

Link to Slides: [bit.ly/WSCA2019](http://bit.ly/WSCA2019)



## Preparing for Careers of the Future: School Counselors, Lead the Way!

Thursday, Feb 7, 2019 7:45 am - 10:45 am

Presented by: **Angela Cleveland, NCWIT Counselors for Computing  
Program Director**

**Julie Gustafson, NCWIT Counselors for Computing Community Manager**



@NCWIT #NCWITC4C

Meeting Room N



C4C is a project of the NCWIT K-12 Alliance, made possible by Merck.

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NCWIT Investment Partners: Avaya, Pfizer, Bloomberg, Hewlett Packard Enterprise, Qualcomm, and Facebook

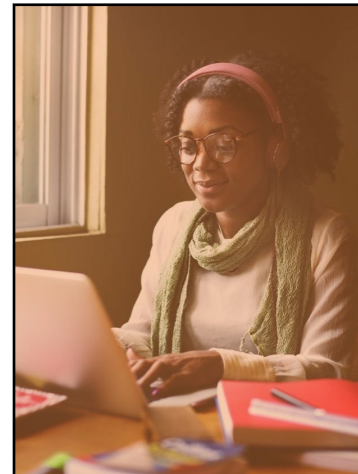


## Overview

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- 1 What is C4C?
- 2 What is Computer Science?
- 3 Why Computer Science?
- 4 Computer Science in Wisconsin
- 5 Why School Counselors?
- 6 Where to go from here?



## Counselors for Computing

### Mission

Provide counselors with information and resources they can use to support **ALL** students as they explore computer science education and careers.



### How We Do It

C4C provides professional development and resources for counselors and others in an advising role.



### Outreach, Activism for Change

- Critical partners in CS for ALL
- Recognize counselors as allies



### Leadership Development

Join C4C leadership development workshops, receive stipends, and do good work.



# What Is Computer Science?

CS is **posing a problem** in such a way that a **computer** can help us **solve** it.

- Communicate
- Solve problems
- Design and imagine
- Share, store, retrieve, manipulate, **secure** information



CS is **designing** computing devices and **programming** them.

## 2 What is Computer Science?

**Computer Science is Changing Everything!**



[bit.ly/CSChangingEverything](http://bit.ly/CSChangingEverything)

[studio.code.org/courses](http://studio.code.org/courses)

**Pair Programming Demonstration**



### Hour of Code

If you don't have time for a full length course, try a one-hour tutorial designed for all ages. Join millions of students and teachers in over 180 countries by starting with an Hour of Code.

[View more Hour of Code tutorials](#)

**Select one!**

<p><b>Minecraft</b> Program animals and other Minecraft creatures in your own version of Minecraft.</p>	<p><b>Star Wars</b> Learn to program droids, and create your own Star Wars game in a galaxy far, far away.</p>	<p><b>Frozen</b> Let's use code to join Anna and Elsa as they explore the magic and beauty of ice.</p>	<p><b>Classic Maze</b> Try the basics of computer science. Millions have given it a shot.</p>
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# WHAT IS COMPUTATIONAL THINKING?

decomposition: solve a problem by breaking it into smaller groups

pattern recognition: find the order, analyze the data

algorithmic design: creating solutions using a series of ordered steps

Credit: [www.robotresources.com](http://www.robotresources.com)

ASCA: [schoolcounselor.org/asca/media/asca/home/MindsetsBehaviors.pdf](http://schoolcounselor.org/asca/media/asca/home/MindsetsBehaviors.pdf)



**B-LS 1.**  
Demonstrate critical-thinking skills to make informed decisions

**B-LS 9.**  
Gather evidence and consider multiple perspectives to make informed decisions

**B-SMS 7.**  
Demonstrate effective coping skills when faced with a problem

**B-LS 4.**  
Apply self-motivation and self-direction to learning

**B-SS 7.**  
Use leadership and teamwork skills to work effectively in diverse teams

**B-SMS 6.**  
Demonstrate ability to overcome barriers to learning

**B-LS 5.**  
Apply media and technology skills

**B-SS 6.**  
Use effective collaboration and cooperation skills

**How does computational thinking connect with school counseling?**

**Wisconsin:**  
\_\_\_\_\_ job openings **Today**

**www.glassdoor.com**

company reviews  
salary reports  
interview reviews and questions,  
benefits reviews  
office photos and more.  
✦ Search "Information Technology" in your town!

