

EducationWeek.® WEBINAR

A Vision for Computer Science Education

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**What are the barriers
you are facing when trying
to develop a computer
science program?**



Katie Zink

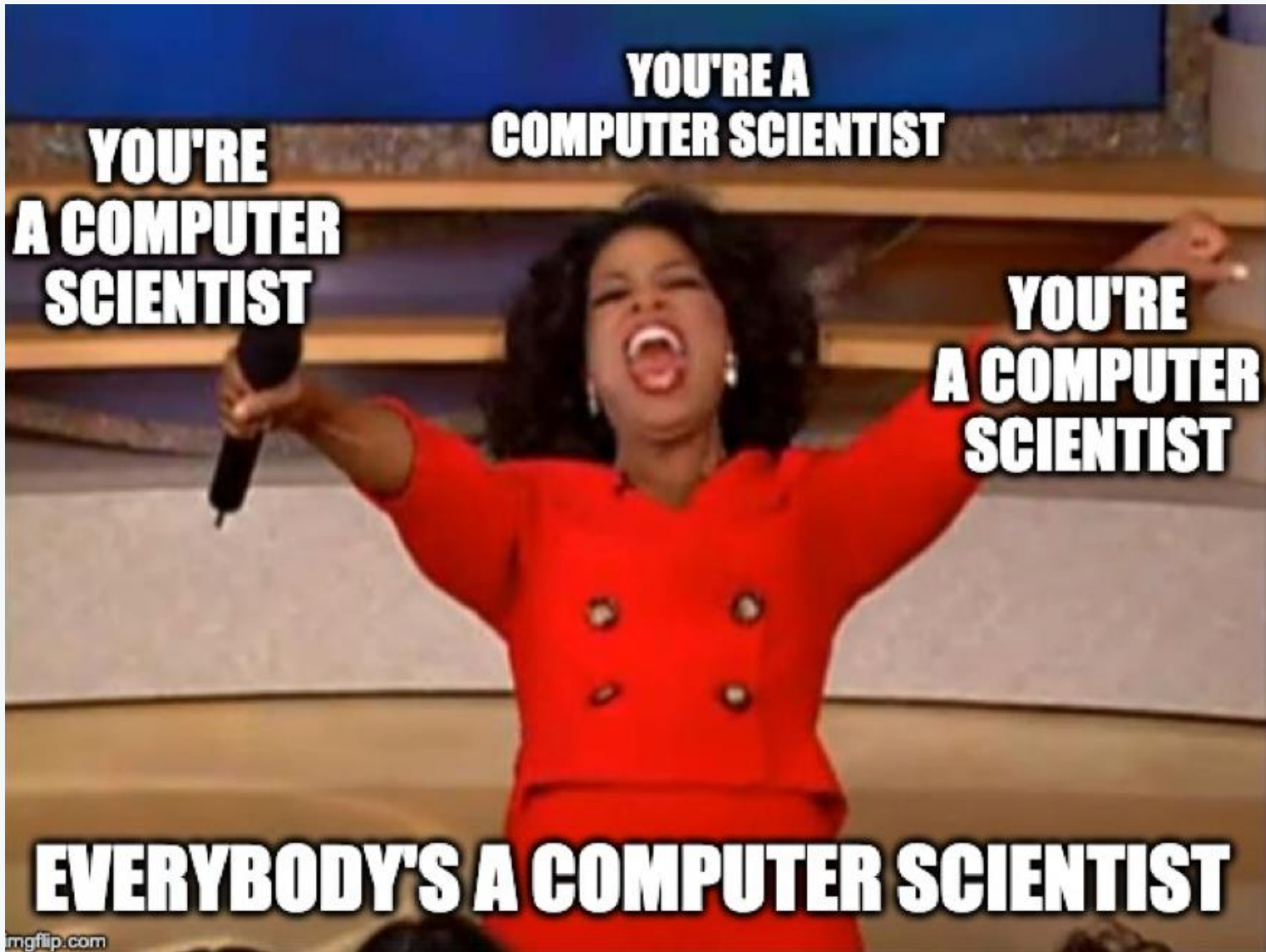
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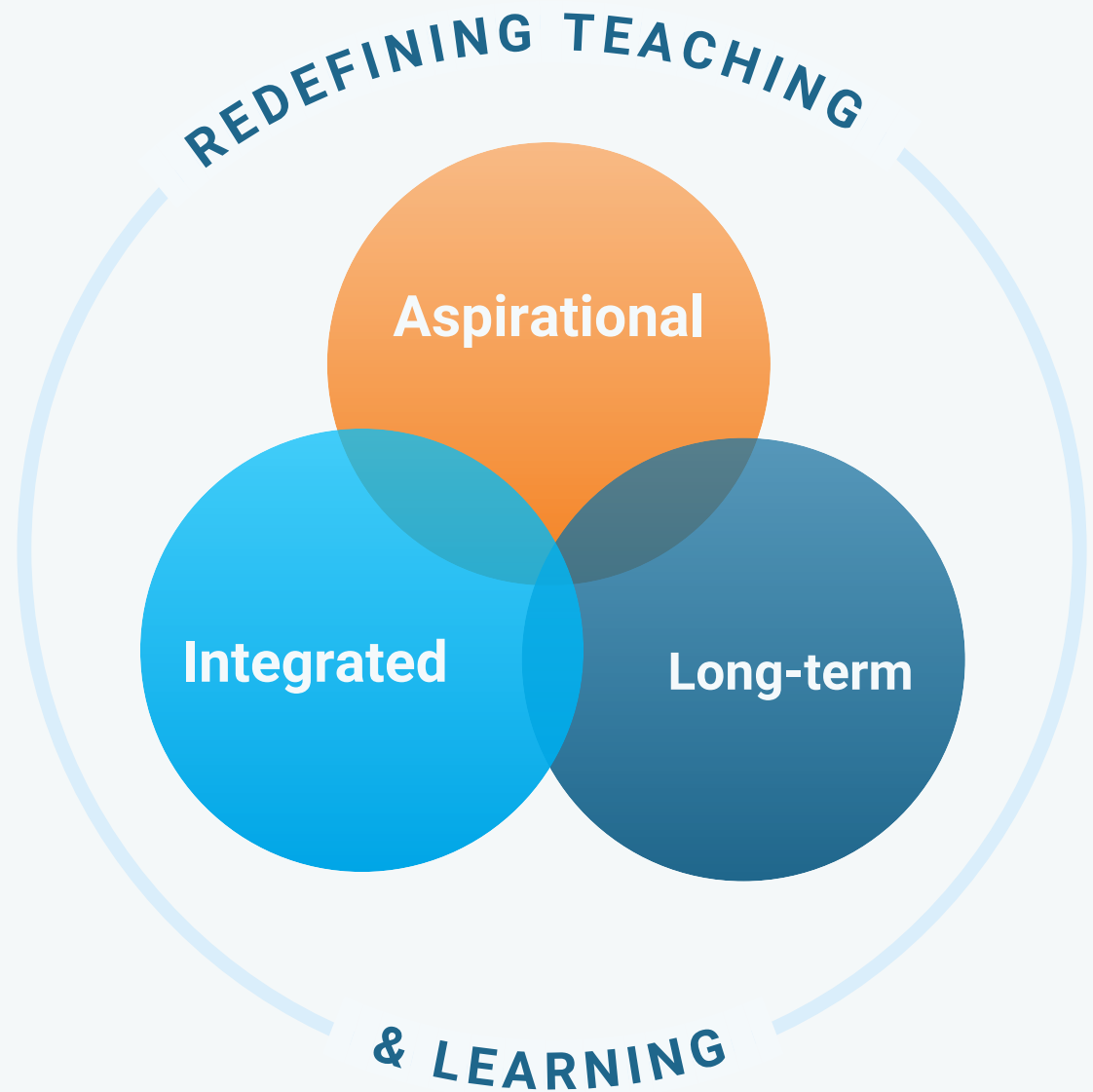
**Computer
science is all
around us.**





