Prepare Today’s Students for Tomorrow’s Careers

Webinar Presenters: Angela Cleveland, Jane Krauss, Stephen Sharp, Dana Wile
Webinar Date: 2/15/18  3-4pm EST
Learning outcomes:

*Upon completion of this webinar attendees should be able to:*

1) Have a new sense of what computer science is and who's right for it

2) Identify concrete tips for talking about computer science education and careers with students and parents, teachers and other influencers

3) Identify four factors that influence career decisions, reflect on ideas to support computing careers

4) Feel confident that they are supporting viable pathways, whether students' postsecondary plans are for 2- or 4-year college or military service
Overview

- What Is C4C?
- Why Computer Science?
- Why School Counselors
- Computer Science in Your State
- Where to Go from Here?

What Is Counselors for Computing

Mission
Provide counselors with information and resources they can use to support more—and more kinds of—students as they explore computer science education and careers.

How We Do It
Professional development and resources for counselors and others in an advising role

Outreach and Activism for Change
Emphasis on female participation but strategies, practices and resources useful for improving opportunity for all

Leadership Development
Help us do our work. Join C4C Leadership Development Workshops, receive stipends, do good work
Why Computer Science?

Computer Science is Changing Everything!

Why 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 or manipulate information

CS is **designing** computing devices and **programming** them.
How does Computational Thinking connect to School Counseling and the ASCA Mindsets and Behaviors?

How does Computational Thinking connect to School Counseling and the ASCA Mindsets and Behaviors?

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 6. Demonstrate ability to overcome barriers to learning

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

B-LS 5. Apply media and technology skills

<table>
<thead>
<tr>
<th>Decomposition</th>
<th>Can the student break down the problem into smaller, more manageable parts?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstraction</td>
<td>Can the student hide or remove unnecessary information?</td>
</tr>
<tr>
<td>Iterative Thinking</td>
<td>Is the student comfortable adapting the plan in response to new or varying information?</td>
</tr>
<tr>
<td>Debugging</td>
<td>Can the student develop a plan for dealing with problems?</td>
</tr>
</tbody>
</table>

Source: Julie Mueller Computational Thinking for Teachers August 2016 Presentation re: Assessment of CT
Computational Thinking Connects Across Content

<table>
<thead>
<tr>
<th>Mindsets &amp; Behaviors</th>
<th>Computational Thinking</th>
<th>PA CEWS</th>
<th>Common Core</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gather evidence &amp; multiple perspectives to inform decisions</td>
<td>Modeling &amp; Simulation</td>
<td>Describe individual &amp; personal interests, range of careers.</td>
<td>Describe - ELA</td>
</tr>
<tr>
<td>Critical thinking for informed decision making</td>
<td>Use of Data</td>
<td>Entrepreneurship Skills</td>
<td>Analyze - ELA</td>
</tr>
<tr>
<td>Demonstrate Creativity</td>
<td>Programming/Development</td>
<td>Creative Thinking</td>
<td>Create - ELA</td>
</tr>
</tbody>
</table>

Link to ASCA Webinars about Core Competencies

The Future of Work

Unprecedented and near ubiquitous change of industries due to technology.

Exponential growth and infusion of technology blurring the lines between physical and digital.

Technologies include: artificial intelligence (machine learning), automation/robotics, Internet of Things, 3D Printing, and nanotechnology.

Impact on industry timeline

Change of skill demand and composition

Computing jobs are the #1 source of new wages in the United States

500,000 current openings:
Jobs in every industry and every state, and projected to grow at twice the rate of other jobs.

Computing jobs:
50% in tech sector
50% every other sector

STEM degrees and jobs in the US
Value of Diversity to Computing

- Enhances Innovation
- Expands the Qualified Employee Pool
- Improves the Bottom Line
- Promotes Equity

The people who create our technologies and services should be like the people who use them.