**How many jobs are within 20 mile radius of your town?**

**www.dice.com**

Career search site that serves information technology and engineering professionals.  
✦ Search "Information Technology" in your town!

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**Some may think:**

This problem is about **"STEM"**  
(Science, Technology, Engineering, and Math)...

Source: Code.org

**The STEM problem is in computer science**

**58%**  
of all new jobs in STEM are in computing

**8%**  
of STEM graduates are in Computer Science

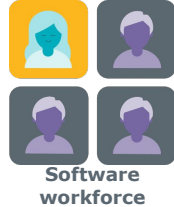
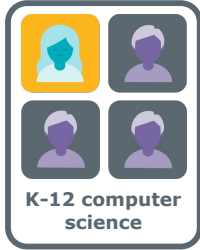
Source: Code.org

Sources: Bureau of Labor Statistics, National Center for Education Statistics

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## Solving the diversity problem begins 13

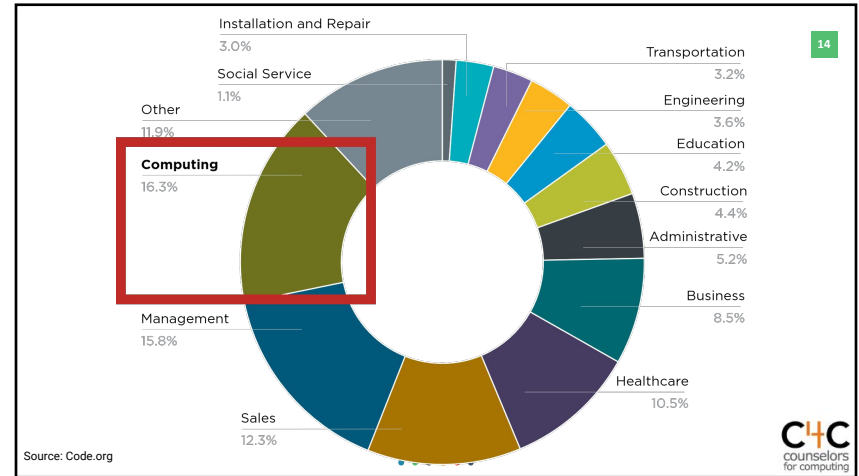
in K-12



Women who try AP Computer Science in high school are ten times more likely to major in it in college, and Black and Hispanic students are seven times more likely.

Source: Code.org

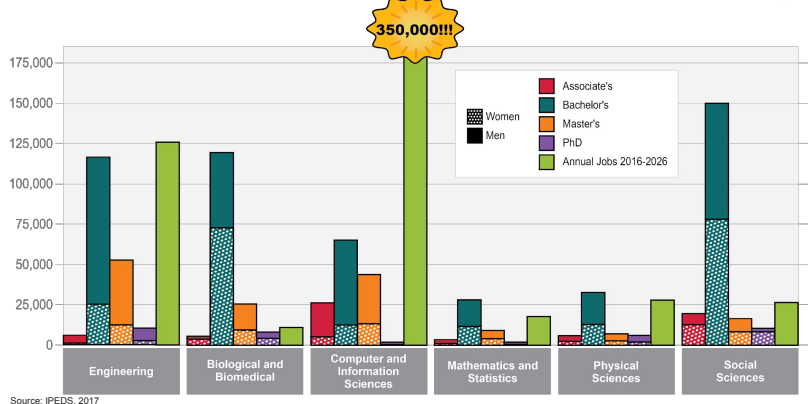
Sources: College Board, National Center for Education Statistics, Bureau of Labor Statistics



