The Honorable L. Louise Lucas
President *Pro Tempore,* Senate of Virginia
P.O. Box 700
Portsmouth, VA 23705

The Honorable Glenn Davis
Chairman, House Education Committee
2901 S Lynnhaven Road
Suite 270
Virginia Beach, VA 23452

October 1, 2022

Superintendent Balow, Secretary Guidera, Senator Lucas, and Delegate Davis:

Pursuant to the budget of the Commonwealth of Virginia, "CodeVA shall report, no later than October 1 each year to the Chairmen of the House Education and Senate Education & Health Committees, Secretary of Education, and the Superintendent of Public Instruction on its activities in the previous year to support computer science teacher training and curriculum development, including on collaboration with other stakeholders to avoid duplication of efforts."

Please see enclosed for our annual report.

Thank you.

Respectfully,

Chris Dovi
Executive Director, CodeVA

Cc: The Honorable Barry Knight , Chair, House Appropriations Committee, The Honorable Janet Howell and George Barker, Co-Chairs , Senate Finance and Appropriations Committee

CodeVA 2021-2022 State Report

CodeVA 2021-2022 State Report

CodeVA shall report, no later than October 1, each year to the Chairmen of the House Education and Senate Education & Health Committees, Secretary of Education and the Superintendent of Public Instruction on its activities in the previous 2021-2022 to support computer science teacher training and curriculum development, including on collaboration with other stakeholders to avoid duplication of efforts.

CodeVA is a state-funded, Virginia-based nonprofit that partners with schools, parents, and communities to bring equitable computer science education to all of Virginia's students. All of CodeVA's programs, services and curricular resources are provided at no cost to Virginia public school divisions and teachers, with a focus on creating equitable access to the resources that school divisions need to implement the Virginia Computer Science Standards of Learning. Founded in 2013 as a response to a dual critical shortage of computer science educators and computer science workforce, CodeVA's work with students, parents, teachers, school districts, industry partners and policymakers is statewide in scope and impact. CodeVA's objectives are to train Virginia's educators in how to teach computer science and computational thinking, and to broaden participation among minoritized students and underrepresented groups in STEM+C (Science, Technology, Engineering, Mathematics and Computer Science). Demand from Virginia's various industries reliant on computer science is for increased participation among females, as well as Black and Latino students. CodeVA advances these goals through a multifaceted approach including public advocacy and awareness, funded research programs, public educator training programs and curriculum development, and direct student programs.

Virginia has thus far maintained its leadership in policy and implementation of K-12 CS - an important distinction and accomplishment nationally, considering the growing competitiveness among states to attract high-tech employers and entrepreneurs. In 2018, partly on the strength of its K-12 CS commitment, as stated in the Virginia Computer Science Standards of Learning, Virginia became Amazon's choice for its HQ2. This trend has continued into 2022, with Google pledging further investment in Virginia - and a keen interest in Governor Glenn Youngkin's announcement for a planned Virginia Computer Science Lab School Network aimed at supporting Virginia's efforts to grow its tech talent pipeline.

CodeVA has been involved in many of these announcements, and is a key mention in the Virginia Chamber of Commerce's Blueprint 2030 plan, which recognizes as essential CodeVA's mission to foster a sustainable and effective computer science educator ecosystem within Virginia's schools. In spite of continued strains on public school educators, which have compounded over the past three years leading to record teacher attrition and a parallel decline in teacher participation in professional development, CodeVA's work

continues to grow and reach new participants.

CodeVA Impact

CodeVA offered 29 distinct professional learning programs during 2022. These programs are designed to meet educators where they are - whether new or veteran to computer science - and support them as they work to learn and teach this new field. Many of these teachers participate in **CodeVA's Coach Academy** programs for elementary and middle school. The objective of this program is to prepare participating educators as **CS Coach** resources for their school/division, capable of providing ongoing CS professional development for other school/division faculty.

CodeVA's own training is conducted by the program's **Adjunct Faculty** members. Adjunct Faculty are computer science teachers, or elementary/middle school teachers who have specialized training in computer science integration through CodeVA's faculty development program, and who also receive ongoing professional development from CodeVA in CS content and adult professional development.

In addition to official CodeVA sessions, the past year CodeVA's faculty conducted 146 local sessions, serving 3084 teachers in their regions. 67% participated in local curricular work and they often support local out of school time activities in their regions, this past year serving 3723 students across the state.

CodeVA varies the type of programs offered throughout the year to meet the needs of teachers. During the school year, CodeVA's Learning Bytes program meets teachers where they are, offering quick sessions that support building awareness of computer science topics. In the summer, longer, more in-depth sessions are available alongside shorter sessions, giving teachers a menu of options they can pick and choose from to build their own learning programs.

Several of these professional learning programs are designed to build school and division internal capacity for conducting computer science sessions for faculty. These CS Coaching Academies prepare school personnel to support faculty as they work to implement computer science in their classrooms. CodeVA's data collection shows **80% of these**

coaches conduct professional learning sessions back in their schools during the school year, impacting on average 35 educators each.

