science.

Building Computer Science Pipeline

FAST FACTS
What does this impact?

- Economic Growth
- Business Costs
- National Security
- Lifetime Earning Potential
“Being future ready means having the critical thinking and problem-solving skills needed to be successful at whatever jobs develop so that today’s students can support themselves and their families with dignity in the workplace someday.”

STACY LANE
Director of Coding Programs at the Marquette Tech District - Cape Girardeau, Missouri
Equity in Computer Science

**Computer Science Positions**
- Women: 46%
- African American: 26%
- Latinx: 16%
- Other: 12%

**Computer Science Degrees**
- Women: 60%
- African American: 18%
- Latinx: 12%
- Other: 10%
What does this impact?

- Pipeline Build
- Technology Accessibility
- Wealth Gaps
What is the solution?

When enrolled in AP Computer Science, women are ten times more likely to major in it and African American and Latinx are seven times.

*Early, continual, and intentional exposure gets them to this threshold.*
Versatile Computer Science Skills

62% of the fastest-growing and highest-paying jobs are Computer Science related

18% of the fastest-growing and highest-paying jobs require a Computer Science degree

In a study of current job listings, the most in-demand skills are tech-oriented.

The fastest growing skills being used in the workplace are digital.
Adaptability

85% of the jobs forecasted for 2030 do not exist yet.
What are the computer science benefits you find most compelling?

*Share your own in the comments!*

A. Building computer science pipeline

B. Equity in the field

C. Cognitive & higher-order thinking skills

D. Transferrable digital skills
Computer science is not only a set of digital skills; it is a mindset founded on problem-solving, critical thinking, and metacognition.
The Vision for Computer Science Education
Sow interest before students can develop stereotypes of who is a computer scientist and whether they fit that role.
Integrate computer science across curriculum to demonstrate the versatility of the subject and the digital skills it cultivates.
Prioritize creativity so students evolve from passive consumers to active creators.
Ignite student imagination by teaching them to question, design, and invent.
Pursue instructional equity with standardized access to computer science across districts, regardless of socioeconomic conditions.
Empower teachers with hands-on professional development that models the learning experiences they are expected to emulate.
Encourage technology integration that is collaborative, creative, and cross-curricular.
Where can educators start?

Computational thinking.
Computational Thinking

- Is derived from the problem-solving process derived from developing code
- Applies to problem-solving anything from analyzing poems to developing mathematical formulas
- Centers on building a critical and intentional process
- Develops persistence, grit, and a growth mindset
The Ultimate Guide to Computational Thinking

• Find unplugged examples for integrating computational thinking into any class

• Learn how computational thinking empowers students to imagine, pursue, and achieve a better future for themselves

• Explore the different concepts that make up computational thinking
What do you need to take the next step toward computer science education?
Questions?