COMPUTER SCIENCE
in
ARKANSAS

December

RECORD-BREAKING ENROLLMENT!
MORE THAN 10,000 STUDENTS ENROLLED IN CS COURSES!

Governor Asa Hutchinson announced on November 18, 2020, that student enrollment in computer science courses topped 10,000 for this fall term. This is a record number of students, which is an increase of 6.5 percent over the previous year and more than an eight-fold increase since the 2014-15 term.

This report indicates that, for the first time in Arkansas, the percentage of Black/African American students who are taking a computer science class (19.6 percent) exceeds the percentage of all Black/African American students enrolled in Arkansas high schools (19.2 percent).

ADE also reports that the number of female students enrolled in at least one computer science class (3,135) increased by 28 percent over the past year and a 1,300 percent increase since 2014 of 223 female students.

"When we became the first state in the nation to require all high schools to teach computer science, our goal was to increase enrollment to 7,500 by the 2019-2020 school year," Governor Hutchinson said. "We surpassed that goal a year early, and this year, even with COVID-19, we topped 10,000. Educators and students embraced the initiative. We have enhanced our education system, and we are strengthening our workforce."

Governor Hutchinson also announced his support for legislation, sponsored by Senator Jane English, during the 93rd General Assembly that would require a computer science credit to graduate and would require each high school to employ at least one certified computer science teacher.

Anthony Owen, State Director of Computer Science, praised the work that led to the sixth consecutive increase in enrollment. "I am proud beyond words that our schools, educators, and students stepped up and again demonstrated that computer science remains a top priority across Arkansas."

The above enrollment numbers were taken from Arkansas school districts' Cycle 2 enrollment reports, which were reported to the Arkansas Department of Education (ADE) by October 15.

You can see the presentation here:
http://dese.ade.arkansas.gov/public/userfiles/Special_Projects/Computer%20Science/Data%20Files/Student_Enrollment_Presentation_2020_21.pdf

ARKANSAS RECEIVES THE 2020 FRANK NEWMAN AWARD FOR STATE INNOVATION

Arkansas has been named the recipient of the 2020 Frank Newman Award for State Innovation. The Frank Newman Award for State Innovation recognizes states and territories for enacting innovative education reforms or implementing innovative programs that go beyond marginal or incremental changes to improve student outcomes on a large scale.

Since 2015, when Arkansas established its computer science initiative, it has been the first state to:

- write and mandate grade-specific computer science standards for all K-8 students
- pass comprehensive legislation requiring every high school to offer a high-quality computer science curriculum, such as Advanced Placement
- add computer science knowledge and skills to the standards for all elementary school teachers

As a result, enrollment in computer science has continued to climb and has shown a statewide increase in diversity of students. Arkansas has also increased the number of teachers certified to teach computer science from about 20 to 225 in a four-year period.

Much of this progress is attributed to broad, bipartisan support for Act 87 (2015), which includes continued funding of $2.5 million per year for instructional resources, teacher development and stipends, and incentive programs for schools. For more information visit: https://www.ecs.org/about-us/awards/

STATE DIRECTOR ANTHONY OWEN ADVISING NATIONALLY

Arkansas State Director of Computer Science Anthony Owen has recently been featured nationally talking about the work Arkansas is and has been doing in computer science education.

Director Owen recently presented "Working Collaboratively to Advance Computer Science in Arkansas" to the Education Commission of the States (ECS). ECS serves as a partner to state policymakers by providing personalized support and helping education leaders come together to learn from one another. Director Owen also participated in the working group call of Governors for K-12 Computer Science hosted by Code.org.

Director Owen presented how the Arkansas Computer Science Initiative has made substantial progress for education, dramatically increased the number of credentialed computer science teachers, increased the number of high school computer science course offerings in addition to student enrollment, and increased the number of students seeking degrees and credentials in computer science.

Director Owen also spoke about the Computer Science and Cybersecurity Task Force (CSCTF) and the important collaborative steps Arkansas is making toward advancing computer science. From the recommendations of the CSCTF, legislation has been proposed for a computer science graduation requirement and for the requirement of every high school to have a licensed computer science teacher.