These educators, representing all regions of Virginia, participated in over 5900 hours of professional learning. **As of August 2022, 89.4% of Virginia's 132 divisions have staff trained by CodeVA. Of those divisions, 39.4% have a CodeVA-trained teacher in at least half of their schools., Finally, 9 divisions across the Commonwealth have CodeVA-trained staff in 100% of their schools**.

EDUCATOR IMPACT	
	Attendance
CodeVA Sessions (taught by Adjunct Faculty)	930
Coaches Impact - *in School/Division*	2128
Adjunct Faculty *in School/Division*	3084
TOTAL	**6142**

The map in Figure 1 illustrates the Virginia public schools with teachers who participated in CodeVA's 2021-2022 virtual professional development. This is an interactive Google Map that may be accessed here.

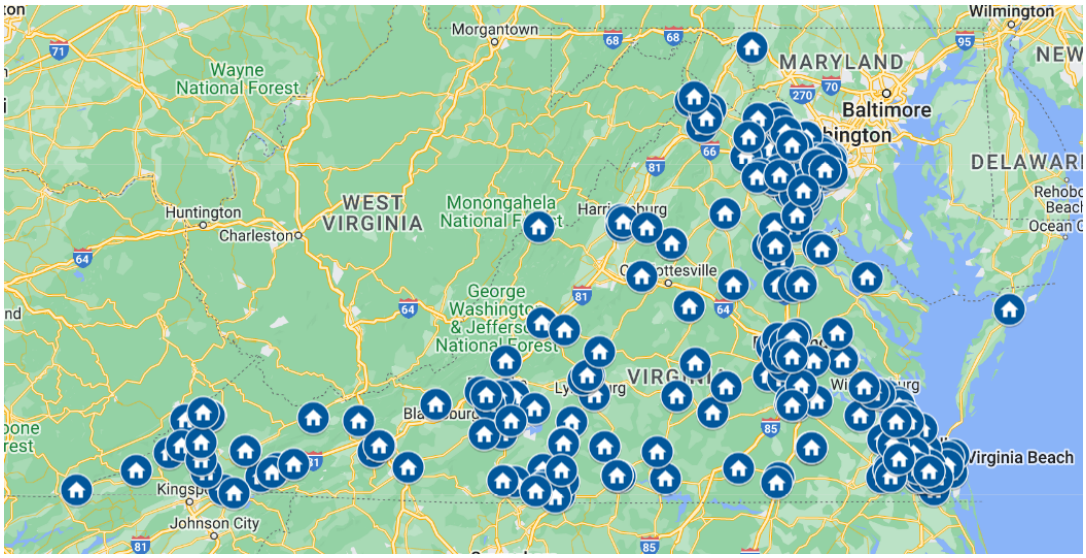


Figure 1: Schools and/or divisions with teachers participating in CodeVA Professional Development.

Figure 2 shows the CodeVA 2021-2022 teacher attendance by Region. Region 2 - Tidewater had the most participation with 27%, followed by Region 4 - Northern Virginia (24%), Region 1 - Central Virginia (16%), Region 7 - Southwest (12%), Region 6 - Western Virginia (6%), followed by Region 3 - Northern Neck, Region 5 - Valley, and Region 8 - Southside all with 5% each. Factoring for density of population by region, these results demonstrate the deep investment CodeVa has made across the state. As an example, the teachers in Region 7 make up only 5% of the total number of teachers in Virginia, yet represent 12% of all teachers served in 21-22 by CodeVA. This reflects both the success of CodeVA's partnership with the Tobacco Commission, and the funding of a half-time position at the SW Higher Ed Center in Abingdon, and support for another staff member at the Institute for Advanced Learning and Research in Danville.

