

TABLE OF CONTENTS

CodeRVA - OVERVIEW3

- 1. School Description 3
- 2. Roots of Racial Isolation: Richmond Core Based Statistical Area 5
- 3. Magnet School Theme: Computer Science/Information Technology 12
- 4. Next Generation High School Redesign Model 14

Competitive Priority 1: Need for Assistance..... 16

- 1. The costs of fully implementing the magnet schools project as proposed;..... 16
- 2. The resources available to the applicant to carry out the project..... 17
- 3. The extent to which the costs of the project exceed the applicant's resources;..... 22
- 4. The difficulty of effectively carrying out the approved plan 23

Competitive Priority 2—New Magnet Project & Evidence Base..... 24

- 1. New Magnet Project..... 24
- 2. CodeRVA Evidence-Base..... 24

Competitive Priority 3—Selection of Students..... 27

Competitive Priority 4 – Racial Integration and Socioeconomic Diversity 28

PROGRAM NARRATIVE..... 31

- (a) Desegregation..... 31**
- 1. The effectiveness of plan to recruit students 31
- 2. How the school will foster interaction among students 37
- 3. How the school will ensure equal access and treatment 41
- 4. The effectiveness of all other desegregation strategies..... 42

(b) Project Design.....	43
1. How the magnet school will improve student academic achievement	43
2. The applicant has the resources to operate beyond the length of the grant.....	52
a. Commitment of Partners:	52
b. Evidence of Commitment and Support.....	56
3. Professional Development Plan.....	57
4. Strong Theory, Logic Model and Performance Measures	62
(c) Quality of Management Plan.....	68
1. The adequacy of the management plan to achieve the objectives.....	68
2. CodeRVA Timeline and Implementation Plan:	72
2. How the applicant will ensure a diversity of perspectives.....	89
(d) Quality of Personnel.....	90
1. The project director is qualified to manage the project	90
2. Other Key Personnel	92
3. Teachers are qualified to implement the special curriculum of the magnet school	100
(e) Quality of the Evaluation Plan	101
1. Methods will produce evidence of promise	102
2. Methods use objective performance measures related to the intended outcomes	105
3. Extent to which the costs are reasonable	118
REFERENCES.....	121

CODERVA - OVERVIEW

1. School Description

This application for a Magnet Schools Assistance Program (MSAP) award is being submitted in consortium with twelve school divisions* located in central Virginia. The proposed MSAP project will provide supplemental resources and support to CodeRVA Regional High School, a new inter-district magnet school focused on Computer Science (Magnet Theme) in the Richmond, Virginia metropolitan area. **CodeRVA is the first and only magnet school in Virginia designed explicitly to reduce minority group isolation.** The school has three goals:

1. Address racial, economic, and gender inequities in STEM-related education,
2. Redesign the high school experience to better meet the needs of today's students, and
3. Increase the pool of potential employees in computer science for central Virginia

Operating as a year-round school, expanded learning time over the calendar year will allow students to accelerate or extend the time needed for individualized mastery of content. During the first two years, personalized learning and competency-based progression will speed completion of high school requirements. Online and blended coursework will be accompanied by facilitated small group support and intensive remediation when necessary. Project-based learning (PBL) will foster curiosity, creative thinking, and confidence, while building complex problem-solving skills. PBL will also be used as a research-based, intentional strategy for creating intercultural relationships among a diverse student population as well as grounding students' work in a real-world context. Computational thinking will be embedded throughout the curriculum and projects to strengthen computer science skills and learning. Project portfolios and performance-based assessments will hold students to high standards and document mastery of rigorous content.

*Virginia Local Education Agencies are legally defined as school divisions.

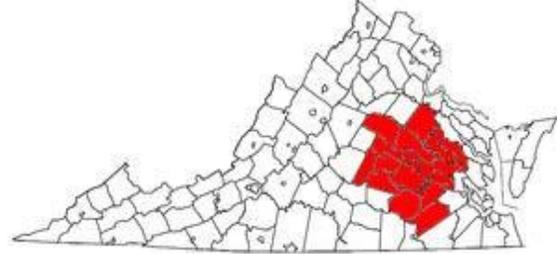
In years three and four, partnerships with community colleges will give students access to college coursework through dual enrollment. Area employers have committed to offering paid part-time employment that further develops students' digital knowledge and interpersonal skills. The intention is that CodeRVA students will emerge at the end of four years with a high school diploma, an associate's degree, industry certification(s), and paid work experience.

Key to the school's premise of equity is the removal of barriers to application, enrollment, and access. There are no course prerequisites or entry exams; only interest on the part of the student in the field of computer science. Strategies are in place to build a diverse applicant pool, including targeted outreach into minority segregated, high-poverty middle schools with promotional materials that reflect multiple ethnicities. Materials highlighting characteristics of computer science careers that have been proven to be appealing to girls are also being developed: those that are socially relevant, provide opportunities for collaboration, and offer flexibility. Students are selected for enrollment through an independently-operated, controlled-choice lottery that supports CodeRVA's goals for diversity and equitable opportunity. Bus transportation will be provided by partnering school divisions to enable students from across the region to attend regardless of economic background or parents' ability to provide transportation.