Bipartisan support from the Arkansas General Assembly for the CS initiative has resulted in over $15 million dollars in appropriations and funding. This money has allowed Arkansas to be innovative in the promotion and growth of the program including providing bonuses to Arkansas educators to become licensed and teach CS, rewarding students for qualifying scores on the AP CSA exam, paying CS educator licensure fees and training costs, employing a network of statewide computer science specialists that have provided training to over 15k of Arkansas's teachers, and much more.

Q & A WITH GOVERNOR ASA HUTCHINSON

Governor Asa Hutchinson is the 45th governor of Arkansas. When the governor was 31, President Ronald Reagan appointed him as the U.S. Attorney for the Western District of Arkansas. In 1996, he won a seat in the United States Congress and was re-elected twice. In 2001, President George W. Bush appointed him as director of the U.S. Drug Enforcement Administration. In 2003, President Bush appointed him to Homeland Security as undersecretary for Transportation and Border Security.

Q: Governor, we have often heard that your granddaughter Ella Beth is who inspired you to push your Computer Science Initiative when running for Governor. However, after the passing of House Bill Act 187 in 2015, did you imagine the CS Initiative would become what it is today with Arkansas leading the nation in CS education? How has it exceeded and/or not lived up to your expectations?

A: "When the computer initiative law was passed in 2015, I was confident it would catch on with our students and that interest would increase. The fact that Arkansas has become a national leader is an extra benefit. I knew Arkansas could lead in computer science, but it has exceeded my expectations in terms of the national attention it has brought to our state as a leader in an area of education."

Q: Did you have any prior experience with CS education before your campaign for Governor? Did this drive your passion for the Initiative? If not, what did?

A: "Through my work at Homeland Security, and even at the U.S. Drug Enforcement Administration, I realized the critical role that technology plays in identifying threats, with simplifying the movement of people in a secure fashion. That experience with technology made me recognize the critical role that software development and coders will play in our future. That, combined with the inspiration from my granddaughter, Ella Beth, made me understand how critical this was for our state."

Q: As Governor of Arkansas, the state that is leading the nation in Computer Science education, you have seen first-hand the development of CS education in this state. How do you see it evolving even further in the years to come?

A: "For the past six years, I've gone out on my tour of Arkansas high schools recruiting students to take computer science. That has brought us over 10,000 students enrolled this year. The numbers have increased every year. Now that we have laid this incredible foundation, it's important that we actually require computer science as a graduation requirement. I'm asking our general assembly to pass a law mandating that every student in Arkansas must take a computer science course in order to graduate. Further, to make sure that we have a certified computer teacher in every high school in Arkansas. I see the computer science initiative evolving dramatically in terms of the variety of courses offered and in reducing the inequities between the small rural schools and urban schools. We want to make sure that everyone across the state has access to computer science instruction."

Q: The Computer Science and Cybersecurity Task Force released their report on October 1, 2020. What excites you most about the work of that committee, their suggestions, and what it can mean for the future of Arkansas?

A: "They've done extraordinary work. They have made recommendations that go from the cybersecurity arena to data science and how we can better partner with industry. Their recommendations include higher education and increasing their leadership role in computer science and course offerings to industry and how we need to integrate industry to a greater extent in our classrooms and with students so they can actually see what their future opportunities will be. They can envision themselves working for an Arkansas company in a field related to technology and computer science and earn a good living from it. They have to be able to visualize the opportunities. Of course, the task force recommended what will be our next step which is a big step for Arkansas, mandating computer science as a requirement. That task force has built on what was done before, and if the general assembly adopts the recommendation, then Arkansas will continue to lead the nation in computer science education."

Q: If you could speak directly with a student wavering on enrolling into a CS course, what would you tell them?

A: "Computer science now is just as fundamental as any other tool and skill that we use in life. It doesn't mean you're going to have a career in computer science. It doesn't mean you're going to be a coder. It gives you an understanding of the world of computers and a vision of what technology means for our future."

COMPUTER SCIENCE EDUCATION WEEK

Arkansas has once again honored Grace Hopper's birthday by celebrating Computer Science Education Week. Governor Hutchinson formally designated, via **proclamation**, December 7-13 as Computer Science Education Week in Arkansas.