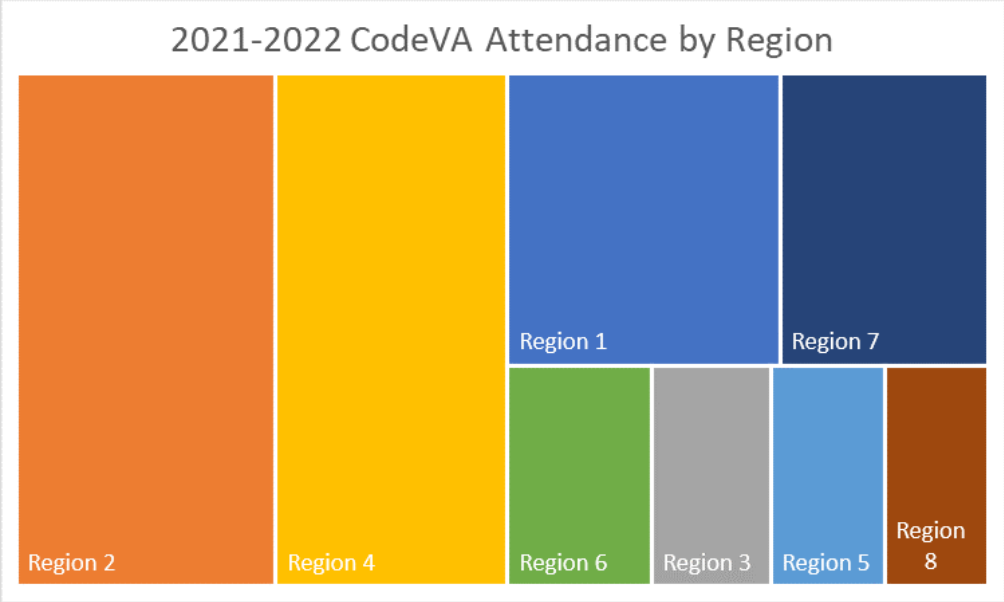


Figure 2: CodeVA 2021-2022 Attendance by Region

Figure 3 breaks down professional development attendance by grade level and type of training. During the 2021-2022 year, the majority of participants attended middle school sessions, followed by elementary, coding/programming-focused, and high school levels. The coding/programming-focused sessions support educators from multiple grade levels in developing skills in computer coding. Figure 4 shows the breakdown by attendee roles. One major element of the CodeVA training is not only that it supports just classroom teachers in learning computer science, but also that it offers sessions to support school and division leadership, instructional coaches, and other educators.

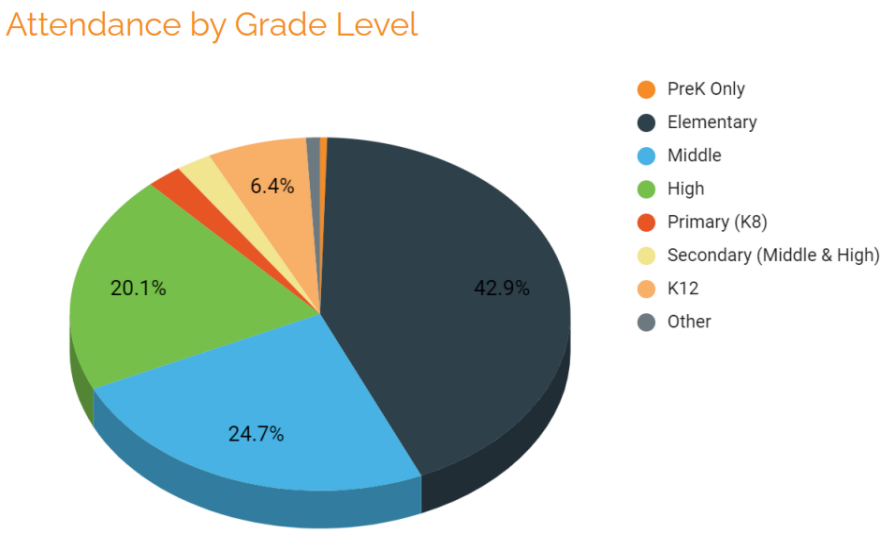


Figure 3: 2021-2022 attendance by course grade-level/type

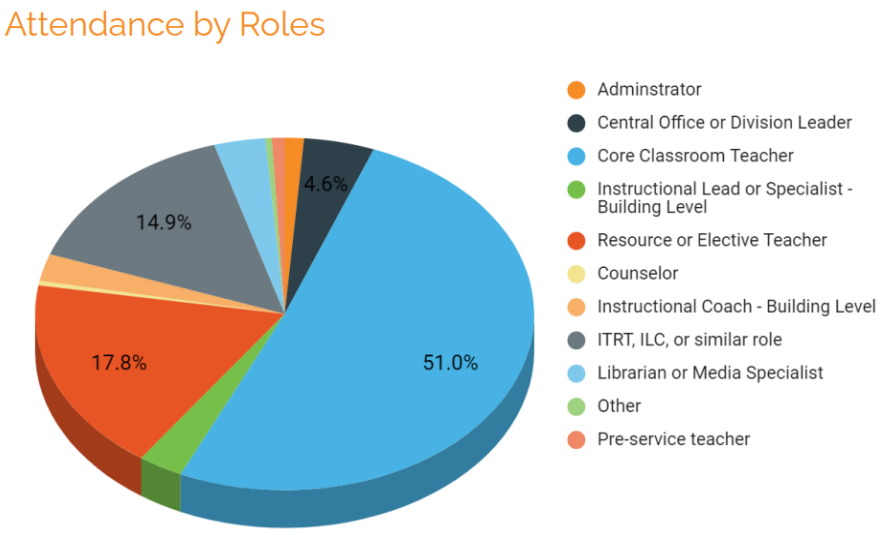


Figure 4: 2021-22 attendance by role

Participant Feedback

CodeVA conducts regular evaluation of all learning programs to ensure the sessions are meeting the needs of participating educators. This includes pre- and post-training surveys to measure teacher learning across several dimensions, as well as questions to gauge the effectiveness of the faculty, logistics, sessions and curriculum. See Appendix B for pre/post survey results.