Source: Code.org

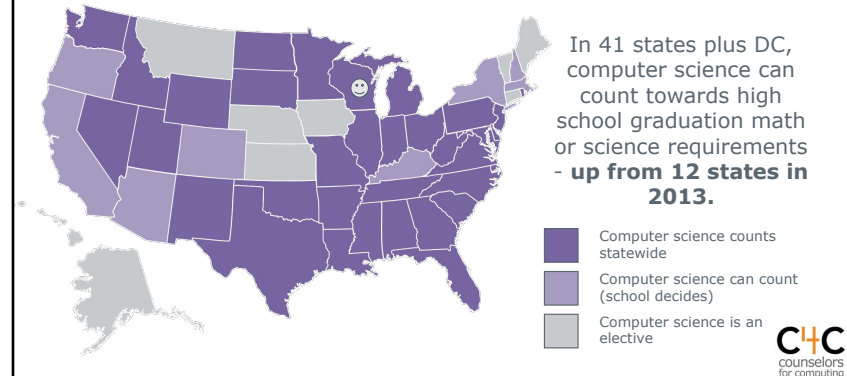


## Degrees and Job Growth, 2017



Source: IPEDS, 2017

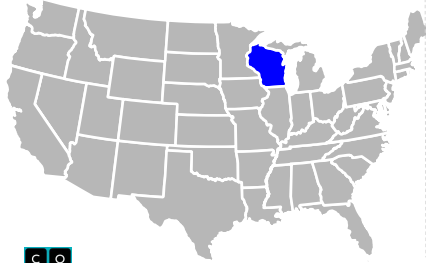
## CS can count for graduation in 41 states + DC








## 4 Computer Science in Wisconsin

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### Wisconsin Fact Sheet - 2019



-  **6,939** Open computing jobs  
(2.4x state average demand rate)
-  **918** Computer Science Grads
- X** No Dedicated state funding for CS PD
- X** Doesn't require all high schools to offer CS
-   K-12 CS curriculum standards
-  **AP Stats**
- 17%** of schools teach AP CS
- 1,498** students took the AP exam
- 20%** were female
- 107** underrepresented minorities



Source: Code.org/promote



**PUMPCS**  
Professional Learning for Computing Science

**PD:** Year-long professional learning.  
**When:** 5-day in summer: Green Bay - TBD, 2019; La Crosse - TBD, 2019; Milwaukee - July 22-26, 2019; Baraboo area - (tentative) TBD, 2019; online and local 1-day quarters at local sites in school year (dates TBD)  
**Where:** Green Bay, La Crosse, Milwaukee, and Baraboo.  
**Cost:** Curriculum freely available.  
**Workshop program (3 days):** \$1,530 (travelers) / \$990 (commuters)  
**States:** Accepting applications beginning January, 2018, at <https://code.org/wis/ate/professional-learning/cs-discoveries>  
**Future:** Next cohort expected in 2020-21.

**Partnership with Code.org**

Video: <http://bit.ly/PUMPCS19Video>



## Code.org CS Pathway

Recommended Code.org courses

Courses from Code.org for students in grades K-12 and professional learning for teachers.


[View my recent courses](#)

Elementary school					Middle school			High school					
K	1	2	3	4	5	6	7	8	9	10	11	12	
												CS Principles	
												CS Discoveries	
												CS Fundamentals	
												Pre-reader Express	CS Fundamentals: Express
Professional Learning for all grade levels												Learn more	

