

ARCS NEWS

Advancing Rural Computer Science

Brought to you by The Center for Educational Partnerships at Old Dominion University

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Announcements



Greetings!

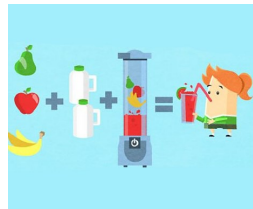
We hope everyone is well and had a restful Thanksgiving. The ARCS team is looking forward to winter break and anticipate that you are, too!

In this newsletter, we are thinking about algorithms. This month's Concept Corner asks us to think about the step-by-step activities we accomplish everyday as examples of algorithms. From brushing their teeth to tying their shoelaces, we imagine that your students will be able to come up with some great examples! For a more direct application of algorithms, you might want to check out the Scratch holiday card lesson in Pedagogy Pointers.

Have a wonderful holiday season!

The ARCS team.

Concept Corner



Algorithms and Everyday Life

With increasing use of computers in everyday life, one is beginning to hear the word "algorithm" with greater frequency. What is an algorithm? An algorithm is a sequence of steps to perform a task. And though most associate the word algorithm with computer science, we use algorithms on a daily basis in our own lives.

When you wrap a holiday gift, you follow a sequence of steps like measuring the size of the box to be gift-wrapped, cutting appropriate sized wrapping paper for the box, folding and taping it around the box in a specific fashion and attaching the gift bow. This sequence of steps is an algorithm for wrapping a gift. Different people may use different methods or "algorithms" for gift-wrapping! When you play card games, you often want to keep your set of cards organized by suit or numbers. Unconsciously, you apply a sorting algorithm to do that. While these are examples of simple algorithms, they are similar to more complex algorithms that computer scientists devise in that they all are a sequence of precise steps to accomplish a task. An example of a more complex algorithm is the set of steps used to knit a sweater with a particular pattern. Even more complex algorithms are used by computers to learn our online shopping habits and make recommendations to us for buying more things! Now that you know what algorithms are, think about some of your usual daily tasks and identify if and how you are using algorithms to accomplish those!

Here is a short video describing "[what are algorithms](#)" that you might enjoy!

Pedagogy Pointers



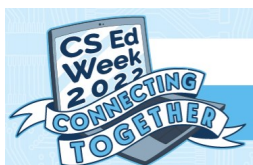
For the Holidays

SCRATCH Ed has an interactive holiday lesson to help students build an interactive, animated holiday card to share with family and friends in the month of December. The holiday card lesson takes approximately one hour and includes a curriculum guide. The lesson is aligned to CS 2.2a-c, 3.2a-c, 4.2a-c, 5.2a-c.

[Ed Holiday Card Lesson](#)

[SCRATCH Ed Holiday Card Instructions](#)

Computer Science in the Commonwealth



Computer Science Education Week is December 5th –11th, 2022

This year the focus is on data science and #ConnectingTogether. There will be an in-person LAUNCH event at The Science Museum of Virginia, hosted by CodeVA, where students will hear from speakers from all over Virginia and participate in hands-on activities throughout the museum. We will live stream the event from this page for all to see on our website for friends around the state who can't join us in person!

After the Launch event, we have a full week of student workshops, after-school programs, and professional learning opportunities for educators! With offerings for K-8 students and any educator level, we're sure to have something for everyone. Find out more information [here](#).

<https://www.csedweek.org/>

Engaging All Learners



Algorithms are a dominant concept in computer science, but just the term "algorithm" alone can be intimidating! In the simplest of definitions, algorithms are a set of rules or steps to be followed to complete a task. One great way to help students – particularly elementary-age students – understand the idea behind the term algorithm is to embed the concept into everyday activities. This can be accomplished through computing resources or we can use unplugged lessons to connect algorithms with recognizable aspects of daily life.

Fortunately, there are some awesome resources out there to help us integrate algorithms into the classroom or home, including [this article](#) from Sphero which defines and discusses algorithms using approachable terminology and provides explanations of how we use algorithms through both plugged and unplugged examples. Another source is Code.org's [CS Fundamentals Unplugged](#) series, which provides open-source materials through fully developed lesson plans, many of which include instructional videos for educators and printable materials to be used in teaching the lessons.

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