Summary Survey Results (out of 6)

AVERAGE RATINGS BY QUESTIONS	
QUESTION	**RATING** *(out of 6)*
Satisfaction with CodeVA's implementation of **logistical** components (PL)	5.7
Satisfaction with course **facilitators** (PL)	5.52
Courses met the needs of adult learners (curriculum)	5.41
Ratings of course content, activities, tools, etc (curriculum)	5.36

Participant Feedback - Professional Learning Content

"I am a lifelong learner and I have thoroughly enjoyed each session. Each session has been 'over the top.' I walk away with new ideas that have increased my knowledge, and, in '7 Habits of Highly Effective People' language, I have 'sharpened my saw!'" - educator participant in post-program survey

Participant Feedback - Delivery

"I really appreciated how you valued discussion among participants. I feel like I received lots of great feedback from the facilitators." - educator participant

"Thank you for the option to work alone or collaboratively, sometimes my mind is flowing with activity ideas and its best to just get rolling alone rather than trying to collaborate with so many variables like subject taught and grade levels within a session like this one." - educator participant

Participant Feedback - Effectiveness

"Gained new knowledge in this session. The session triggered some ideas that I can go back and test/ prototype." - educator participant

"This was a very engaging and interactive session. Thoroughly enjoyed! Was perfectly designed for a Saturday morning - had a great time! It was fun - time well spent!" - educator participant

CodeVA's Model

CodeVA's service model is unique in the United States. Since fall of 2013, it has invested in Virginia by building statewide partnerships and infrastructure so that every student in Virginia has opportunities to experience high-quality computer science education. All of its programs, as part of its remit as a state program supporting Virginia's computer science Standards of Learning,are offered at no cost to all Virginia divisions, schools, and educators. To ensure quality of its programs, CodeVA focuses on three main elements.

First, the delivery of high quality computer science professional learning, through eight hubs across the state. This model ensures all educators, from classroom teachers to administrators have access, when they need it, to localized professional learning. Second, CodeVA has developed a highly trained faculty consisting of current classroom teachers with training and experience in computer science education, developing a nationally recognized - and increasingly copied - standard for continuing professional development and recertification. Finally, in order to provide locally relevant curriculum, CodeVA has built a team of curriculum writers that generate classroom resources and materials for professional learning. These three elements weave together to form a foundation for computer science education to flourish in Virginia, and for the state to maintain it's leadership nationally in the computer science field.

These investments have built a foundation for computer science education in Virginia, but much more remains to be done in collaboration with our partners at the Virginia Department of Education to ensure access for all students. It is no small challenge ensuring all Virginia students have access to high quality computer science instruction. Computer science represents the first addition in over 50 years of entirely new subject to public schools.

Professional Learning

CodeVA's Professional Learning programs vary in length, ranging from year-long cohorts for high school teachers implementing career oriented computer science electives, to multi-day sessions to build elementary and middle school teachers' ability to integrate computer science into their core instruction. All programs include, at no cost, all materials and curriculum that teachers need to teach their students when they return to their classrooms.

Embedded in the summer professional learning sessions is a *Lunch and Learn* series that engages industry professionals and other speakers relevant to computer science education and industry to speak about computer science careers and opportunities in Virginia. These sessions invite educators to learn about the varied jobs across the state that rely upon computer science as a part of daily work.

To serve the varying needs in each region of Virginia, CodeVA has developed a network of hubs across the state. These partnerships allow CodeVA to conduct local in-person professional learning, host community building events, and also generate a flow of information about local needs back to the organization. These partnerships are essential to serving the varying needs of Virginia's schools. The current Hub Partners include Institute for Advanced Learning and Research in Danville, Chesterfield Public Schools, Harrisonburg Public Schools, Loudoun Public Schools, Roanoke Higher Education Center, Stafford Public Schools, Chesapeake Public Schools/Old Dominion University, and the Southwest Higher Education Center in Abingdon.

Computer Science Faculty

National research-established best practices show adult teacher professional learning works best when the instructor is a peer with practical knowledge of the subject. CodeVA's model employs this approach. Adding a new subject to K-12 education offers a unique challenge to this approach, as most current educators lack the knowledge and skills in computer science, which necessitates significant investment on the part of CodeVA in developing a capable faculty, and in continuing to broaden that faculty's knowledge - and capacity to share that knowledge - of computer science pedagogy. To meet the state

mandate every teacher from kindergarten through eight grade will need professional learning, support and resources. And to meet industry need and higher education expectations, there is high demand for high school teachers with the knowledge and skill set to teach specialized computer science courses.