Throughout this week, the state encouraged Arkansas schools, after-school organizations, civic organizations, and industries to promote computer science education. Governor Hutchinson was excited to personally encourage all Arkansans to engage in this most important and fun initiative. Watch his video address here: **https://youtu.be/rkPqG9Ppz40**

The following articles are dedicated to highlighting the new Arkansas Computer Science announcements and/or commitments that were made each day this week. For a full listing of the announcements as they are made please visit the ADE Computer Science and Computing Initiative online at: **bit.ly/ARCSEDWeek**

ARKANSAS COMPUTER SCIENCE NETWORK OF SUCCESS PROGRAM

The Arkansas Department of Education Office of Computer Science is pleased to announce the creation of the Arkansas Computer Science Network of Success (ACSNS) program. This program, which is open to Arkansas Public, Private, and Charter schools, supports the recommendations of Governor Asa Hutchinson's 2020 Computer Science and Cybersecurity Task Force and is aligned to the Arkansas Computer Science Gold Medal School Program (ACSGM). The ACSNS is designed to provide structural support to Arkansas's computer science educators wishing to grow their computer science programs.

The main focus of the program is to facilitate meaningful communication and synergy within the local school district while assisting in developing a system for networking regionally for increased industry opportunities. This provides educators with the tools and strategies needed to create a greater student demand, school capacity, and economic value in computer science and computing programs within their districts. These increased values will be achieved by developing a network of success that includes administration, counselors, teacher cohorts, and regional industry and commerce partners.

The program, which will officially launch in the Summer of 2021, will support the building of an ACSNS by providing CS certified educators with initial training and ongoing support provided by the Arkansas Statewide Computer Science Specialists. Some concepts to be discussed include:

- How to implement and grow a successful CS Program of Study
- How to strive and achieve proper vertical alignment among campuses, creating a feeder system
- How AP CS affects your school's SQSS ESSA ranking
- How to identify, develop relationships with, and engage with regional industry and commerce partners
- How to promote your program through a properly developed communications plan
- How to identify and diminish barriers to broadening participation/diversifying enrollment in computer science courses
- How to incorporate competitions and out of school activities into a successful program
- Understanding the Arkansas Computer Science Gold Medal School Program

Participating schools will be required to enter into a participation agreement with the ADE Office of Computer Science before being formally admitted into the program. Interested parties should fill out the form found here: **https://forms.gle/G7MwzJtqLtknjWrY8**

NEW CODING LIBRARY BOOKS
#ARKIDSCANCODE / #RISEARKANSAS

The Arkansas Department of Education Office of Computer Science is pleased to announce the continuation of its cross-initiative program supporting both the Arkansas Computer Science (#ARKidsCanCode) and Arkansas Reading Initiatives (#RISEArkansas).

Over the previous three years of this program, approximately 900 K-8 public school libraries received coding devices and more than 6,000 coding related books. The CSforAR team is excited this will continue for 2020, as we prepare to send additional computer science and computing-related books to public school libraries across the state.

Public school libraries serving students in any combination of grades K-5 will receive a copy of:

- Grace Hopper: Queen of Computer Code
- Doll-E 1.0
- Secret Coders

Public school libraries serving students in any combination of grades 5-8 will receive a copy of:

- Emmy in the Key of Code
- Secret Coders

For more information visit:
http://adecm.arkansas.gov/ViewApprovedMemo.aspx?Id=4612

25 DAYS OF HACKING BY ELI

Over the next few weeks, there will be some ongoing cybersecurity activities available on the Internet. If you or your students are interested in Capture the Flag events, consider looking into these (Editor's note: that means you, TSA Sponsors!) Many of these are named some form of Advent, and as such, reveal a new challenge every day.