Computer Science in YOUR STATE

That's what's going on around the country. Here's what's happening in your neck of the woods.
Why School Counselors?

**ASCA Position Statement**

“The School Counselor and Career Development” (Adopted 2017)

“School counselors play a critical role in students’ career development by:

- Identifying gaps in college and career access and the implications of such data for addressing both intentional and unintentional biases related to college and career counseling”

(14-Point Document)
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."

Encouragement:

"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."

Knowledge: I-A-3. Demonstrate an understanding of barriers to student learning and use of advocacy and data-driven school counseling practices to close the achievement/opportunity gap

Abilities and Skills: I-B-4. Collaborates with parents, teachers, administrators, community leaders and other stakeholders to promote and support student success

Attitudes: I-C-3. Believe every student should graduate from high school and be prepared for employment or college and other post-secondary education
“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

“At my old school, I was pretty severely bullied. I was cyberbullied, verbally bullied, physically attacked four separate times, and sat alone at lunch every day. I felt awful about myself during that time and was always so afraid to go to school because I never knew if I was going to be hurt again. However, once I was able to transfer schools, I made it my duty to always invite kids sitting alone to my table. This small action really made a huge difference in their lives and some of those kids are now my closest friends. This experience inspired me to create my app, Sit With Us, because I wanted to bring people together and help prevent bullying on a larger scale.”

Natalie Hampton
Career Perception & Pathways

Sample Jobs Available with Military Training*

<table>
<thead>
<tr>
<th>Job Title*</th>
<th>Projected Growth 2010-2020</th>
<th>2012 Average Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Technician</td>
<td>18%</td>
<td>$46,260</td>
</tr>
<tr>
<td>Network Administrator</td>
<td>28%</td>
<td>$69,160</td>
</tr>
<tr>
<td>Help Desk Specialist</td>
<td>18%</td>
<td>$46,260</td>
</tr>
<tr>
<td>Technical Writer</td>
<td>17%</td>
<td>$63,280</td>
</tr>
<tr>
<td>Database Administrator</td>
<td>31%</td>
<td>$73,490</td>
</tr>
<tr>
<td>Software Developer</td>
<td>30%</td>
<td>$90,530</td>
</tr>
<tr>
<td>Computer Security Specialist</td>
<td>22%</td>
<td>$75,660</td>
</tr>
<tr>
<td>Multimedia Artist or Animator</td>
<td>8%</td>
<td>58,510</td>
</tr>
<tr>
<td>Multimedia Producer</td>
<td>8%</td>
<td>$58,510</td>
</tr>
<tr>
<td>Web Developer</td>
<td>22%</td>
<td>$75,660</td>
</tr>
</tbody>
</table>

*Upon leaving service
### Sample Jobs Available with 2-Year AA, AAS Degree or Industry Certification

<table>
<thead>
<tr>
<th>2-Year Job Title</th>
<th>Projected Growth 2010-2020</th>
<th>2012 Average Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Support, Help Desk Specialist</td>
<td>18%</td>
<td>$46,260</td>
</tr>
<tr>
<td>Network Technician</td>
<td>18%</td>
<td>$46,260</td>
</tr>
<tr>
<td>Nuclear Medicine Technologist</td>
<td>19%</td>
<td>$68,560</td>
</tr>
<tr>
<td>Medical Record, Health Information Technician</td>
<td>21%</td>
<td>$32,350</td>
</tr>
<tr>
<td>Environmental Engineering Technician</td>
<td>24%</td>
<td>$43,390</td>
</tr>
</tbody>
</table>

**Four-year, Adv. Degree Job Title**

<table>
<thead>
<tr>
<th>Job Title</th>
<th>Projected Growth 2010-2020</th>
<th>2012 Average Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Security Specialist</td>
<td>22%</td>
<td>$75,660</td>
</tr>
<tr>
<td>Web Developer, Web Site Manager</td>
<td>22%</td>
<td>$75,660</td>
</tr>
<tr>
<td>Database Administrator</td>
<td>31%</td>
<td>$75,660</td>
</tr>
<tr>
<td>Network, Computer Systems Administrator</td>
<td>19%</td>
<td>$75,660</td>
</tr>
<tr>
<td>Software Developer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Software Engineer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*...continues with 4-yr, adv. degree jobs*