CodeVA has expanded from a team of five trainers in 2014 and now currently employs 43 active faculty members. Six of those facilitators are lead trainers whose roles include preparing faculty for sessions. To become a full faculty member,every instructor completes a rigorous apprenticeship, and all faculty complete a recertification process with CodeVA annually. This ensures that a highly skilled team of trainers is in place as the computer science education effort moves to scale across the state. This model also means that the faculty - all are current classroom teachers actively teaching in school divisions across Virginia - become resources to their home school divisions, even as they conduct CodeVA sessions for their peers statewide.

The adjunct nature of CodeVA's faculty allows us to expand and contract staffing to meet both seasonal professional development needs, as well as to better control for changes in levels of corporate and foundation funding support that, along with state support, undergird these programs. This investment also ensures that the school divisions where faculty work full-time have highly skilled people in-house that can help with local professional learning, curriculum work and system-level planning without the risk and expense of contracting with external providers.

This investment in a statewide, highly-skilled computer science faculty has an impact beyond the sessions that CodeVA directly schedules. This team also supports their local divisions by doing curricular work and running professional learning sessions in their home divisions and schools, creating sustainable, local, computer science infrastructure.

Over the next two years, CodeVA anticipates the need to double its faculty to meet an increased need for professional learning as the Virginia Department of Education supports and augment division efforts to meet the state computer science SOL mandate.

Curriculum Development

The final element of CodeVA's service model is curriculum development. This team is responsible both for creating classroom facing materials for teachers to use with students and the materials and resources used for Professional Learning sessions.

All CodeVA professional learning curriculum is revised annually based on the feedback from participants and changes in the field. New programs are developed and deployed to ensure that as educators build their computer science skills, follow-up sessions are available to continue to support teachers in building knowledge and capacity for computer science instruction..

To support divisions in building internal capacity for computer science integration, the team developed workshops with the focus of building local capacity, knowledge, and skills for developing classroom lessons. This was piloted in 2021-22 through 6 sessions for a group of 16 train-the-trainer teacher participants in the Winchester Public School system.

This pilot allowed for the creation of one-day workshops called Curriculum Jams to generate integrated curriculum products for use in local classrooms. This will be available for schools and divisions across the state in 2022-23.

- After two years of providing live, virtual, learning sessions to teachers throughout the pandemic, CodeVA added facilitated asynchronous courses. This new delivery model was based on teacher requests for more flexible, just-in-time offerings. These combine on-demand content with facilitators available to offer support when needed. **Piloted in Summer 2022, four asynchronous courses were added, serving 88 educators, (representing 9.5% of total participation) showing the demand for more flexible professional learning offerings.**

Several additional new professional learning programs were launched in 2021-22.

- Piloted in summer 2022, the **Praxis Prep** program supports current high school teachers in adding the computer science endorsement via the Computer Science Praxis exam. This intensive year-long program tackles the shortage of computer science teachers by developing computer science teaching capacity from within the school faculty.
- CodeVA has offered a **middle school elective program** for a number of years, and this year a level 2 session was offered to educators looking to deepen their computer science knowledge.
- Acknowledging that not all educators have the time for participation in a full-day session and highlighting the need for topics-focused course offerings, a program called **Learning Bytes** launched to expand computer science knowledge and bring together communities of learners. These short sessions are offered throughout the year to deepen educator knowledge, and topics range from Cybersecurity, Ciphers, and Puzzles, and Using Unplugged Activities to Boost Plugged Integration.

