

CodeVA

Annual Report 2021



Thank you to our funders...

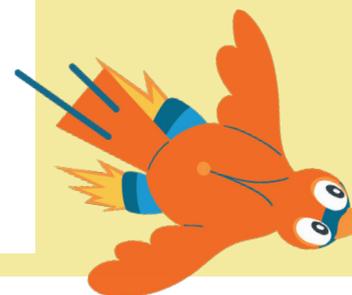


... and our partners for their continued support!

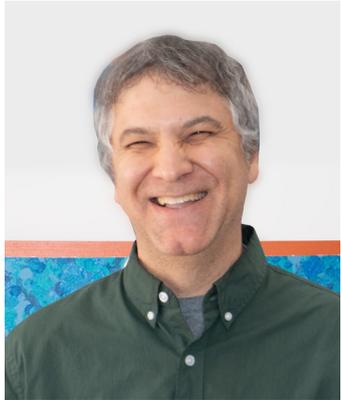
National Science Foundation	Exploring Computer Science	Science Matters
VA Department of Education	Chesterfield County Schools	Science Museum of VA
CS For All Consortium	George Mason University	HirEd
Google CS First	Harrisonburg City Schools	Suffolk Public Schools
Open Class	Loudan County Public Schools	United Way
CSTA SOVA	The Institute	UVA Wise
CSTA Tidewater VA	NRV	VAST
CSTA Blue Ridge VA	Old Dominion University	VCU School of Engineering
CSTA Shenandoah Valley	Project Guts	University of Virginia
CSTA Northern VA	Richmond Community Foundation	Virginia Commonwealth University
CSTA Central VA	Richard Bland College	CBS 6 WTVR-TV
Bootstrap	Greater Richmond Chamber	Microsoft
Roanoke Higher Education Center	RVATech	Mid-Atlantic Broadband
	Richmond Memorial Health Foundation	

Table of Contents

- Letter from the Executive Director 2
- About CodeVA 4
- Eureka Workshop: The Role of Mentors 8
- Unplugged Adventures 12
- Robotics 13
- CS Ed Week Launch! 2020 14
- Full STEAM Ahead 15
- What is CS Ready? 18
- Educator Engagement Spotlight: ITRTs 20
- Moving to Year-Round Professional Learning 22
- CodeVA's Impact on Teachers and Students 23
- Research 24
- Advocacy 26
- Governance 28
- Growth 30
- 2022 Goals 31
- Financial Statements 33
- Express Delivery via Snail Mail! 34



Letter from the Executive Director



In 2017, Virginia became the first state in the nation to mandate computer science education for all Virginia students, from kindergarten through 12th grade, with an innovative provision calling for mandatory integrated standards for all students from kindergarten through middle school.

And then, of course, every school in Virginia instantly made certain that computer science literacy was a reality in every classroom for every child.

Well, that's not exactly true.

In reality, during the five years since that mandate, CodeVA has provided state-supported, no-cost professional development to thousands and thousands of teachers across the commonwealth, representing literally every single school division in the state.

But it's a drop in the bucket, when considering there are tens of thousands more teachers yet to be reached - and unlikely ever to be reached without some plan and direction from school administrators who, bluntly and understandably, have to make up on their own how to make this state mandate a reality.

Collaborations between school administrators; individual, foundation, and corporate donors; and CodeVA fuel this vision.

Who could have accounted for the fact that our school leaders - principals, school counselors, superintendents, and everyone in between - had never before been asked to add a core subject to all public school classrooms?

And since Computer Science is the first such core subject to be added to comprehensive education in more than 150 years, it stands to reason that there's really no roadmap for anyone to follow, no prior institutional knowledge, no sage veterans to call upon for assistance.

Which leads us to CS Ready.

In 2020, CodeVA, with funding from Amazon Future Engineer and other private donors, launched a pilot program that is helping Virginia's school leaders to develop the tools and know-how - and actual roadmaps - for a future where every child truly does have access to meaningful computer science literacy.

Presently about 40 schools - with plans to add another two dozen schools during this school year - are serving as pilot sites for this long-term planning process. They represent all regions of the state, and run the gamut from urban to very remote rural schools. All are Title I or qualify as economically disadvantaged, because if a school with the greatest challenges can successfully implement CS for All, so can the best-resourced schools. Each CS Ready school has assembled an Impact Team of school leaders with positional and budgetary authority to make things happen, and to support the school's CS plan. Now in year two, a number of these schools -

even in the midst of likely the most challenging school year ever, thanks to the global pandemic - are coordinating across their schools to make sure regular and intentional CS instruction is happening. This is a major shift from CodeVA's past efforts, which focused on individual teachers, who for the most part could only impact their own classrooms, and not the other 10 or 20 classrooms in their elementary school, or who as a high school elective teacher couldn't rely on the school counselor to know why CS is so important to nearly all career fields graduates might pursue in in STEM fields, and in many humanities fields, too.

The CS Ready framework eventually will comprise planning tools not only for schools and school divisions, but also for the community that those schools serve, creating a collaborative and reciprocal planning cycle that builds on success, but that ultimately has the student as the focus of that communal effort. After all, what is the measure of educational success but a community's success in translating all that hard work educating a child into a skilled and desirable workforce that drives economic development and community prosperity?

During this global emergency, our communities took their first true steps to bridge the Digital Divide for all, when they suddenly were forced to provide one-to-one laptops and internet so students could attend virtual classes.

Do these advances ensure that students have any more than the basic minimum?

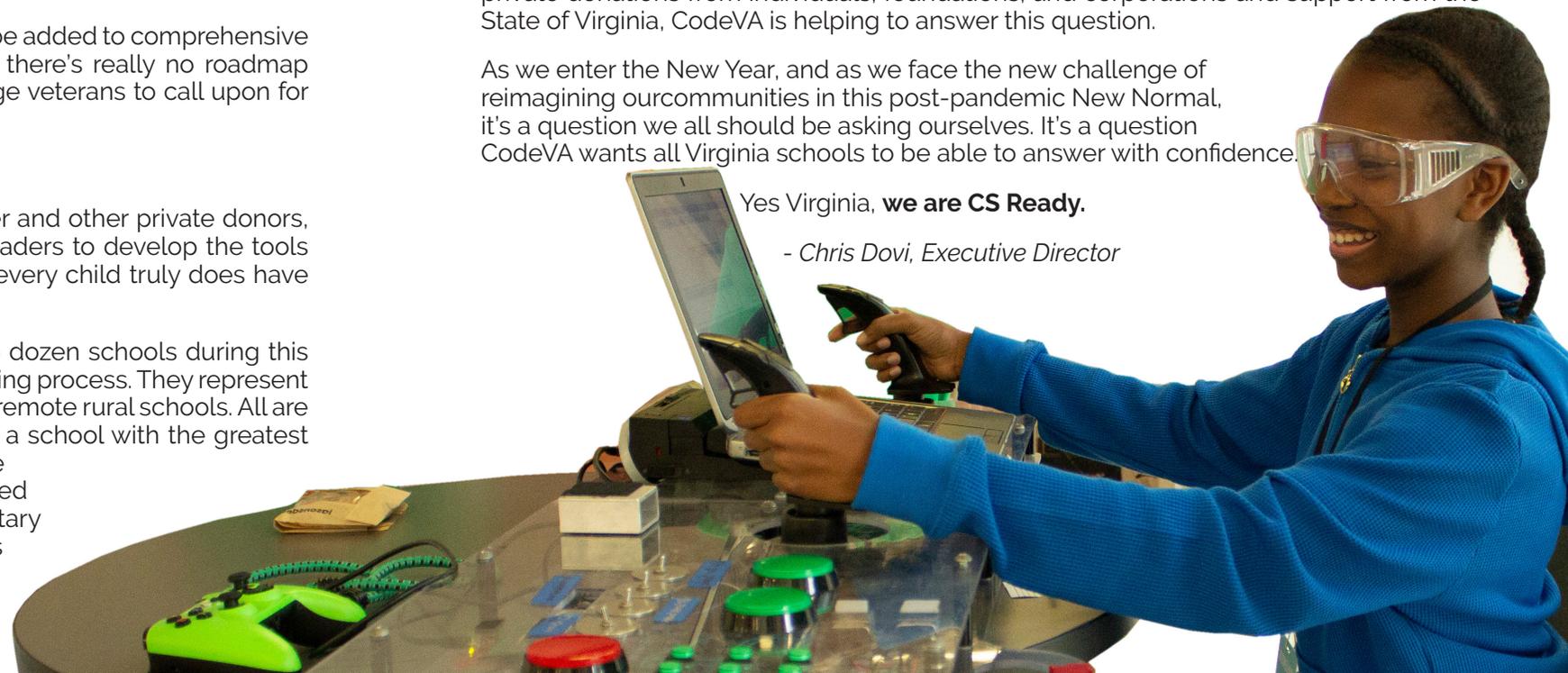
It's now time to ask ourselves: Are our communities really ready for the digital future? Is your community CS Ready?