### Sample Jobs Available with 4-Year or Advanced Degree

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<thead>
<tr>
<th>Job Title</th>
<th>Projected Growth 2010-2020</th>
<th>2012 Average Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Information Systems Manager</td>
<td>28%</td>
<td>$69,160</td>
</tr>
<tr>
<td>Network, Computer Systems Administrator</td>
<td>28%</td>
<td>$69,160</td>
</tr>
<tr>
<td>Bioinformaticist</td>
<td>19%</td>
<td>$70,790</td>
</tr>
<tr>
<td>Database Administrator</td>
<td>31%</td>
<td>$73,490</td>
</tr>
<tr>
<td>Computer Security Specialist</td>
<td>22%</td>
<td>$75,660</td>
</tr>
<tr>
<td>Web Developer, Website Manager</td>
<td>22%</td>
<td>$75,660</td>
</tr>
<tr>
<td>Software Developer</td>
<td>30%</td>
<td>$90,530</td>
</tr>
<tr>
<td>Software Engineer</td>
<td>9%</td>
<td>$98,810</td>
</tr>
<tr>
<td>Computer Scientist</td>
<td>19%</td>
<td>$100,660</td>
</tr>
</tbody>
</table>
Academic Exposure

CSEd Week
The 1st Week of December
try an Hour of Code

An hour of code.
A lifetime of change.

WHAT'S YOUR CODING SUPERPOWER?

Combining computer science (CS) with things you're passionate about can give you the skills to make a real difference to the world around you.

Life in code
Computer science is part of your daily life – even if you can't see it.

Mission Possible
10 ways computer science is making the world a better place...
Introduce CS with **Careers with Code**

CS + X

9 Ways Tech Can Change The World

Crack the Code! quiz!

Get Started!

Guide

Careers with Code

9 Ways Tech Can Change The World

What have other C4C counselors done?

<table>
<thead>
<tr>
<th>Reflect</th>
<th>Advocate</th>
<th>Collaborate</th>
<th>Lead</th>
</tr>
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<tbody>
<tr>
<td>Go to ncwit.org/C4C to get your free kit. Reflect on your perceptions of who’s right for CS. Examine course offerings and enrollment trends.</td>
<td>Share C4C messages, resources with students, families, and colleagues.</td>
<td>Invite young Aspirations women to school. Find ones in your area on this NCWIT Award page: past winners. aspirations.org/awardees.</td>
<td>Join C4C Workshop Leadership development Regional meetings Conferences.</td>
</tr>
</tbody>
</table>
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.org/C4C
C4C@NCWIT.org
For more about Counselors for Computing (C4C), visit our webpage.

Resources:
- Click here to make a copy of the presentation Google Slides.
- Click here to order a free C4C Kit. It’s filled with lots of information about how to talk with students about careers in computer science.
- Read the free online versions of Careers with Code magazine.
- Get the stats about computer science in your state from Code.org.

Promote Opportunities Among Your Students.
- Technolochicas.org: Get inspired to follow in the footsteps of these 10 amazingLatinas who share a passion for technology. Learn about their journeys, watch how each one of them is succeeding in their technology-related fields and get motivated to create the technologies of the future!
- FabFems offers a directory of technical women who can speak to your students. Search by location.
- For camps and clubs, here’s a link to AspireIT programs in your area. (presently one camp, more added after April). The Connectory is a national database of STEM opportunities, including lots of CS!

The Learning Continues!
- Article: What Happened to Women in Computer Science?
- Infographic: Girls in IT: The Facts

NCWIT Counselors for Computing
c4c@ncwit.org