Looking Ahead - Building Capacity

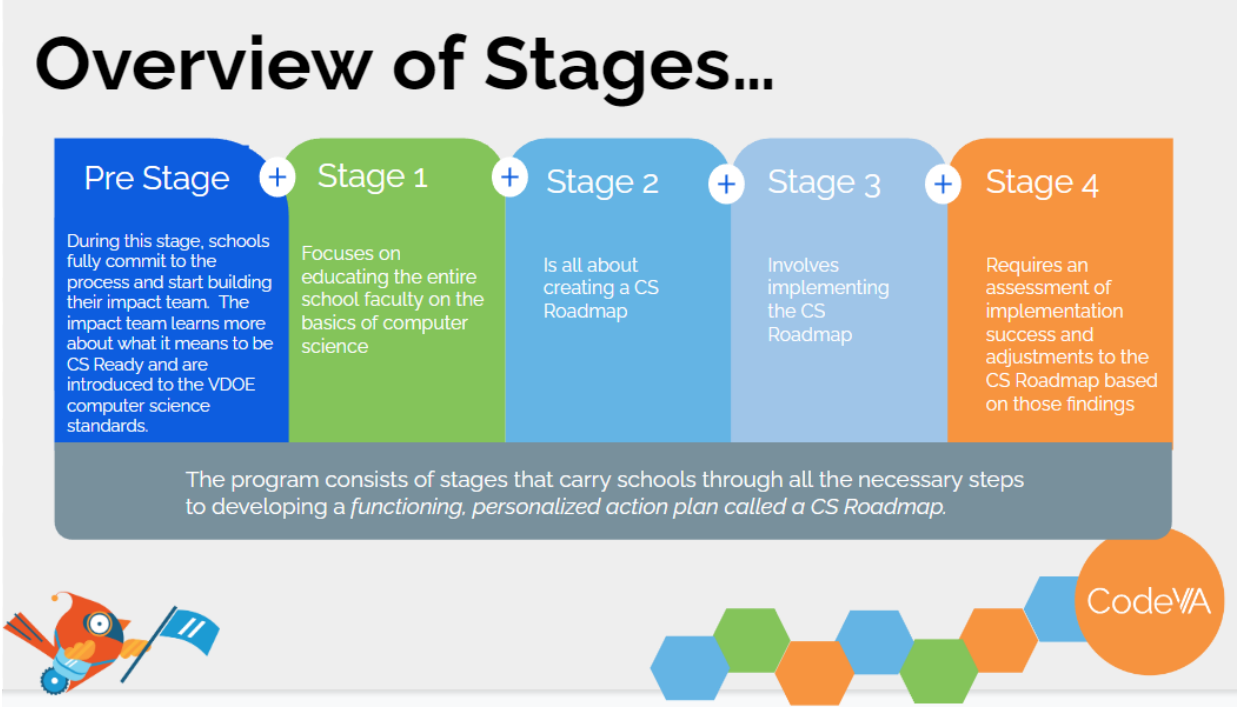
Since 2013, CodeVA has made a tremendous investment in Virginia's teachers. As the state moves to ensure meaningful implementation of the computer science mandate, there must be a fundamental shift from the individual teacher as an agent of change towards building intentional division-wide infrastructure to support teachers and ensure all students have access to computer science literacy. Adding a completely new subject to public schools is no small feat, and it requires leadership, strategic planning and investment to ensure all students in Virginia have computer science opportunities. To support this new phase in Virginia's CSforALL movement, CodeVA has developed partnerships and programs meant to amplify and scale the computer science education initiative.

With continued funding from Amazon's Future Engineer program, CodeVA has continued with its ongoing development of the **CS Ready Schools** program. Through this multi-year planning and strategy model, CodeVA's specialists guide Virginia schools in creating school-based Impact Teams, developing personalized CS Roadmaps for their schools, and establishing local resources to support school-wide computer science education and

culture. Participating schools use CodeVA's free professional learning, curriculum, and resources - and are introduced to a variety of other external resources that are a part of the national computer science education ecosystem landscape - to develop and implement their CS Roadmaps, measuring progress and adjusting their paths along the way to provide high-quality CS instruction to all students in their learning community.

The CS Ready Program, in its pilot phase, is available for a school with a population of at least 50% students eligible to receive free and reduced lunch, or with a Title 1 school designation.. This program supports the needs outlined by the Virginia Department of Education by creating a sustainable ecosystem of Computer Science education for each participating school, and ultimately each school division. CS Ready School seeks to accomplish division-level impact by providing teams with iterative metrics and toolkits designed to empower their schools and divisions to utilize the tools independently beyond the initial support and coaching from CodeVA. CS Ready is designed to support and empower teachers, administrators, and other community stakeholders to implement computer science education across grade levels so that every student has equal access to this foundational literacy. As this program moves out of pilot it will be freely available to all schools across Virginia .

Why a Strategic Plan? CodeVA offers free curriculum and professional learning across Virginia. This means teachers can opt in to training and explore computer science for their classrooms. After nine years of conducting professional learning sessions we know these teachers often struggle to implement computer science instruction without the support of school level planning by leadership. This means that even with the availability of high-quality teacher professional development in the subject, many students continue to lack access to cohesive computer science instruction year to year. Many more lack any such instruction at all. The CS Ready project creates a context for teacher professional learning that moves from individual teachers struggling to find time to implement computer science to a school wide initiative with community and administrative support.



CS Ready currently supports high-needs schools as they work to integrate digital workforce skills, including the mandated computer science curriculum into their K-12 classes. The schools start by forming an impact team. This team consists of school leaders, teachers, and community members working together to create the schools strategic plan. Each participant on these teams averages 36 hours of workshops and individual study over those nine months, all with the goal of learning how to effectively implement computer science courses and integration into their individual schools. The program wraps CodeVA's existing free professional learning and curriculum materials with real-time coaching and support from CodeVA staff. By providing support and guidance to schools when they need it, this program fosters the development of a computer science culture as a part of a school's learning community.