Do we have the investment we need in our programs to meet the demand? Through private donations from individuals, foundations, and corporations and support from the State of Virginia, CodeVA is helping to answer this question.

As we enter the New Year, and as we face the new challenge of reimagining our communities in this post-pandemic New Normal, it's a question we all should be asking ourselves. It's a question CodeVA wants all Virginia schools to be able to answer with confidence.

Yes Virginia, **we are CS Ready.**

- Chris Dovi, Executive Director



About CodeVA

CodeVA is a Virginia-based nonprofit that partners with schools, parents, and communities to bring computer science education to all of Virginia's students. Founded in 2013 as a response to a dual critical shortage of computer science educators and computer science workforce, our service to students, parents, teachers, school districts, industry partners and policymakers is statewide. CodeVA's objective is to broaden participation among all communities, with emphasis on communities of color, women, and low-income and rural students, and other underrepresented groups in STEM and Computer Science. We advance these goals through a multifaceted approach including educator training and curriculum development, state-level advocacy, practical research, and out-of-school student programs. These programs are made possible through the State of Virginia, private donations from individuals, foundations, and corporations, and many talented volunteers.

During the 2020 - 2021 school year, in order to adapt to evolving Covid-19 restrictions, CodeVA re-platformed 1,200 hours of educator-facing content instruction from in-person to online to continue to provide equitable access to computer science education for educators statewide. This switch to a virtual environment allowed for asynchronous learning opportunities where educators could work both collaboratively and on their own at their discretion. The Virtual classroom environments also allowed CodeVA to offer a wider array of professional learning opportunities in response to teacher requests for more hands-on coding experience and understanding of how to blend the Virginia Computer Science SOL's across content areas.

CodeVA's Eureka Workshop student programs also remained fully virtual until summer 2021, when we began to offer outdoor classes as part of Unplugged Afternoons (now continued as a monthly program called Unplugged Adventures). Hundreds of students participated in online classes, workshops, and weeklong "camps" to learn coding, video game design, 3D printing, and other arts-integrated computer science learning. Student events, including CS Ed Week and Full STEAM Ahead, were also held virtually this year, allowing for more statewide participation.

This year was the pilot for CS Ready, CodeVA's program to address the need for schools and communities to plan and measure progress on their approaches to computer science education. While it was challenging to introduce such a hands-on statewide program over virtual meetings, 19 schools participated in Year 1 of the pilot, demonstrating that educators and school administrators across the state are eager to get to work advancing computer science learning throughout their schools, and to help build the digitally literate workforce of tomorrow.



EUREKA

WORKSHOP

2021 IMPACT STATS



21,643

Issues of Snail
Mail Distributed

5,180

Printed
in Spanish



90+

Programs Offered

346 STUDENTS SERVED



40%

of Students Served at
a Reduced or Free Rate

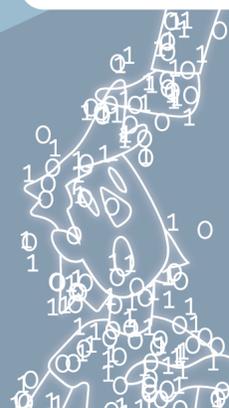


248

Hours of Instruction
Provided

12

Community Partners Served



Eureka Workshop: The Role of Mentors



Since opening its doors during the summer of 2014, CodeVA's Eureka Workshop summer camps and out-of-school programs have provided thousands of hours of computer science-infused fun for kids in the Richmond region and beyond. In 2020 and '21, those programs went virtual, impacting thousands more students from across Virginia - and even some beyond the commonwealth's borders.

The goal of these programs is *far* more than child's play.

Through the less structured environment of informal education, with its strong emphasis on encouraging connections to creative media, the goal, says Maggie Smith, CodeVA's Director of Children's Programs, is "to allow kids to have autonomy, and find their own digital identity, and to decide how they want to participate in technology, rather than having society determine their eligibility."

"Some students think that there's only a right and a wrong in computer science and programming," she says. "When you come at the topic with a playful approach, it doesn't seem so high-stakes. By coming at CS through the lens of play and integration, we reinforce resiliency. Nothing is final."

In particular, providing elementary and middle school students with opportunities outside of formal education to make associations and to playfully explore computer science - through expressive arts, visual storytelling, music making, video game-making, and robotics - students are more likely to get "over the hump" of middle school. Those middle school years are when self-identity tends to shift away, particularly for girls and minority students - but also for many boys, from STEM and computer science as an interest.

"We get to watch them grow and we get to watch them make those choices - and to be involved with technology on their own terms."

Eureka Workshop's arts-integrated classes for elementary to middle school students are designed to remove psychological and institutional barriers to computer science involvement and to encourage children to see coding as useful, fun, and accessible. A recent Amazon Future Engineer/Gallup report shows that fun and engaging activities around computer science, as well as peer interactions outside of school, have a substantial positive effect on student interest and participation in CS at school, and that participation is more likely to continue into college and career.

"It's exciting because we get to watch them grow and we get to watch them make those choices - and to be involved with technology on their own terms," Maggie Smith says.

Eureka's focus on providing no-cost or low-cost services to families in Richmond, where nearly 90% of students are Black, serves as an intentional act of disruption.

CodeVA's Eureka Workshop programs encourage a sense of belonging through student engagement with peers and role models in a positive and inquiry-driven learning environment.

And Eureka has gotten good at producing home-grown talent for the purpose, with a growing roster of former participants returning to become instructors or volunteers. "Students who have been in our program understand exactly what it's like, and I think it's important to have people with similar experiences," Maggie says, noting most arrive without much confidence in themselves as owners of computer science skills or ability. "There's just a stronger relationship and there's more trust."

Two such young people, Shon Bennett and Demonte Cosby, participated in CodeVA programs before graduating high school. Now in college, they both work as part-time Eureka instructors during holiday and summer breaks.

Shon Bennett



Shon is an alumni of John Randolph Tucker's Advance College Academy; this program enabled him to graduate with both an Associate of Social Science and an advanced studies diploma his senior year of high school. This fall Shon will continue his studies at VCU's College of Engineering, majoring in computer science. Shon joined the Eureka Workshop team as an intern in May 2021 through the archIVE project, and became a student coordinator for the project in June of 2021. Shon looks forward to helping CodeVA bring attention to youth imprisonment through digital spaces, and hopes to equip youth with skills that will better them professionally, personally and socially.

An important lesson for Shon, who came to CodeVA involvement late in his high school career, is one that's central to the tech industry: fail fast. "Sometimes trying new things works out, sometimes it doesn't," Shon says, knowing the only way to get to the correct solution is to try again until you find the right path: "You just have to try."

Now at Virginia Commonwealth University School of Engineering with hopes of becoming a software engineer, Shon's path to computer science wasn't always a done deal. In high school at J.R. Tucker, he took an AP Computer Science class where his teacher strongly encouraged him to join in a CS Education Week competition hosted by CodeVA and the Virginia Department of Education.

His winning entry involved a proposal that mapped out his design for two apps he wanted to create. The first matched artists with paid opportunities in their community. The second, a Bible app, provided an inspirational quote or passage each day. In both cases, Shon sought to solve a real-world need that was close to his heart.