These are current/upcoming events:
https://tryhackme.com/room/adventofcyber2
https://holidayhackchallenge.com/2020/
https://competition.hacking-lab.com/
https://xmas.htsp.ro/home

If you would like to see past events to warm up with, view here:
https://www.hacker101.com/
https://holidayhackchallenge.com/past-challenges/
https://tryhackme.com/christmas
https://overthewire.org/wargames/bandit/
https://overthewire.org/wargames/natas/

While holiday shopping or completing your holiday hacking, be mindful of any information you share on the internet (intentionally or otherwise). Don't forget to clear your cookies - except for Santa's! Please reach out to eli.mcrae@arkansas.gov should you have any questions and share your progress or ask for help! Or visit the specialists including Eli at https://bit.ly/ARCSCoffee

COMPUTER SCIENCE
EDUCATOR OF THE YEAR AWARD CYCLE

The CSforAR team is happy to announce the Arkansas Computer Science Educator of the Year award cycle for the 2020-2021 school year. This award is open to any licensed educator currently working in a K-12 Public School or Public Charter School who demonstrates a strong commitment to and substantial impact on the CS initiative in their school and community.

Five finalists will be selected from the applicants, and each will receive $2,500. Of the five finalists, one will be selected as the Arkansas Computer Science Educator of 2021, and receive an additional $12,500 award.

Eligible educators may apply here until the end of February 2021. The five finalists will be selected and announced by the end of March, and the winner will be announced in May 2021.

K-12 RESOURCES FOR CSEDWEEK

As Computer Science Week (CSEdWeek) wraps up, the CSforAR Team wanted to bring awareness to the teacher resource document found at https://bit.ly/CSEW20TRB that can help educators plan computer science lessons and activities.

Though a selection originally slated for CSEdWeek, this document is still a great resource for teachers who have not utilized it. The resource document is made up of a variety of computer science activities that have been divided into grade bands, K-4, 5-8, and 9-12. Each day also highlights one of many computer science heroes. Pick and choose what seems to work best for you!

More than 1,000 teachers and students accessed the document during CSEdWeek! Ms. Carole Anderson from Bauxite High School said, "They didn't even realize they were doing math, defining variables or drawing objects in the design. The code has a loop and I saw so many lightbulbs go off in their heads around my room." Pictured here is an example of one of the many snowflakes they made.

Please feel free to reach out to the team for more information by emailing CSforAR@arkansas.gov or visiting us in our Zoom Cafe at bit.ly/ARCSCoffee.

INNOVATION IN COMPUTER SCIENCE
SCHOOL GRANT PROGRAM FOR 2020/2021

Hey teachers! Do you ever just look around your classroom and say "if only I had…"

Just kidding, we know you all have! And do we have some news for you. The Arkansas Department of Education Office of Computer Science has announced the continuation of the Computer Science Innovation Grant opportunity for Arkansas public K-12 schools. This funding has been allocated for the purchase of curriculum, software licenses, non-fundamental equipment, professional development, student incentives, and other approved expenses that directly support the instruction of the ADE K-12 Computer Science and Computing Standards.

This is a competitive grant, and will be judged by committee.

The proposal process opens when announced by ADE via Commissioner's Memo and closes at April 30, 2021; award decisions will be released by 05/28/2021. The grant performance period will be July 1, 2021 through June 30, 2022; initial funding will not be distributed until after July 15, 2021. The funding for these one-time grants is being provided by the ADE Office of Computer Science, and is subject to the availability of funds appropriated by legislative act. The proposal submission system can be accessed here.

VIRTUAL ARKANSAS TO PROVIDE ADDITIONAL COMPUTER SCIENCE CURRICULUM OPTIONS

The Arkansas Department of Education is continuing its partnership with the Arch Ford Education Service Cooperative's Virtual Arkansas division to develop additional CS curriculum options for high school programming including the new data science pathway over the next two school years. This curriculum will support teachers and students through increasingly rigorous and relevant concepts leading to more Arkansas students being prepared for industry recognized certifications and prepared to enter post-secondary computer science and data science programs. To support this partnership, ADE will provide grants totaling approximately $150,000 over two fiscal years.

This year Virtual Arkansas released its cybersecurity curriculum pathway that was developed under a previous grant from the Arkansas Department of Education Office of Computer Science.