**The computer science that
fuels our digital world
~~is distant and impossible~~
is accessible to all of us.**

**Computer
science
education
is...**



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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- 1 – What is computer science?**
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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

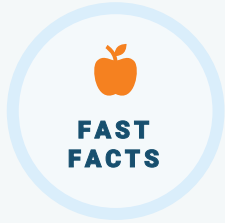


**Harness advances to
redefine our reality**



Why is computer science important?

Computer science education is an essential tool for developing future readiness.



Building Computer Science Pipeline

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

What does this impact?



Economic
Growth



Business
Costs



National
Security

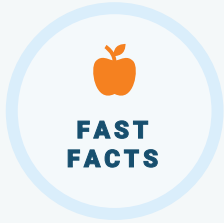


Lifetime
Earning Potential

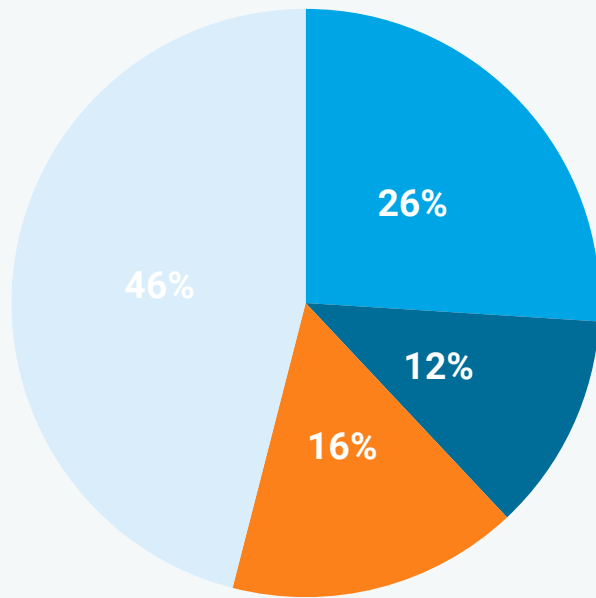
“Being future ready means having the critical thinking and problem-solving skills needed to be successful at whatever jobs develop so that today’s students can support themselves and their families with dignity in the workplace someday.”