The same year, he applied for an internship at CodeVA in order to earn volunteer hours towards his Computer Science Honor Society service requirement. He worked on

the ARCHIVE project, a grant-funded collaboration between CodeVA and local youth organization Performing Statistics.

Now also serving as a part-time instructor for Eureka Workshop children's programs, Shon says working with children strengthens two skills important to a computer scientist collaborating with project teams: patience working with a group, and the essential ability to decompose and describe clearly the elements of a problem and a solution. In his high school computer science class, he recalls learning about pseudo-code, which is a means of breaking ideas and instructions down into simple commands for a computer to follow. This exercise, he says, is not unlike what is needed to communicate with people, whether they're Eureka elementary students or full-grown adults.

Shon says, "I've picked up more patience working with children. I've picked up the skill of having to break things down more than usual for children to understand. And I think that's very good for an engineering major because we work in teams a lot, and there may be someone in your team who has never coded before, so you have to try and break things down and be more patient with them."

He credits CodeVA not only with honing his computer science skills, but also with developing industry-critical soft skills like team building and communications, concepts that he thinks are often overlooked in engineering school and in industry.

When asked if he thought that CodeVA helped support him on his engineering journey, he replied, "You have given me a lot of soft skills like team building and working together and that's very important in engineering. I think that's something that gets neglected a lot in engineering. You think you're going to be by yourself at a desk all day, but computer science is more collaboration than you think it is. And I think that's where CodeVA stepped in."

Shon also shares an important personal mission in common with CodeVA. He wants to make people of color more visible in engineering, computer science and STEM. He credits CodeVA with reaching a lot of underserved communities and underrepresented communities that often are excluded from computer science. Shon is an amazing young man and inspiring role model to the students he teaches, and Eureka Workshop is lucky to have him on the team.



Demonte Cosby

Demonte Cosby also came late to CodeVA and computer science. Now pursuing a degree in outdoor leadership at Warren Wilson College in North Carolina on full scholarship, Demonte grew up in public housing in Richmond. Recruited to join a program for at-risk youth that used bike racing as a means of encouraging self-discipline and ambition, Demonte's racing team began attending CodeVA as an academic resource to augment other programs. He found an immediate affinity.

"When we came to CodeVA, you guys were listening, not just talking," Demonte says.

Demonte also appreciated Eureka's unique classroom environment that emphasized participation and creativity over classroom lectures. He had no prior experience with computer science, and says he and his teammates on the Richmond Cycling Corps had little experience with being part of a collaborative group. Coming together and building a robotics team with his classmates, he says, felt like the first time they had truly worked together.

"We weren't a team before that, but [CodeVA] helped us by coaching [us] to feel vulnerable and open with each other - giving each other the opportunity to be heard," says Demonte, who calls the experience essential to preparing him for a college environment, where he encounters and collaborates with all sorts of people.

Demonte began work as a summer camp counselor in 2017, the same year he first participated in CodeVA programs as a participant. He describes his time with CodeVA as a "life impact" that genuinely changed his trajectory, encouraged him to attend college, and to persevere even though he started at the beginning of the pandemic: "You take me like I am," Demonte says.

Being himself just happens to make Demonte a perfect mentor for younger students, says Maggie Smith. "Demonte is so curious," she said. "I want people like that to be role models for younger students so they can see it's okay to ask questions - he sets an example of positive questioning."

Demonte, meanwhile, says he's learned so much from the kids he's taught. "They've taught me how to be patient - to take my time with them, to listen and keep my eyes and ears open." And he says he's learned with computer science that sometimes the best teacher is the student, that often it's a process of learning together with the kids - where he might make a mistake in building a robot or coding an application in Scratch, it's part of the learning process when the student gets to correct him.

"CodeVA definitely impacted me in a lot of ways," Demonte says. "I wasn't introduced to a lot of things that I was introduced to until CodeVA. I learned a lot of connections, a lot of terminology, I learned how to deal with computers...if it wasn't for CodeVA, I probably wouldn't have had the opportunity to go this route. You guys made me - or pushed me - or encouraged me to want to go to college, and being in that environment made me motivated to want to go to college." Demonte is currently a sophomore at Warren Wilson College, majoring in Outdoor Leadership, and continues to hone his computer science skills by teaching with Eureka Workshop during summer breaks. CodeVA is honored to be part of his life, and to see the incredible instructor and inspiring mentor he has become for the next generation of Eureka Workshop students.

In 2020 - 2021, Eureka Workshop programs and Robotics teams were generously supported by the following funders:



and Individual donors.

Unplugged Adventures

This year CodeVA's Eureka Workshop launched Unplugged Adventures, a new program designed to engage children with computer science learning in a fun outdoor - and mostly unplugged - setting. Originally called Unplugged Afternoons, it began as a weekly event intended only for the summer, but quickly grew into a monthly year-round program. Unplugged Adventures are arts-integrated classes for elementary and middle school students, **free of charge and designed to include the whole family**. Each month has its own theme, with a wide variety of outdoor and arts-integrated activities.

This new program has quickly become key to CodeVA's mission to introduce kids to computer science in an engaging and accessible way, and to work within the community to build a computer science ecosystem both inside and outside of schools. Unplugged Adventures participants get to explore computer science and STEM through hands-on activities, and they go home with computer science activities that do not require internet access. In addition to helping make connections for kids between computing concepts and the world around them, Unplugged Adventures also seeks, in part, to address an important way we can bridge the digital divide for low-income families that may not have reliable or adequate devices or internet connectivity at home.

2022 Vision: As we move forward, Eureka Workshop staff plan to continue to grow this program by holding more events at public schools, public libraries, and community centers throughout the greater Richmond region as a way of reaching more children and inviting families to see computer science as accessible and engaging - and a great way to spend a Saturday morning.

Robotics

CodeVA's Robotics programs paused for the majority of the 2020 - 2021 school year while most students adjusted to the struggles of virtual school during the global Covid-19 pandemic. During this time, CodeVA undertook planning and program review towards a return to robotics team programs with longtime community partners Henrico Police Athletic League, as well as a new partner in the Richmond region's Cultural Roots Home School Co-op.

Middle and high school school students began meeting weekly during the 2021-22 school year. Over the course of the 56-hour program students spend the first 20 hours exploring the world of robotics with guided challenges and by completing learning modules as a group. Starting in January students jump into the VEX IQ challenge and split into competition teams of four students each. Throughout the remainder of the season students work towards completing a robot build for the VEX IQ challenge. The 'teams' compete against each other in a simulated competition twice before the end of the season. At the end of the season the Middle School teams will give a presentation about their robot builds at the final season event.

During 2022 CodeVA is looking to expand the age range of the program in the coming year by developing content for elementary school robotics teams.

Unplugged Adventures and CodeVA's Robotics program are proudly supported by Meta and generous individuals supporting CodeVA's core programs.



CS Ed Week Launch! 2020

Computer Science Education Week 2020 took place from December 7th - 13th, 2020. Unlike the one-day launch events that CodeVA has hosted in previous years, 2020 necessitated that we presented a whole week of virtual events including speakers, family nights, kids activities, and sessions for educators. This was the **first time we have been able to engage with educators statewide during CS Ed Week** (instead of in the Richmond metro region) and our professional learning facilitators ran concurrent sessions within their local hubs. 513 educators, parents, and students registered for events during the week. The virtual nature of 2020's CS Ed Week events allowed for educators to engage entire classrooms in student-facing events, and volunteers from Bank of America worked as online panel moderators, help desk staff, and more. CS Ed Week 2020 was generously sponsored by Capital One, GE, and the Virginia Lottery. And we continued the online fun during CS Ed Week 2021, sponsored by Meta, G.E. and Capital One, with our theme "Me, My Data and I. Individual donor contributions to CodeVA underwrites CS Ed Week and our core programs. A goal for 2022 is to maintain CS Ed Week as a week-long program and to bring our programs to all Virginia students and beyond. Many of our programs already are modeled nationally.

Thank you to everyone who supported or attended
CS Ed Week to #BringCSHome with you!



