ARCS NEWS

Advancing Rural Computer Science

VOL. 3, ISSUE 2

NOVEMBER 2022

Announcements
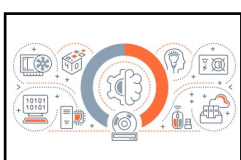
Greetings!

We hope you had a Happy Halloween earlier this week! This month, we revisit some basics: What is computer science? Where can I find Computer Science SOLs? Scroll down for more!

In October, the ARCS team shared out at two national conferences: the National Rural Education Association conference, and the United States Education Department EIR Project Directors Meeting. We will be sharing at VAST and VSTE later this fall, too. We are so proud of the project and hope you find value in being part of it, too. Speaking of value, later this month we will be reaching out to those of you who joined the project and completed the Code VA K-5 Coaches Academy last summer. We will be offering you a choice of free CS classroom materials, courtesy of ARCS!

If you are currently enrolled in the Microcredentials, watch out for communications from our ARCS Education Specialists. They are planning some live online events to support you!

Whether you are in your first or second year with us, please sign up for Code VA's Learning Bytes (see Professional Learning section below).

We are also getting ready to open up enrollment for next year's cohort. Do you know an educator or team of educators who might be interested in joining ARCS? If so, please forward this link so that they can register to receive more information: **http://bit.ly/ARCSINTEREST2023**

Since this is our November edition, we wanted to wish everyone a Happy Thanksgiving. As always, if you have any questions or comments for us, please don't hesitate to email us at **tcep@odu.edu**.

Concept Corner
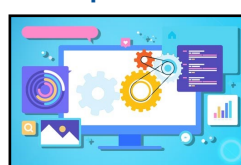
What is computer science?

When the term computer science comes to mind, people often think of computer technicians or topics such as computer engineering, programming and coding, and cybersecurity. Did you know that some of these are broader than computer science itself? For example, someone who fixes computers is known as an informational technician and may work in an information technology (IT) department. They provide technical support by testing, building, installing, and maintaining hardware and software. Computer engineering focuses on designing and building computer hardware. Cybersecurity experts help mitigate malicious interference in computers and their programs.

So, what IS computer science? **Computer science (CS) and computer scientists focus on designing computational methods (also called algorithms), frameworks and data structures to solve important computational problems.**

These algorithms are then implemented as computer programs. Computer scientists are also typically responsible for creating software with good coding practices. Of course, this contributes to the work of others in the computing field. To see how, let's take a look at your smart phone. The applications you use, whether it be Zoom, Google, WhatsApp or Contacts were created by computer scientists. The Contacts application has an algorithm that helps sort the list of contact information that is input by you. If you were to break open your phone you would see a lot of small devices (hardware) that were put together by computer engineers. If you run into a problem where you cannot log into your phone or it will not restart you would rely on an IT specialist for support. Updates are made available to fix bugs and other issues that can be detected by cybersecurity specialists. In partnership with these other specialties, computer science makes everyday tasks easier, more efficient, safer, and fun.

Pedagogy Pointers
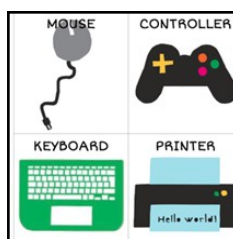
Lower Elementary Resources

For Lower Elementary: GoOpenVA has K-2 friendly computer science vocabulary word sort that includes imagery to help lower elementary students learn and better understand the kind of technology they will see in computer science lessons. The lesson is aligned to CS 2.7, 3.8, 4.8, and 5.7.

Access lesson plan here

Computer Science in the Commonwealth

What is Computer Science?

Computer science is an integral component of our everyday lives and a relatively young academic discipline, especially at the K-12 level. It is important to understand that the term computer science is broad and at its core involves logic and design, computing, computational thinking, and creativity. Computer science can be defined as "the study of computers and algorithmic processes, including their principles, their hardware and software designs, their applications, and their impact on society" (Tucker et. al, 2006, p. 2). The **2017 Virginia K-12 Computer Science Standards** acknowledge the multifaceted subject areas within computer science. They are organized into six strands: algorithm and programming, computing systems, cybersecurity, data & analysis, networking, and the internet, and impacts on computing.
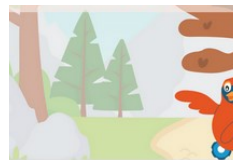
Professional Learning

CodeVA provides year-round computer science professional development for all Virginia K-12 educators. Register for upcoming **Learning Bytes** PD sessions:

Data Science Every Day

Backward Design for Computer Science Integration

Engaging All Learners

While the definition of computer science is not complex, the multitude of uses and applications of computer science is as diverse as any other aspect of our culture and society, which reminds us that computer science instruction should be designed to involve and engage all learners. In fact, integrative computer science activities across the curriculum that incorporate student voice and introduce new concepts using familiar vocabulary are among the techniques that can promote computer science teaching and learning. **Check out** this brief (4 minute) video from the 2019 International Society for Technology in Education (ISTE) annual conference for ideas and examples on creating a culturally diverse learning space to promote computer science for all.

Old Dominion University

The Center for Educational Partnerships

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