Research - Building Computer Science Knowledge

In order to deepen collective understanding around student and teacher learning of computer science, CodeVA currently is a recipient of or participant in several national research grants. These include:

- **Reaching Across the Hallway.** CodeVA is collaborating with TERC in Cambridge, MA, and the University of South Florida to explore the integration of computer science into middle school social studies and history classes in rural districts. Funded by the National Science Foundation (NSF) (#2010256).
- **CS FAB.** In partnership with the University of Virginia, Virginia Commonwealth University, Petersburg City Public Schools, and Chesterfield County Public Schools, CodeVA is the awardee in the development of a toolkit for grades 3-5 educators to help integrate both computer science and culturally relevant teaching across content areas. Funded by the NSF (#2031258).
- **Equipping for Praxis: Advancing Computer Science Teachers through Endorsement** In partnership with James Madison University, TERC and co-Principal Investigator Ms. Shelita Hodges, an experienced computer science instructor at Richmond Public Schools, CodeVA is the awardee in the development of a program to lead teachers to gain computer science (CS) endorsement, teach more advanced skills and concepts, and experience gains in self-efficacy and identity as a CS teacher. The target population is teachers who currently teach introductory-level CS in schools with large populations of underserved students (low income, rural, and students of color). Funded by the NSF (#2219770).
- **Advancing Rural Computer Science** (ARCS; Old Dominion University) and **Metrics** (Winchester Public Schools) partner with CodeVA to deliver professional development as integral parts of their research projects. Funded by the US Department of Education.
- **Everyday AI**. A partnership with Massachusetts Institute of Technology, CodeVA is supporting investigation of artificial intelligence instruction integration in Richmond Public Schools middle school science classrooms and out-of-school programs. Funded by the NSF (#2048746).

- **VTEC CTE.** The federally funded implementation project encompasses developing a CTE Summer Academy, through CodeVA's Eureka Workshop out-of-school-time program, for Indigenous Virginia teens to learn about CTE in an arts integrated manner. Eureka is working to offer Critter Code at tribal community centers, as well as developing a teen counselor program with the goal of creating paid roles for VA teens. Educator Engagement is developing toolkits for participating school divisions to identify career opportunities in STEM for tribal communities, and adapting VA native history lesson plans from VTEC to integrate CS and expand lessons into units.
- **Supporting Effective Educator Development**.This grant awarded to VCU is designed to strengthen the STEM content knowledge and pedagogical skills of elementary and special education teachers in high-needs schools. CodeVA is supporting the project team by designing Professional Development and professional enhancement activities in STEM with a focus on Computer Science. Funded by US Department of Education (#84.423A)
- **Project GUTS (Growing Up Thinking Scientifically)**, in partnership with Massachusetts Institute of Technology, investigates methods of teaching computer science in middle school science classrooms.
- **CHOICE**, or Professional Learning in Choice Communities, is a federally funded research grant awarded to Virginia Ed Strategies to provide enhanced professional development opportunities and PLCs for STEM+C teachers primarily from rural divisions within Virginia. CodeVA is providing expertise and consulting on how to implement computer science professional development. Funded by the US Department of Education.

In addition to the nationally awarded grant projects listed above, CodeVA participates in many state-funded projects, including **SCHEV's GearUp program**, to support quality computer science professional development to educators across the Commonwealth of Virginia. These grants not only expand the understanding of best practices in teaching computer science and inform our program design, but also bring funding to Virginia that supports teachers and students across the state. CodeVA provides both logistical and material support to many of the VDOE's locally awarded Advancing Computer Science Education grants, and anticipates providing even more of these supports during the upcoming round of ACSE funding.

Partnerships and Community

To support the statewide implementation of computer science education, CodeVA engages in a robust variety of other activities to build engagement, interest, and community support. In December 2021, CodeVA hosted a virtual CS Ed Week Launch program with a total reach of nearly 16,000 students, educators, and families across the Commonwealth through virtual workshops and online video content.

Partnerships play an integral role in CodeVA's mission to create equitable computer science opportunities for students statewide. CodeVA has continued to work with Virtual Virginiato create online computer science courses, including curricula, and has been supporting GO Virginia projects by providing educator professional development services in both Southwest Virginia and Loudoun/Chesapeake. In spring 2022, CodeVA announced a partnership with the Virginia Department of Education focused on collaboration to create new data science K-12 classroom resources, to promote resources created by the Virginia Department of Education, and to integrate this data science focus into CodeVA's professional development program statewide in support of the integration of data science that are a part of the new Mathematics Standards of Learning. CodeVA is working with the national consortium Data Science for Everyone to increase awareness and engagement around data science in K-12 education. Other national partners include, but are not limited to, Data Science for Everyone, Code.org, ECEP Alliance, CSTA and CSforALL.

Virginia Department of Education

CodeVA regularly collaborates with the VDOE to support their strategic leadership. The VDOE has begun work on the development of a Computer Science State Plan. Throughout the summer 2022 CodeVA staff collaborated with the VDOE, utilizing Virginia's Expanding Computing Education Pathways (ECEP) Alliance committee. CodeVA is Virginia's member organization, and Keisha Tennessee, the VDOE's computer science coordinator, serves alongside CodeVA's executive director and education director on the Virginia ECEP committee's leadership team. This Virginia Computer Science Plan work is ongoing as this

report is being submitted, with the final draft's adoption by the VDOE expected in time for the plan's release for schools to use in spring 2023.

