ARCS NEWS

Advancing Rural Computer Science

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

VOL. 3, ISSUE 4 JANUARY 2023

Announcements

Greetings!

We hope everyone had a restful break and that you were able to spend quality time with friends and family.

Lisa Steffian and Alexis Tharpe, our newest members of the ARCS team, will be your primary contacts, training coordinators, and mentors for the remainder of this program. Lisa has over 10 years of experience in K-12 and higher education and is especially excited about integrating CS content in nontraditional STEM content including social studies and language arts. Alexis worked as a classroom teacher with over 20 years of experience teaching elementary and middle school students. She served as a science curriculum writer and facilitator integrating CS and STEM activities into the curriculum.

CodeVA has opened their spring calendar! All ARCS participants are encouraged to complete two Learning Bytes sessions.

Click **here** to register.

February 1st at 6PM —Culturally Relevant and Responsive Teaching in CS

February 15 at 6PM —Cybersecurity, Ciphers and Puzzles

March 1 at 6PM— Backwards Design for Computer Science Integration

March 15 at 6PM— Artificial Intelligence Basics

March 29 at 6PM— Data Science Every Day

As always, we welcome your comments, questions, and ideas. We look forward to working with you all.
Happy New Year!

The ARCS team

Concept Corner

Data -- Analysis, Analytics, and Mining

Data Analysis is a process of examining, curating, transforming, and modeling data with the goal of discovering useful information, which informs conclusions and supports decision-making. Examples of data analysis that you might have already encountered or carried out are the creation and use of data tables, bar graphs, or pie-charts. Each of these allow us to arrange our data in a systematic way which makes it easy to obtain useful information about the data. The advent of powerful computing devices, high-capacity data storage devices and high-speed communication networks has transformed the way we collect, analyze and utilize data.

There are many other Data X terms that we hear about these days; for example, Data Analytics and Data Mining. As you might expect, they are related to Data Analysis.

Data Analytics is an overarching discipline that encompasses the complete management of data. This not only includes data analysis, but also data collection, organization, storage, and all the tools and techniques used.

Data Mining is the process of discovering patterns in large data sets – data sets that cannot be looked at, let alone analyzed by humans in any reasonable amount of time. Companies like Amazon and Google collect data on what people search, then use Data Mining techniques on this data to come up with recommendations for products for you to buy or show you targeted advertisements based on your searches.

Pedagogy Pointers

For all levels: Data Nuggets is an open-source, free, quantitative lesson planning collection that has resources available for all levels of learning that can be integrated into almost any curriculum. The lessons are designed to present students with data and provide them opportunities to draw conclusions and support those conclusions with evidence. The lessons align with CS 3.12.

Data Nuggets main page

Data Nuggets Lesson Collection

Free Video Lesson: BrainPOP Jr.'s free lesson on data analysis includes an overview for elementary-age children on reading and interpreting bar and tally graphs. The video lesson includes a quiz and other interactive activities once the video is complete. If your school or school district has access to BrainPOP Jr., the site has a number of other useful data-related video lessons. The lesson aligns with CS 2.11.

Graph Video Lesson

BrainPOP Jr. Data Videos Lessons

Binary Bracelets: The concept of binary can be hard to grasp, but this **activity** uses math and the common material of perler beads to help students turn decimal system numbers and the alphabet into binary (0's and 1's). There's even a "cheat sheet" for quick reference! The lesson aligns with CS 4.12 and 5.13.

Computer Science in the Commonwealth

Computer Science Educator of the Year Nominations are Open!

Nominations close - January 31st.

One may nominate an educator for more than one category. Once an educator is nominated they will receive notification to complete the CSEOY nominee application. The nominee will confirm category submission during the application process.

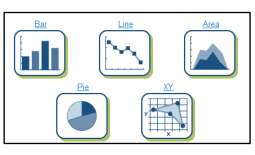
Six Categories:

- PreK – 2nd Grade
- 3rd – 5th Grade
- 6th – 8th Grade
- 9th – 12th Grade
- ITRT/STE(A)M Coach/Specialist/Instructional Support
- Administrators and Counselors

There will be one winner per category and one overall winner that will be named Virginia Computer Science Educator of the Year.

Nominations can be made at **https://bit.ly/VirginiaCSEOY2022**.

Engaging All Learners



A key part of data analysis involves the presentation of the findings that result from the analysis. Often, data that may not be easily distinguishable or interpretable in narrative format can be effectively presented in visual displays that illustrate relationships between variables, allowing students to make comparisons, investigate cause and effect, and describe characteristics of data. Using graphs and charts have also proven to be a useful tool that educators can use to engage and support diverse learners across the curriculum**. Click here** to visit the American Institutes for Research's *PowerUp What Works* site for free online tools and resources to support graphing activities. The site also offers ideas on how to incorporate graphing into your data analysis lessons, whether they are plugged or unplugged.

United States Education Department Grant U411C190032. The contents of this newsletter were developed under a grant from the Department of Education. However, those contents do not necessarily represent the policy of the Department of Education, and you should not assume endorsement by the Federal Government.

Old Dominion University

The Center for Educational Partnerships

Have a question or feedback for us? Email TCEP@odu.edu

Website: https://www.odu.edu/tcep/arcs

Tel: 757-683-5449