VIRGINIA LOTTERY



Full STEAM Ahead

This year's Full STEAM Ahead conference was held virtually from July 19th - 22nd, 2021, and proudly presented by CarMax and generous individual donors. Full STEAM Ahead, our workshop conference dedicated to empowering youth to see themselves in Science, Technology, Engineering, Arts and Mathematics, shifted gears this year from an all-girls event to female focused programs and presenters, but extending a welcome to **all middle school students**. Full STEAM Ahead seeks to inspire young women by connecting them with diverse professional role models in engaging hands-on workshops. Our speakers shared their experiences as leaders in their respective industries, highlighting the importance of STEAM and the power of interdisciplinary collaboration.

This year's Opening Keynote Speaker was Danielle Boyer, Founder of The STEAM Connection. Danielle is a young Indigenous (citizen of the Sault Ste Marie Tribe of Chippewa Indians) woman who is recognized for her work as an entrepreneur, author, activist, and inventor, much of which revolves around educating children on the future of technology and innovation. By empowering underserved youth with technical skills, Danielle helps them take back power in their lives, paving the way for a more sustainable, diverse, and innovative future. She has been named one of People Magazine's Girls Changing the World and a L'Oreal Paris Woman of Worth, and currently mentors 35 youth robotics teams.



CARmax[®]

Educator Engagement

2021 Impact Stats

Educators from 195 schools and organizations participated



Over 15,000 Hours

of Professional Development Delivered

2021

Over 50 Separate Professional Development Sessions Offered



58%

of Schools Served Were Title 1 or Free/Reduced Lunch Schools



What is CS Ready?

CS Ready is CodeVA's program to facilitate community readiness in a future where a computer science-literate workforce is a simple necessity for success. At a school level, it is educator professional learning and a formal planning process that links classrooms, counselors, school administrators and community partners around a common goal of supporting computer science and computational literacy as a pathway to workforce, entrepreneurship, and community success. CodeVA piloted its CS Ready School framework in 2020-21 school year, with 19 schools from across the state participating. All of the pilot participants during that first year, and this year as well, represent either Title I or economically disadvantaged school populations.

CS Ready participating schools each convene an Impact Team of diverse leaders (decision-makers both inside and outside of a school) to represent the entire ecosystem needed to support a successful computer science program integrated throughout all grade levels. This comprehensive group of community and school stakeholders then work together, through a three-year program designed by CodeVA, to create their school's roadmap for equitable and sustainable Computer Science education.

Essential to the heart of the program and its success is that it also serves as professional development for school and community leaders, who may have had little to no experience with computer science education before the mandatory Virginia computer science Standards of Learning were adopted in 2017. Rather than seeing this lack of prior awareness as a deficit, CS Ready approaches it as an opportunity. The CS Ready School program works with teachers and school leaders to integrate digital workforce skills, including the mandated computer science curriculum into their K-12 classes, and it acts as a framework for communities to plan not just for computer science in their schools, but ultimately as a way to plan for a CS-Ready workforce to support their community's development.

practical, sought-after modern workforce skills - serves to bridge, if we lean into the opportunity. CodeVA's CS Ready program includes intentional, region-specific teacher training throughout the year. But with additional resources to support that teacher's school, and work with the school administrators and other stakeholders to help successfully implement these big changes that schools - whether they're well-resourced suburban school divisions or lesser-resourced urban or rural schools - struggle to undertake without planning, agreed-upon goals, and a roadmap for how to get there.

CodeVA has increased its services in support of Virginia educators through our CS Ready Program to help them amplify the training they receive through CodeVA's Professional Learning opportunities. In 2021-22 our CS Ready program is continuing to work with schools in the Year One cohort, while also onboarding a Year Two cohort, to develop roadmaps for implementation of Virginia's CS standards in all K-12 classrooms. We also have initiated partnerships with George Mason University and Old Dominion University to begin work to develop parallel CS Ready programs for school divisions and for communities, so that the life cycle of CS readiness is represented along the entire span of workforce and economic development, and community planning continuum. By 2023, CodeVA hopes to launch the CS Ready School framework as a free strategic planning tool available to all Virginia schools and communities, in order to serve our mission to create access to computer science learning to every child in Virginia.

CodeVA's development of the CS Ready program is made possible by a generous grant from Amazon Future Engineer. Private donations and volunteer hours from individuals and corporations are essential to our success. A goal for 2022 is to expand CS ready to a Year-Two cohort and to develop roadmaps to reach all Virginia's classrooms.

CodeVA's CS Ready program includes intentional, region-specific teacher training throughout the year with additional resources to support each school and its individual needs.

The outcomes of the CS Ready School program include connecting school impact teams across a school division into a regional network of computer science teachers and administrators, all designing and implementing their own CS Ready roadmap, giving each school the tools to design its own CS program relevant to its local community's needs, but also coordinating with the wider CS Ready community to align goals and expected outcomes.

So why CS Ready? There is an unfortunate gap between K-12 public education and the expectations of both higher education and workforce, one that computer science education - with its dual emphasis on critical thinking/problem-solving literacy, and



Educator Engagement Spotlight: Instructional Technology Resource Teachers

Instructional Technology Resource Teachers (ITRTs) often are the leaders in their schools that help empower other educators to implement the mandated Computer Science standards and technology standards in schools. ITRTs are integral to much of CodeVA's work, as the ITRTs trained by CodeVA are often expected to make a substantial impact at their home schools and divisions.

As CodeVA continues to embrace the challenge of educating Virginia's teachers in computer science content, ITRTs are often looked to as leaders for Computer Science integration. While instructional technology resource teachers and coaches are not alone in bringing Computer Science to all Virginia schools and students, we want to take the opportunity to spotlight three ITRTs, who are graduates of CodeVA's K5 Coaches Academy and have clearly made an impact in their schools, divisions, and communities.



Photo provided by Ashley Bland

Tobin Traxler

Ashley Bland

Kevin Spencer

Tobin Traxler is an Instructional Technology Coach at Leesylvania Elementary School with Prince William County Public Schools. He was selected as the 2019 Virginia Computer Science Educator of the Year, and currently works as a CodeVA Facilitator and curriculum writer. His school was among the first to participate in the CS Ready pilot year, and he is leading his school through year two of the CS Ready Program.

Ashley Bland, the 2021 Virginia Teacher of the Year, is the ITRT for JB Cary Elementary, Mary Scott Preschool and Binford Middle School (BMS) in Richmond, and is on the CS Ready Impact Team for Binford in their initial year of the CS Ready program.

Kevin Spencer has been an ITRT with Roanoke City Public Schools for over 15 years. He has an excellent relationship with teachers and students and first participated in CodeVA professional development at the Roanoke Higher Education Center, CodeVA's hub in that region of the state, in 2019.

In her role teaching, modeling, and coaching PK-8th grade, Ashley said her job is creating resources and lessons that go "beyond traditional content and educational technology. My focus is on digital citizenship, cybersecurity, and best practices." Ashley continued, "The CS Ready program at Binford Middle is still in its beginning

stages. However, CodeVA has designed a very thoughtful way of rolling out programming and providing professional development for staff. I appreciate structure and the ability to have thought partners across the Commonwealth, including those that have successful programming and those in the beginning stages like my school."

Kevin said his "experience with CodeVA has inspired me to create lessons surrounding coding and Computer Science for the RCPS+ (summer school) program and try out lots of new ideas with teachers teaching binary." Kevin collaborates with teachers and other ITRTs throughout the division to support teachers directly in classes, modeling, or co-teaching lessons.

Meanwhile, Tobin Traxler at Leesylvania Elementary School, is hard at work making sure every student has access to computer science. "In my school, we are working on creating computer science experiences for all students in our PK-5 building. In our first year as a CS Ready School, our leadership team developed a vision and mission on how CS could be implemented and integrated into every classroom. We developed a list of materials and resources that we have, and created a plan for how we could successfully bring CS to every student and instill a program that would be long lasting. Our school understands how important CS is to our students and knows how impactful it can be for their future. This year, our leadership team gave a professional development training to teach our staff basic information about CS and how they could blend unplugged and plugged lessons into their everyday classroom lessons, so their students can be introduced to CS and make connections with their grade-level content."

In 2022, we anticipate expanding professional development opportunities, both virtually and in person, and offering more courses to ITRTs. Donations from individuals, foundations, and corporations directly support educator programs for ITRTs like Tobin, Ashley, and Kevin, to help them continue to do inspiring work within their field.