To support Virginia's new Data Science high school elective course, CodeVA has created a series of lesson modules that amplify the computer science content in this curriculum. Three Data Science focused lesson sequences support 4-6 week "project units" built around introducing data science to high school students. Each item contains a linearly-sequenced unit of activity guides/lesson plans leading toward a domain-oriented "problem space" characterized by open-ended prompts. The units below each offer a different level of technical rigor and different levels of practical abstraction to teachers and learners, ordered from "least technical" (Data Science Unplugged) to "most technical" (Embedded Data Collection & Analysis).

Virtual Virginia

In addition to its work designing courses for student-facing instruction, CodeVA also works with Virtual Virginia as a dissemination partner for professional learning programs. This allows for virtual delivery of both live and asynchronous professional learning sessions, an essential component of serving through the pandemic.

CodeVA has continued progress with a teacher microcredential pilot with Virtual Virginia and Virginia Association for Supervision and Curriculum Development, with the goal of increasing teacher access to credentials in computer science, as well as the increased career opportunities that result in professional credentialing. This pilot, codesigned by CodeVA and Virtual Virginia, seeks to establish a model for Virginia to accredit and to ensure consistency of delivery, grading and recording of microcredentials for the purpose of elevating microcredentials from use as CEUs to a reliable tool for awarding add-on endorsements in high-needs STEM and computer science content areas.

All of CodeVA's state and national partnerships, advocacy work, and staff support on Virginia Department of Education teams is part of its larger goal to help build a computer science ecosystem within Virginia.

In 2021-2022, the Microcredential Pilot moved from the “development” to the “pilot program” phase. In this phase A collection of micro-credentials will be selected that (1) meet the quality criteria, (2) meet the requirements of the legislation, and (3) conform to Virginia’s Teacher Performance Standards and/or the Virginia Profiles (of a Graduate, Educator, and/or Classroom). **74** teachers are currently enrolled and **11** have completed the “What is for CS Educators” pilot course in order to examine:

- Participation and completion rates.
- The quality of teacher submissions, which provide evidence of teacher competency.
- The alignment between teacher submissions and Teacher Performance Standards.
- The degree to which teachers perceive the micro-credential as a meaningful professional development experience.

Appendix A - Attendance update

Summer Professional Development Sessions

CodeVA delivered more than 50 professional development sessions during the 6

Summer 2022 Programs

Elementary School Programs

- Elementary Coaches Academy
- K5 Launching Computer Science
- K5 Computer Science Integration
- Virginia Computer Science Standards of Learning (SOL) Deep Dives
- K5 CS Starter Pack
- CS First

Middle School Programs (MS)

- Middle School Coaches Academy
- Middle School Elective (Computer Science Discoveries)
- Project GUTS
- Middle School Computer Science Integration
- Middle School Launching CS*

High School (HS)

- AP Computer Science Principles
- Computer Science Foundations (Exploring Computer Science)
- HS - Programming using Java*

Programming

- Programming in Scratch

- Programming in Scratch II*
- Programming in Python
- Programming in Python II*

** Denotes new course*

Appendix B - Pre - Post Survey Results (out of 5)

Question	Pre *n=339*	Post *n=434*	Change
I have an understanding of what computer science is.	4.29	5.3	1.01
I am comfortable teaching computer science	3.66	4.66	1
I am aware of computer science career options to share with students	3.97	4.87	0.9
I am aware of resources to help me learn coding	4.11	5.38	1.27
I am comfortable integrating computer science into my existing curriculum	3.73	4.82	1.09
I have a strong working knowledge of Virginia Computer Science Standards of Learning	3.27	4.72	1.45
I am comfortable teaching the Algorithms and Programming strand of the Computer Science SOLs.	3.16	4.6	1.44
I am comfortable teaching the Computing Systems strand of the Computer Science SOLs.	3.04	4.51	1.47
I am comfortable teaching the Cybersecurity strand of the Computer Science SOLs.	3.08	4.45	1.37
I am comfortable teaching the Data and Analysis strand of the Computer Science SOLs.	3.15	4.52	1.37
I am comfortable teaching the Impacts of Computing strand of the Computer Science SOLs.	3.19	4.55	1.36
I am comfortable teaching the Networking and the Internet strand of the Computer Science SOLs.	3.07	4.45	1.38
I am confident I can conduct professional learning activities to prepare my faculty to implement the Computer Science SOLs.	4.2	4.67	0.47
I am confident I can develop new professional learning activities to prepare my faculty to implement the Computer Science SOLs.	3.93	4.69	0.76
I am confident programming with Java	2.43	3.75	1.32
I am confident programming with Python	2.61	4.67	2.06

I feel confident programing with Scratch	3.07	4.83	1.76
I feel confident with programming (any language).	3.54	4.11	0.57
I am familiar with teaching strategies that are effective at my grade level for teaching computer science	3.5	4.72	1.22
I can go back to my job tomorrow and integrate content from this course into my lessons or job.	3.59	4.85	1.26
I understand how "unplugged" activities can help teach coding concepts.	3.8	5.16	1.36