STACY LANE

Director of Coding Programs at the Marquette Tech District - Cape Girardeau, Missouri

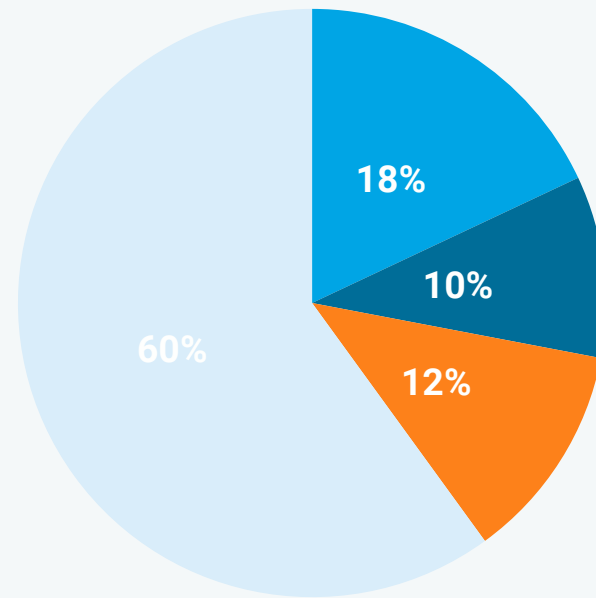


Equity in Computer Science



■ Women ■ African American ■ Latinx ■ Other

COMPUTER SCIENCE POSITIONS



■ Women ■ African American ■ Latinx ■ Other

COMPUTER SCIENCE DEGREES

What does this impact?



Pipeline
Build



Technology
Accessibility



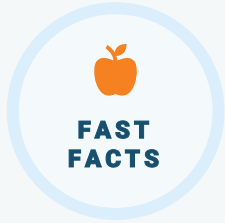
Wealth
Gaps

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**

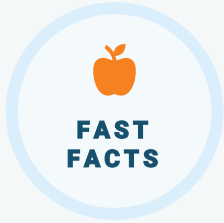
18% of the fastest-growing and highest-paying jobs **require a Computer Science degree**



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
~~only a set of digital skills~~
**a mindset founded on problem
solving, critical and creative
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?

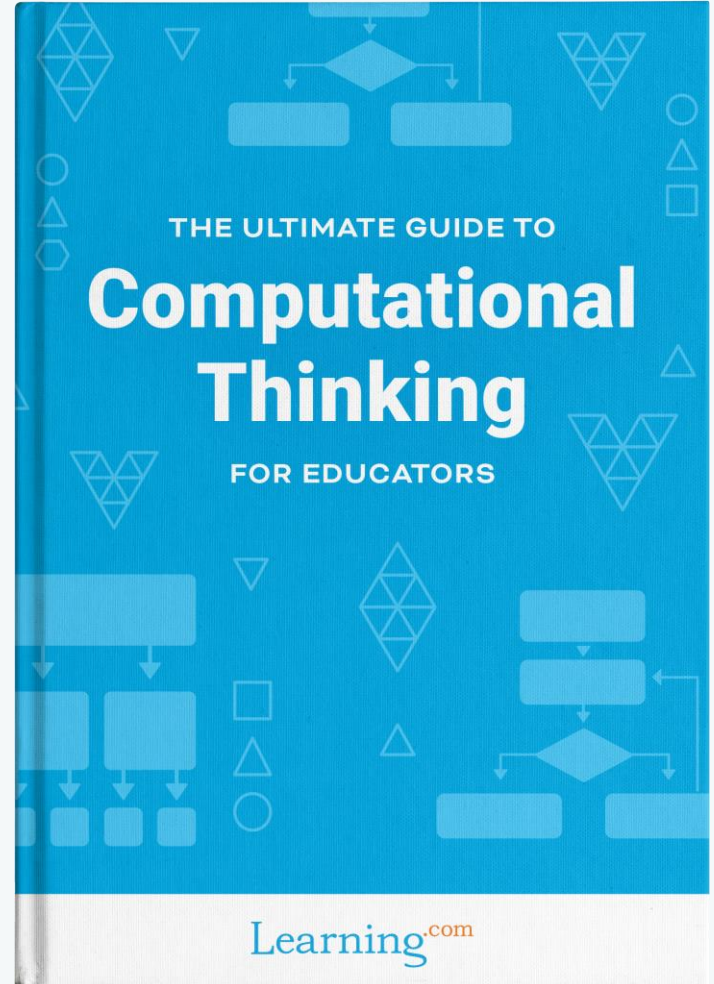
**Computational
thinking.**

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?

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