Moving to Year-Round Professional Learning

In the Fall of 2021, CodeVA's Educator Engagement division launched training beyond its traditional summer schedule. **Professional development classes and workshops are now available year-round**, thereby increasing accessibility and availability for many participants. Our Professional Learning Series (PLS) offers 10 opportunities with a variety of sessions monthly through our CodeVA Connect platform. CodeVA Connect is also home to Professional Learning Communities (PLC), led by our expert facilitators and apprentices and developed by our own curriculum department. These online communities connect teachers across the state to network and grow in Computer science professional learning.

CodeVA offered five new courses in 2021 and rolled out CodeVA Connect, an online learning platform to run professional learning communities, and a monthly professional learning series asynchronously. CodeVA Connect allows users to collaborate virtually, connect with facilitators and apprentices statewide, and share learning resources such as classroom lesson plans. This new platform provides opportunities to engage schools and communities throughout the year, in a "just-in-time" support model. The CodeVA Connect platform will revolutionize the way we support educators who are working to implement computer science learning into their classrooms. Born out of necessity during the pandemic, online collaboration has become another tool for educators to stay connected and grow their support network, regardless of geography.

The new courses range for K-12 educators including Programming in Scratch I and II; Programming in Python I and II; HS – Programming using Java; MS CS Starter Pack. CodeVA delivered two newly designed professional development sessions associated with its recently funded National Science Foundation research grants. The first was a middle school course focused on computer science and social studies integration, and the second was an elementary course on computer science integration across content areas through the lens of culturally relevant teaching. Additionally, we now offer a course to prepare teachers for the Praxis Exam to certify as Computer Science educators. This course encourages teachers to consider teaching Computer Science, allows schools to hire accredited teachers, and offers Computer Science courses to students, which is still not an option in ALL Virginia high schools. Furthermore, we have increased our focus to include middle and high school counselors. Students entrust their futures in the words and actions of counselors and we believe it is important that school counselors have an arsenal of updated information to provide students with multiple options and paths, as well as a voice of advocacy provided by CodeVA. Counselors have been provided with an initial iteration of The Game of STEM, to help counselors, parents, and students visualize pathways to STEM careers.

Sustaining support for CodeVA from individuals, foundations, and corporations through gifts and volunteer hours is essential to sustain our year-round professional learning. A goal for 2022 is to expand the number of programs offered for professional development.

CodeVA's Impact on Teachers and Students

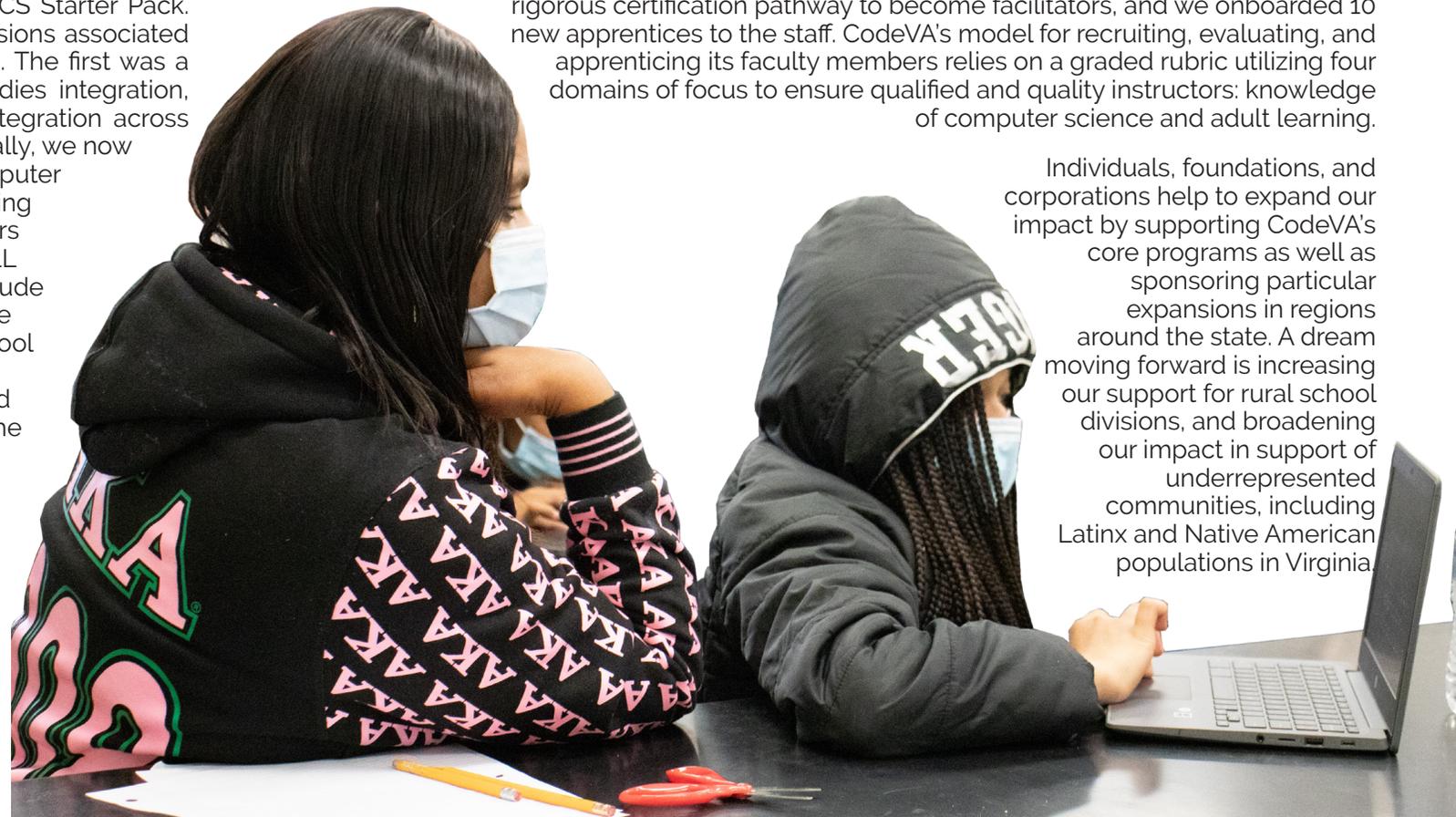
CodeVA delivered over 10,000 hours of professional development training to 1,010 educators from 195 schools and organizations in over 50 separate professional development sessions from April through July, with an average 62% attendance rate (attendance/registrations). Of the participating schools this summer, 112 are designated Title 1 or have a student population of greater than 40% who are eligible to receive Free/Reduced Lunch. These Title 1 or Free/Reduced Lunch schools make up 65% of the 250 educators and 58% of the 195 public schools with educators who attended summer 2021 PD. All professional learning was held virtually in 2020 - 2021.

"CodeVA has given me a platform to build stronger connections with my colleagues and the students we serve. Even though we are ramping up following a virtual year, CodeVA has been mindful of ways to make things accessible to everyone. The ease of access allows me the ability to easily share resources with other teachers and my administration team. I have enjoyed my experience so far and look forward to what the rest of the school year will bring."

- Ashley Bland, Richmond Public Schools Educator of the Year

During the winter and spring, CodeVA continued to expand and enhance our facilitator and apprentice faculty, composed of a diverse group of Virginia educators representing all 8 superintendent regions. We currently have 45 active faculty members, 27 of whom are cross-trained in multiple programs. 10 former apprentices completed the rigorous certification pathway to become facilitators, and we onboarded 10 new apprentices to the staff. CodeVA's model for recruiting, evaluating, and apprenticing its faculty members relies on a graded rubric utilizing four domains of focus to ensure qualified and quality instructors: knowledge of computer science and adult learning,

Individuals, foundations, and corporations help to expand our impact by supporting CodeVA's core programs as well as sponsoring particular expansions in regions around the state. A dream moving forward is increasing our support for rural school divisions, and broadening our impact in support of underrepresented communities, including Latinx and Native American populations in Virginia.