The new curriculum options for schools and their estimated launch dates are:
Fall 2021
- High School Programming - Year 2 - First Semester (Level III)
- High School Advanced Programming - First Semester
- High School Data Science - Year 1 - First Semester (Level I)

Spring 2022
- High School Programming - Year 2 - Second Semester (Level IV)
- High School Advanced Programming - Second Semester
- High School Data Science - Year 1 - Second Semester (Level II)

The ADE Office of Computer Science will collaborate with Virtual Arkansas, and an ADE Office of Computer Science approved team of curriculum writers to develop the curriculum, which will include all the resources needed for a beginning computer science teacher to appropriately instruct students in this high-quality content.

Virtual Arkansas will assign a teacher and provide all courses developed under this agreement through its digital delivery platform beginning in the 2021-22 school year. Virtual Arkansas will also provide this curriculum for all courses in "content only" format at no charge to schools, the teachers, or the students. Virtual Arkansas will also update the virtually delivered and "content only" curriculum as necessary in accordance with the Arkansas Computer Science and Computing Standards.

For more information visit: http://adecm.arkansas.gov/ViewApprovedMemo.aspx?Id=4620

STATE BOARD OF EDUCATION ADOPTS NEW COMPUTER SCIENCE AND COMPUTING ACADEMIC STANDARDS, COURSES

The State Board of Education adopted the 2020 revised Arkansas Computer Science and Computing Standards and high school courses at its meeting on December 10, 2020. The new standards align with industry-standard best practices for computer science, along with updated components that should help us continue our national example of excellence in Computer Science education.

The new standards and courses include the following:
- full revision and update of the Computer Science Practices
- full revision and update of the K-8 (grade specific) Computer Science Standards
- full revision and update of the Coding Block for Grades 7 and 8
- full revision, update, and sequencing into program-specific, three-year pathways of the following high school course programs of study: Cybersecurity, Game Development and Design, Mobile Application Development, Networking, Programming, and Robotics
- creation and sequencing into program-specific, three-year pathways of the following high school course programs of study: Computer Engineering and Data Science
- update of the following Computer Science and Computing options: Independent Study and Internship

The standards and courses approved by the State Board are available at https://bit.ly/3m7A43z and will be posted at http://cs.arkansas.gov within the coming days.

2020-2021 GOVERNOR'S ALL-REGION AND ALL-STATE CODING COMPETITION

It's time to start planning for the Governor's All-Region Coding Competition. This competition is open to Arkansas public, private, and homeschooled school students in grades 8-12. Qualifying teams from the regional event will continue to state. The regional events are scheduled to take place on Friday, February 26, and the State Competition is scheduled for Saturday, May 1.

At this time, the regional events are scheduled to take place in person at regional locations across the state and the state competition is scheduled to be an in-person event in Little Rock. However, because of the COVID-19 pandemic, backup plans to shift one or both of these events to an online version are being prepared. Confirmed teams will receive notification of event locations and of any changes.

CSforAR has established a webpage to provide information regarding regional and state competition:

- locations, dates, and times
- rules
- registration information and process
- contact information

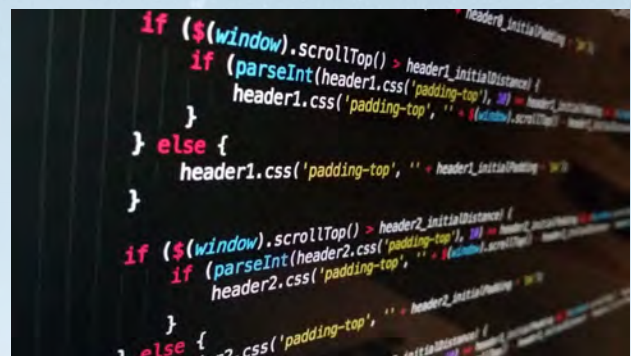Members of each team will receive a cash prize as a deposit into an established 529 College Savings Plan:

- 1st place - $2,000
- 2nd place - $1,000
- 3rd place - $500

Schools that sponsor the 1st, 2nd, and 3rd place teams will receive the following awards to support their computer science program:

- 1st Place - $10,000
- 2nd Place - $6,000
- 3rd Place - $4,000

For more information visit:
http://adecm.arkansas.gov/ViewApprovedMemo.aspx?Id=4619

UPCOMING TRAINING
bit.ly/CSforARPD

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