## Code.org Resources

**Recommended courses from 3rd parties**

Organization	Curriculum	Professional Learning
Bootcamp	Teach algebra through video-game programming, with a 30-hr module to go alongside or inside a math class.	3-day work district. Free
Code Monkey	Over 300 story modes & 484 mode challenges. Can be taught full year, 1/2 year, or quarterly. \$10/student	Free online \$2000/seat
CodeCombat	18 game-based courses teaching Python and JavaScript. Includes 5 game and web development courses. Free course and teacher resources are free. School site licenses start at \$2500	Free on-site PD
CodeHS	6th-12th grade CS pathway. Intro CS JavaScript. Intro CS Python. Computing Literacy. Web Design and more. FREE. Free game for schools, start at \$2000.	Online PD to teaching AP CS. Price: \$1000/seat
Codecademy	5 session intro and project platform. FREE. 2 40-hr intro to Python courses and 200+ open to Game Design courses. \$200/seat or a la carte pricing	Half day, 1-hr workshops 2 per teacher and location
Globaloria	6 game design courses. \$750/seat	3-day, in-person on-site and student price
Robotics	List of educational robotics and electronics kits and tutorials. Platforms feature open standards for building, prototyping, and customizing with	FREE on-site

**Wisconsin**  
**6,939** Open computing jobs  
**918** Computer Science Grads  
**X** No Dedicated state funding for CS PD  
**X** Doesn't require all high schools to offer CS  
 **K-12 CS curriculum standards**  
**17%** of schools teach AP CS  
**1,498** students took the AP exam  
**20%** were female  
**107** underrepresented minorities

# PLTW CS Pathway

## PLTW Launch (PreK-5)

Amazing Discoveries Start Here

## PLTW Computer Science (9-12)

Empower Your Students to Be Technology Trailblazers

## PLTW Gateway (6-8)

Engaging. Exciting. Empowering.

Computer Science Essentials

Computer Science Principles

Computer Science A

Cybersecurity

Microsoft  
Philanthropies  
**TEALS**

Year-long **classroom teacher partnership** with **volunteer industry professionals**

Rigorous **curricula and resources** developed by CS educators and industry professionals

Computer science in every high school  
tealsk12.org

## TEALS Models of Support



### Co-Teach

For teachers new to CS who want help learning the content and a gradual release

Volunteers teach or co-teach with classroom teacher while teacher is learning the material

Volunteers support with grading, and helping students during lab

3-4 volunteers, 4-5x per week

### Lab Support

For teachers comfortable with 80% of course CS content and want a technical backstop, reduced instructor-student ratio, and industry connection in class

Volunteers support the class with grading, and helping students during lab

1-2 volunteers, 2-5x per week

### Classroom Enrichment

For teachers who can teach a CS course independently and want to be a part of TEALS community (curriculum support, monthly meetups, online community, industry mentor)

Range of support from in-class teaching assistant to occasional career talks or demos

## TEALS and Supported Curricula

### Introduction to Computer Science (TEALS)

University of California, Berkeley CS 10

1 Semester course or Full year option w/ Python 2<sup>nd</sup> semester

Block programming language

All grade levels

### AP Computer Science Principles (Partners)

Complements (does not replace) AP CS A

Year long course with AP exam in May

Broad coverage of computing principles, issues, and creative solutions

*Lab Support or Classroom Enrichment support only.*

### AP Computer Science A (TEALS)

University of Washington CSE 142/143

Year long course with AP exam in May

Industry standard Java

So/Jr/Sr with Algebra II completion

## Computer Science in Every High School

A pathway for students to learn CS including the two AP College Board Exams

A sustainable community for teachers and industry professionals to work together

Proven model to grow teacher capacity

7 current SE WI schools, 34 statewide; 2019/20 goal of 50+ schools

Apply at:  
[tealsk12.org/schools](https://tealsk12.org/schools)

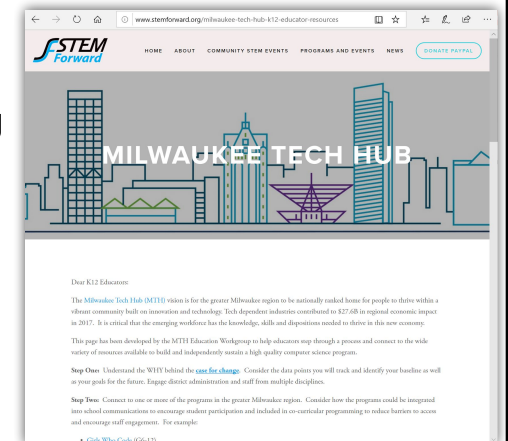


## STEMforward.org

in partnership with

## MKE Tech Hub

## K12 Educator Resources



## WI K12 CS Programs

We have discussed:

- Code.org
- ECS
- PLTW
- TEALS

Others:

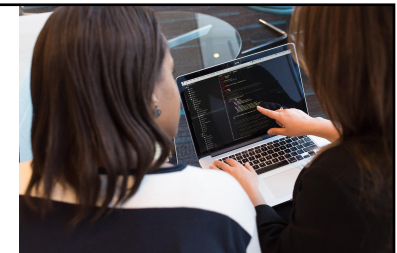
- CodeHS
- Code the Future
- Girls Who Code
- First Robotics (Lego)

Mark Zachar | [markz@tealsk12.org](mailto:markz@tealsk12.org) | [www.tealsk12.org](http://www.tealsk12.org)

## What is like to study computer science?



Txujtsheeb Simeon Xiong  
Northeast Wisconsin Technical School  
Perkins Grant – IT and Business Analyst Career/Academic Advisor



# Why School Counselors?

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## Encouragement: ASCA Ethical Standards

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“School counselors are advocates, leaders, collaborators and consultants who create systemic change by providing equitable educational access ...School counselors demonstrate their belief that all students have the ability to learn by advocating for an education system that provides optimal learning environments for all students...School counselors as social-justice advocates support students from all backgrounds and circumstances.”



## Self Perception

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## Technology affects **every** field

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## Career Perception

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“Don’t ask kids what they want to be when they grow up.

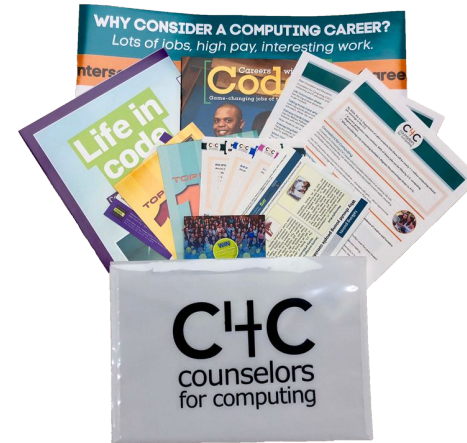
*Ask them what problems they want to solve.*

This changes the conversation from who do I want to work for to what do I need to learn in order to be able to do that.”

- Jaime Casap,  
Google Education Evangelist

What problems do you want to solve?

How can technology help you solve those problems?



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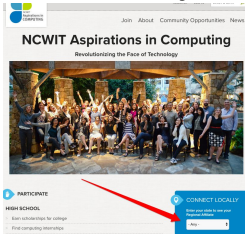


## 6 Where to go from here?

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Connect with your Aspirations Community!



[Aspirations.org](https://www.aspirations.org)



Connect with FabFems! ([FabFems.org](https://www.fabfems.org))



# SEE YOURSELF IN COMPUTING

See Yourself In Computing Virtual Reality Experience

Sign up on our paper sheet  
(name, email)  
for your FREE VR Headset!

<https://cospac.es/h2g5>



*Changes in computer science education are happening fast, with implications for counselor practice.*  
*Many groups are involved in bringing new opportunities to your students and it all adds up to CS for ALL!*  
*Join this movement to support all students, by bringing opportunity to those who are traditionally underrepresented in computer science classes and in computing professions.*  
*We can bring you up to speed.*

@NCWIT  
#NCWITC4C

## Thank You!

Angela Cleveland, Program Director NCWIT Counselors for Computing  
Julie Gustafson, NCWIT Counselors for Computing Community Manager



[ncwit.org/c4c](http://ncwit.org/c4c)



[c4c@ncwit.org](mailto:c4c@ncwit.org)

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NCWIT Investment Partners: Avaya, Pfizer, Bloomberg, Hewlett Packard Enterprise, Qualcomm, and Facebook