CS For And By Teachers

Funded by NSF #2031258

In addition to its challenges, 2020-21 has also been a year of opportunities for CodeVA, and among those opportunities was the awarding of two National Science Foundation research grants to CodeVA. CS For And By Teachers (or CS FAB) sees CodeVA partnered with educators in Chesterfield and Petersburg, and with a UVA researcher to create and test a professional development model and CS Integration Toolkit that provides 3rd, 4th, and 5th-grade teachers the skills and resources to create and continually adapt their own culturally relevant, computer science-integrated lesson plans. Teachers will learn how to integrate culturally relevant computer science in math, science, social studies, and English language arts with a focus on adapting lessons for teachers' own diverse classrooms.

The project is directed by a Research-Practitioner Partnership (or "RPP"). The RPP is a collaborative team of 12 educational professionals from across the education landscape, including K-5 classroom teachers, elementary administrators and researchers, and educators from Virginia-based public universities and nonprofits.

What is the CS Integration Toolkit?

The "CS For and By Teachers" Integration Toolkit will include everything a teacher needs to begin integrating CS into their 3rd, 4th, and 5th-grade classrooms in a way that is standards-aligned, culturally relevant, and tested for effectiveness.

This three-year, regional project is conducted in Central Virginia with a plan to scale statewide as an open education resource, as well as through CodeVA's no-cost professional learning programs for teachers. Our Toolkit will be made available to all during Summer 2024 on the Virginia Department of Education's GoOpenVA open education resource portal.



Reaching Across the Hallway

Funded by NSF #2010256

The second of our National Science Foundation-funded research grants, titled Reaching Across the Hallway, seeks to support rural middle school teachers in integrating locally and culturally relevant computer science activities into their social studies classrooms.

This project encourages a more inclusive understanding of history by allowing students to explore and bring to life historical and societal concepts through computer science and computational tools like modeling and simulation.

Why social studies?

We chose to integrate computer science into social studies for a couple of key reasons. First, in social studies, teacher educators argue students need a more active learning approach focused on primary source documents rather than textbooks. Early research suggests that integrating STEM topics into social studies has great promise in creating a more active learning approach. This project focuses on integrating computer science into middle school social studies to build on that promise.

In addition, by integrating CS into core subjects such as social studies, we are able to work toward our goal to broaden CS participation and bring meaningful computer science education to more students.

What is data storytelling?

Data storytelling is a way to convey data as a narrative form. This project specifically seeks to use data storytelling as a way to create meaningful interpretations of social science and historical events by integrating innovations in new media.

Why CS integration?

Computer Science (CS) integration is the wise approach Virginia has chosen as a means of ensuring all students are exposed to computer science literacy throughout elementary and middle school, while also making computer science meaningful to students by making connections between computer science and other content areas, like math, social sciences, the arts, and humanities. CS Integration also is at the heart of CodeVA's process of presenting professional learning to teachers, illuminating the relevance of CS problem-solving skills and of computer science solutions in conjunction with other academic areas. This approach creates a more equitable CS classroom in three ways:

- (1) students understand CS's applicability across the curriculum; and,
- (2) by integrating CS into core subject areas in early grades, CS becomes more broadly available and provides increased CS opportunities for minoritized and other underrepresented students; and finally,
- (3) by showing students how computer science is truly a problem-solving tool for expression and communication ideas and solutions across all other content areas, more students from more backgrounds will have the opportunity to make informed choices about pursuing continuing education and career opportunities in computing fields.

Advocacy

CodeVA works closely and collaboratively with all of Virginia's regional technology councils. The results of this collaboration are evident in the joint legislative agenda adopted by the state's five active tech councils, which CodeVA helped facilitate in partnership with RVA Tech, the Richmond council. That joint legislative agenda, which included education legislation championed by CodeVA, took the place of the councils' various individual agendas. This collaborative approach was about much more than CodeVA's policy goals. Virginia's economic future is driven by its technology innovation, and the impact of combining the strength of the state's tech community through its combined tech councils is essential to ensuring future innovation and leadership for Virginia. During the legislative off-season, this collaboration continued, with the councils together organizing roundtable conversations focused on education and technology policy with both 2021 gubernatorial candidates. The first of these, with former-Gov. Terry McAuliffe, was hosted at CodeVA's Richmond office, and was followed by a joint meeting of the combined tech council leadership - the first such meeting to take place in more than four years. The second, with Gov. Glenn Youngkin, was held at the Roanoke Higher Education Center, CodeVA's Roanoke office and training hub location.

In summer 2021, CodeVA partnered with the Virginia Department of Education to collaborate on a broad strategy aimed at creating awareness, teacher professional development and classroom lessons/resources aligned with Virginia's planned adoption of revised K-12 standards of learning for math, which includes planned data science pathways. This initiative was publicly launched during the recent national Data Science for Everyone event, hosted by Schmidt Futures. Virginia First Lady Pamela Northam was the keynote speaker at this national event.



CodeVA's advocacy and policy work for Virginia will expand in 2021-22. This year we are working with the Department of Education on a pilot based on CodeVA's recently passed legislation around microcredentials for STEM+C teacher add-on endorsements. This pilot aims to establish a model for accrediting micro-credentials offered by providers to ensure quality, consistency and assurances to state public schools and teachers that microcredentials awarded toward add-on endorsement are a true measure of a teacher's knowledge and mastery of content. Presently, micro-credentials can only count as "continuing education units," which equate generally only to the number of hours a teacher spent attending a seminar or professional development opportunity, rather than as more desirable college credit based on graded completion of a class or program of classes.

While work remains to implement equitable access to K-12 Computer Science education throughout the Commonwealth, CodeVA's educator programs, which owe their availability and success to state support and collaboration, are building a strong foundation to support Virginia's students, educators, and future workforce across the Digital Dominion.

CodeVA also moves into 2022 better positioned to support CS education advocacy in statewide policy. This past summer, CodeVA's executive director, Chris Dovi, was appointed by Gov. Ralph Northam to the new Virginia STEM Advisory Board, which will provide to state leaders both support and advice on STEM education and workforce, and has among its remits the task of making a STEM hub network - not unlike CodeVA's Computer Science professional development and CSTA hub network - into a statewide reality.

Our Digital Dominion leads. And our leaders inspire.

As CodeVA expands its programs to serve educators and students across the state, we have similarly grown the staff and leadership to direct the statewide implementation of teacher training, curriculum development, research, and student programs. CodeVA has expanded state-level advocacy efforts, increased and diversified the makeup of the Board of Directors, more than doubled the staff, and expanded the adjunct faculty of professional learning facilitators to deliver programs and advance the organization to best meet the needs of parents, educators, business leaders, policymakers, and - most importantly of all - students throughout the commonwealth.

In 2021, CodeVA added four new members to our Board of Directors. We are honored to have **Keisha Tennessee**, **Ciara Pervall**, **Ruthe Farmer** and **Anthony Johnson**, who bring a wide breadth of expertise and a clear commitment to our mission to bring Computer Science to all students in Virginia. Two of these Board members fulfill a long-term goal of our leadership to see both the Virginia Department of Education and the Computer Science Teachers Association directly involved in CodeVA's governance. The other two new Board members expand our representation of Virginia's essential cybersecurity industry, and our connection to the national and global CSforALL movement.



Keisha Tennessee is a non-voting board member and representative of the Virginia Department of Education, and serves as the Computer Science Coordinator for the Virginia Department of Education. She has over ten years of classroom experience, a Career Technical Education (CTE) background, and is a National Board Certified Teacher and Certified SCRUM Master. Prior to her role at the Department of Education, she served as the Computer Science Technology Specialist at CodeRVA Regional High School. She also was CodeVA's very first adjunct faculty facilitator, and has served as our master Exploring Computer Science trainer since 2015. Keisha believes that in today's modern society,

computer science is a fundamental discipline for all students. She wants to ensure that every student has an equitable and meaningful learning experience that utilizes computational thinking and strengthens one's own understanding and appreciation of computer science.



Ciara Pervall is the first board member to serve as representation for active classroom teachers, and serves in a new Board position created to ensure the Computer Science Teachers Association will always have a voice in CodeVA's governance. She began her teaching career through a career switcher program in 2015. She has been a substitute teacher for Portsmouth Public Schools, a Career & Technical Education teacher for Norfolk Public Schools, and is currently the Work-Based Learning Coordinator for Chesapeake Public Schools. She received a B.S. in Business Management from Norfolk

State University and is currently enrolled in the graduate program for teacher leadership at James Madison University. Ciara is the President of the Computer Science Teachers Association of Tidewater Virginia and was elected by the leadership from Virginia's seven CSTA chapters.



Ruthe Farmer is a talented entrepreneur laser-focused on inclusion and leveraging existing infrastructure to scale change. She has focused her efforts on diversity and inclusion in tech and engineering since 2001 and is currently the founder and CEO of the Last Mile Education Fund. She also serves as chief evangelist for CSforALL. Farmer previously served as senior policy advisor for tech inclusion at the White House Office of Science & Technology Policy, working on President Obama's call to action for Computer Science for All. She also served as Chief Strategy & Growth Officer and K-12 Alliance Director at

the National Center for Women & Information Technology (NCWIT) for 8 years. She has also been a longtime advisor and collaborator with CodeVA's leadership team.



Anthony Johnson is a Managing Partner at Delve Risk, where he leads a practice focused on driving technology and risk management transformation on behalf of their clients. He brings extensive technical and executive leadership experience to the practice while also serving as a technology advisor to a number of software solution providers. Throughout his career, Anthony has led some of the largest Cybersecurity programs in the world as the Chief Information Security Officer, dealing with highly complex multi-national regulatory requirements and ever evolving sophisticated threats. Prior to joining Delve Risk he served as the Global CISO and Managing Director for multiple

Fortune 100 companies, including Fannie Mae and the Corporate & Investment Bank at J.P. Morgan Chase & Company. His other passions include advancing the discussion on diversity and inclusion in the workforce, and creating channels for disadvantaged youth to enter the technology field.

Growth

In addition to the Board, CodeVA has also grown its staff this year. In 2020 - 2021, CodeVA brought on 6 new part-time staff members: **Anya Ahluwalia, Shon Bennett, Irene Andrade Melendez, Molly Rae Pearl, Amy Robertson** and **Kyle Williams** and 8 full time employees: **Nenny Shields, Laura Hite and Megan Graybill to the Operations Team, Natalie Rhodes, Teresa Cole, Steven Roberts and Kristin Hott** to the Educator Community team and **Kristen Franklin and Jon Stapleton** to the Curriculum Team. Dr. Perry Shank, Curriculum Team Manager, stated, "In the past year, the curriculum department has grown by three full-time positions to accommodate the work of supporting Virginia's public school educators in professional learning opportunities, learning resources, and grant-funded projects. Our team consists of talented individuals whose skills and knowledge complement each other and the work that we do for the organization. As the curriculum manager, I am thrilled to have such a dynamic staff to rely on to keep the work that we do vibrant and relevant!"

Expanding our internal resources will help us build the needed scalability to serve all of Virginia educators and students in a more realistic way. We now have players in place to tackle our CS Ready initiatives along with the partnerships across the state to make it **meaningful, equitable and sustainable.**

CodeVA has also added permanent physical space as a part of our hub partnerships across the Commonwealth. CodeVA now has office and classroom space at the Roanoke Higher Education Center to better serve the Blue Ridge community, providing an opportunity to host educator trainings, roundtable and panel discussions, student programming and CSTA Blue Ridge events.

"The mission and goals of CodeVA align perfectly with the purpose of the Roanoke Higher Education Center. We are delighted to have them as members and look forward to collaborating on numerous computer science initiatives for students and teachers in the region." -Carla Jackson, Senior Director of Academic & Student Services

Statewide, CodeVA has been an instrumental lead in supporting the growth of Computer Science Teaching Association (CSTA) local chapters, helping to found six new Virginia chapters since 2020: Blue Ridge, Shenandoah, SOVA, NOVA, Northern Neck, Tidewater and continuing to support the original Central Virginia chapter. This localized concentrated support allows us to go beyond the measures of professional learning and student programming into connecting with industries, other nonprofits, student clubs and more. Visit www.csteachers.org if you are interested in supporting your local chapter.



2022 Goals

Language Translation

English learners (ELs) are a growing part of the K-12 student population (Department of Education, 2021). Over the past 10 years, the percentage of EL students increased in more than half the states, with increases of over 40% in five states. In Northern Virginia, K-12 schools report students entering speaking over 200 languages (Fairfax County Public Schools, 2021). Under the Every Student Succeeds Act, states must annually assess the proficiency of EL's and provide reasonable accommodations for them on state assessments. Spanish translation is a key need given the rising population of Hispanic children (Virginia Department of Education, 2021). CodeVA is committed to expanding our outreach to non-English speaking students and families to include Spanish and, with additional funding, other languages.

Data Science

Data science is a holistic academic focus that emphasizes storytelling, pattern finding and visualization, and offers almost limitless teaching possibilities in a state where computer science is seen already as an integrated discipline.

In keeping with our goal of supporting Virginia's workforce, CodeVA is creating new curricula and a statewide training capacity aimed at providing data science and machine learning programs for both teacher professional development and student programming. Initially, our focus will be high school, but in subsequent years these programs will reach lower grades, as well.

Over the next year, Virginia's Department of Education will move towards adoption of a proposed data science strand as part of the Virginia mathematics Standards of Learning (SOLs). In November of 2021, CodeVA's executive director spoke to the Virginia Board of Education in favor of data science as a key element of the revision of the Virginia mathematics SOLs.

Numerous Virginia employers, from Bank of America and Capital One to CarMax, Amazon and the National Security Agency, have all expressed support for Virginia once again taking the lead - and setting a precedent among other states - by implementing this essential update to our commitment to STEM education and workforce development.

But why data science for all?

We know data science and computer science deepen understanding of mathematics and create stronger connections for students across grade levels and content areas. By exposing students to data science concepts earlier, and - as we've done with computer science - infused throughout other curricular areas, it becomes accessible. Every student can use this powerful tool - this compelling storytelling device - **to make essential connections** - deepening understanding in nearly any subject. And by doing so, more students - and more diverse students - who otherwise might not be interested in math, may find themselves motivated to use data science in their lives and careers.

If students are able to use data to create a computer model that simulates how the ideas of liberty spread through the British American colonies and led to our independence - and yes, this is absolutely possible - in an 8th-grade social studies class, aren't they that much more likely to be engaged in history and civics? Or by using sports data to debate who is the greatest NBA three-point shooter, aren't I also that much more excited about math as - dare I dream? Fun.

All of this may sound like so much hyperbole, but think back to your own experience in school with math and statistics. So often math class has been about answering "how," without ever answering "why." That "why" is often verbalized as "why do I have to learn this?" or "when will I ever use this?"

Data science - its use across the curriculum - lets us begin to answer that question. It ties abstract tools for problem solving directly to the problem we're trying to solve. Data science not only answers why, it also empowers our students - our future computer scientists and data scientists and entrepreneurs and leaders - to answer that "why" for themselves.

CodeVA's data science curriculum expansion is made possible during this first year of work by a generous gift from Capital One and individual donors.



Financial Statements

Fiscal Year 2021

Revenues

Contributions and Grants	\$4,055,552
Program Service Fees	\$45,133
Interest Income	\$3,976
Forgiveness of Refundable Advance	\$122,510
Total	\$4,227,171

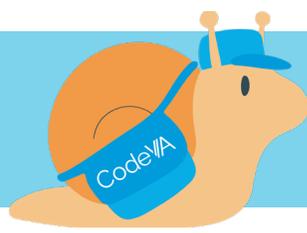
Expenses

Program Services	\$1,581,342
Management and General	\$980,967
Fundraising	\$138,252
Total	\$2,700,561

Net Assets at the Beginning of the Year	\$1,276,583
Change in Net Assets	\$1,510,791
Net Assets at the End of the Year	\$2,787,374



Express Delivery via Snail Mail!

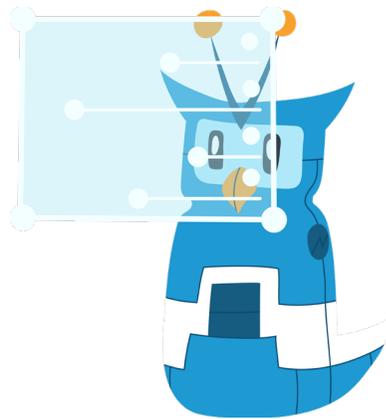


At Eureka Workshop we know that screens and the internet are not always the easiest ways to learn. So we created Project Snail Mail, a booklet that is mailed monthly to students and families as well as distributed through partner organizations. Each issue has a computer science theme that is explored through activities and information. Snail Mail is free and you can register to have it arrive in your mailbox on our website at www.codevirginia.org/project-snail-mail.

Below are some examples of Snail Mail Activities to share with the students in your life.

Data Validation

Data Validation is an important step to make sure data we are using is useful and proper. Computers validate data using many different techniques, such as making sure the data is the correct type or making sure that the data is the correct size. Making sure data is valid is crucial for a lot of computer systems to operate properly. Using Plato's original definition of a human, a featherless biped, here is a computer's thought process!



Is it a human?	Bipedal (Pass/Fail)	Featherless (Pass/Fail)	Result (Valid/Invalid)
Person	Pass	Pass (No Feathers)	Valid Human
Chicken	Pass	Fail (Has Feathers)	Not Human
Plucked Chicken	Pass	Pass (No Feathers)	Valid Human

To practice data validation we are going to explore how we can validate phone calls. All phone calls need to be made from a phone number. Phone numbers, unlike humans, have a defined format which makes them very easy to validate.

Using phone numbers we are going to learn about two ways to validate data. The first is a data type check. We know that phone numbers don't include any letters or other symbols. So we know that as soon as we see anything other than a number the data is invalid. The second type of check we do is called a data format checks. Phone numbers are 10 digits long. This check can tell us if the data is invalid based on the length of the phone number.

For example:

Phone Number	Data Type (Pass/Fail)	Data Format (Pass/Fail)	Result (Valid/Invalid)
64355589A2	Fail (Letter)	Pass (10 Digits)	Invalid
7985550893	Pass (All Numbers)	Pass (10 Digits)	Valid

Using the data type check and the data format check complete the table below and find the invalid phone numbers in our data! If the phone number fails either test it's invalid, if it passes both it's valid.

Phone Number	Data Type (Pass/Fail)	Data Format (Pass/Fail)	Result (Valid/Invalid)
78H5559835			
6045551818			
36555S9024			
8345557194			

People are More than Data

In order to make practical decisions, organizations will put together huge amounts of data on the people they work with. It's important that as many people as possible are able to use their service or product.

For instance, humans can see about one million different colors. Our world is really colorful! And if a scientist ran an experiment that figured out how many colors everyone in your city or town could see, most of the answers would probably be close to a million. But a few people are color blind - they can see some colors, but not all of them. A data validation program might look at the survey responses from color blind people and decide that those numbers are incorrect.

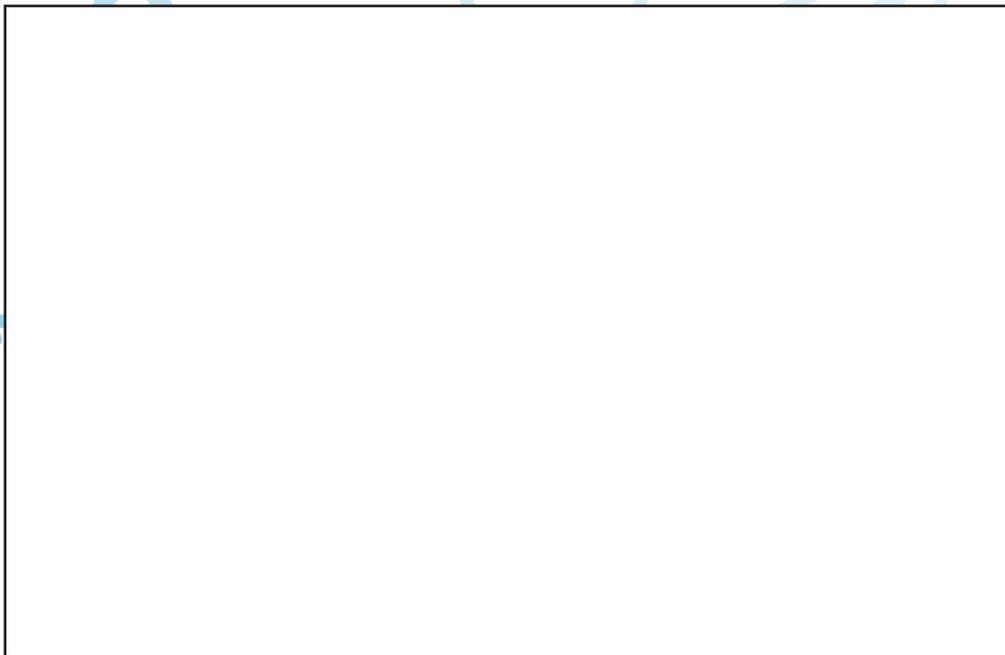
This is where data validation stops working for everyone and it's more important to learn about people as complicated and unique individuals. People with colorblindness still need to use computers and read street signs.

After we make sure that numbers that don't "fit in" are correct, we can listen to the needs of people that are giving us their data and help them work within the system.

Problem solving for people with disabilities or different needs is called accessible design and most websites, buildings, and technology come with accessibility options. Can you come up with some designs to help the people on these pages?

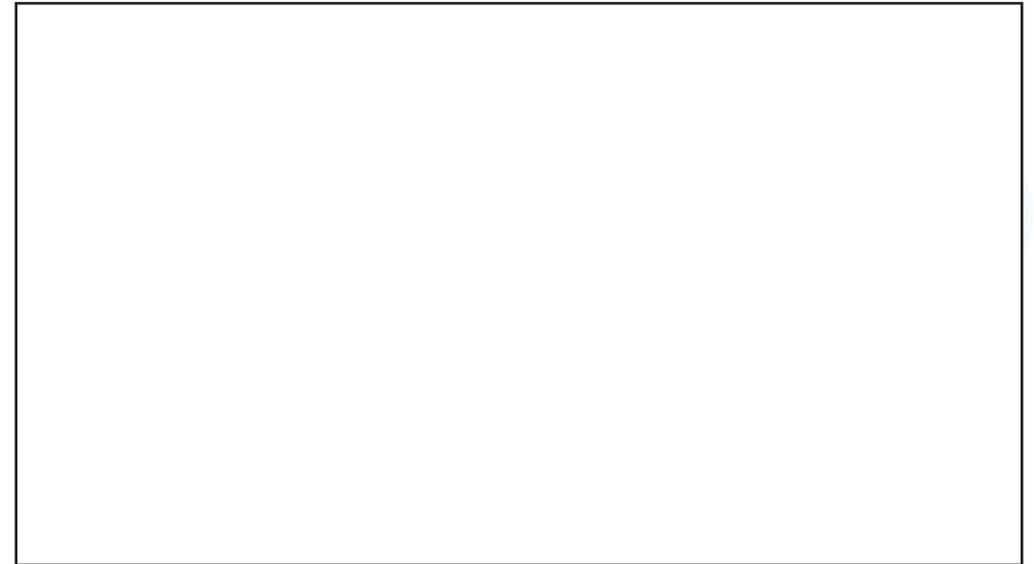
Teegan will be staying at the hospital for a few months and can't leave to attend class or turn in homework. How can the school help Teegan stay connected?

Draw Teegan's hospital room!



Mx. Cody's music class is always loud because they let students use the drums and piano. Lorena has trouble focusing on Mx. Cody's lesson when other students are playing music. What can Mx. Cody change to make the classroom less distracting for students like Lorena?

Draw Mx. Cody's classroom!



An AI was given images of Andy's family so that it learned what "people" look like. Everyone in Andy's family has black hair and blue eyes, so the AI didn't recognize photos of people with brown eyes or blonde hair. How can Andy program an AI that has a better understanding of what people can look like?

Draw some people that Andy can show to his AI!