CodeRVA Regional High School will open on September 5, 2017 to 91 economically and racially diverse ninth and tenth grade students, adding 100 ninth grade students each year until reaching its proposed maximum capacity of 400 in school year 2021-2022. Additional growth will be accommodated depending on demand and the capacity of the facility. A technology-rich environment, multiple academic and social-emotional support systems, personalized learning, direct industry involvement, and cooperative real-world projects will facilitate student agency and prepare CodeRVA graduates for post-secondary education and a range of future careers.

2. Roots of Racial Isolation: Richmond Core Based Statistical Area

Anchored by the historic city of Richmond, Virginia, the Greater Richmond Core Based Statistical Area encompasses sixteen counties and the smaller cities of Petersburg, Hopewell and Colonial Heights. The area is rich in the nation’s history, from its Native American roots to the country’s founding days, through the cataclysmic years of the Civil War – during which Richmond served as the capital of the Confederacy – to its role in the Civil Rights movement. That history continues to impact the city and the region as a whole.



From this historical foundation come racial and economic divisions fed by state and local policy decisions that maintain distinct urban, suburban, and rural localities and school systems.

TABLE 1: RICHMOND CBSA Poverty Rate & Racial/Ethnic Composition

Locality	Poverty Rate	Black	Hispanic/Latino of Any Race	Other	White
Chesterfield Co	7.4%	24.2%	7.7%	7.8%	71.1%
Colonial Heights	11.4%	13.7%	5.0%	6.9%	80.8%
Dinwiddie Co	14.8%	33.7%	2.8%	1.9%	65.6%
Hanover Co	6.0%	10.2%	2.5%	1.8%	88.2%
Henrico Co	10.7%	30.9%	5.3%	11.4%	60.7%
Hopewell	19.0%	40.2%	6.8%	7.7%	55.5%
New Kent Co	7.0%	14.5%	2.4%	5.7%	84.1%
Petersburg	28.0%	78.6%	4.2%	4.3%	19.6%
Powhatan Co	4.9%	12.9%	2.0%	2.1%	86.5%

Prince George Co	10.0%	33.9%	7.1%	7.1%	62.1%
Richmond	25.5%	50.9%	6.4%	6.5%	46.6%
Sussex Co	20.5%	58.4%	3.3%	3.5%	40.3%

Past failures to cooperate on a regional scale have influenced present-day school system populations and resources. In 1973, in *Bradley v. School Board of Richmond*, the Supreme Court tied 4-4 on the issue of metropolitan school division consolidation in the Richmond area, leaving in place an appellate decision overturning the merger of Richmond Public Schools with two adjacent suburban systems. Desegregation in the urban core proceeded without suburban involvement, in a city school system already experiencing significant white and middle class flight to the overwhelmingly white surrounding counties. Forty years later, white students make up roughly ten percent of Richmond Public Schools enrollment, a figure that has been remarkably consistent and distinct from the surrounding localities in the decades since.

Significant shifts, however, have occurred in the close-in suburban divisions originally slated for consolidation,. Henrico County is now a majority-minority school division and Chesterfield is rapidly approaching similar status. All three school divisions are experiencing rising levels of racial and economic school segregation between and within individual schools, along with persistent opportunity and achievement gaps.

TABLE 2: Student Racial/Ethnic Makeup of Partner Divisions

Division Name	F/RM	Asian	Black	Hisp/Latino of Any Race	2+/Other	White
Chesterfield Co	30.1%	3.5%	25.9%	14.6%	4.9%	51.2%
Colonial Heights	46.5%	3.7%	18.3%	6.5%	7.4%	64.2%

Dinwiddie Co	51.8%	0.4%	33.5%	6.1%	5.7%	54.3%
Hanover Co	18.3%	1.9%	9.4%	4.4%	4.2%	80.1%
Henrico Co	40.6%	10.4%	36.1%	9.0%	4.8%	39.7%
Hopewell	88.4%	0.3%	57.1%	9.3%	6.7%	26.5%
New Kent Co	21.3%	1.0%	10.0%	5.2%	6.2%	77.6%
Petersburg	100%	0.6%	91.5%	4.6%	0.9%	2.3%
Powhatan Co	16.7%	0.4%	5.7%	3.1%	3.5%	87.2%
Prince George	40.7%	1.0%	32.0%	11.1%	7.6%	48.2%
Richmond	99.8%	1.3%	71.1%	14.0%	2.0%	11.6%
Sussex Co	70.9%	0.2%	75.0%	3.2%	1.4%	20.2%
PK-12 Reg. Avgs.	52.8	2.1%	38.8%	7.6%	4.6%	46.9%

At the same time, the outer-ring counties of Amelia, Powhatan, Goochland, Louisa and New Kent are among the fastest growing U.S. exurbs in terms of white residents (Brookings, 2011). In short, the geographic scope of the issues confronting the region in 1973 has expanded considerably, just as the costs of inaction have risen. Figures 1-6 illustrate these trends over time for area elementary schools. Each pie represents an elementary school; red denotes the share of white students, green the share of black students, yellow the share of Hispanic students and purple the share of Asian students. Figure 5 presents the same basic scheme with darker green representing the share of students eligible for free and reduced lunch and lighter green representing those who are not eligible.

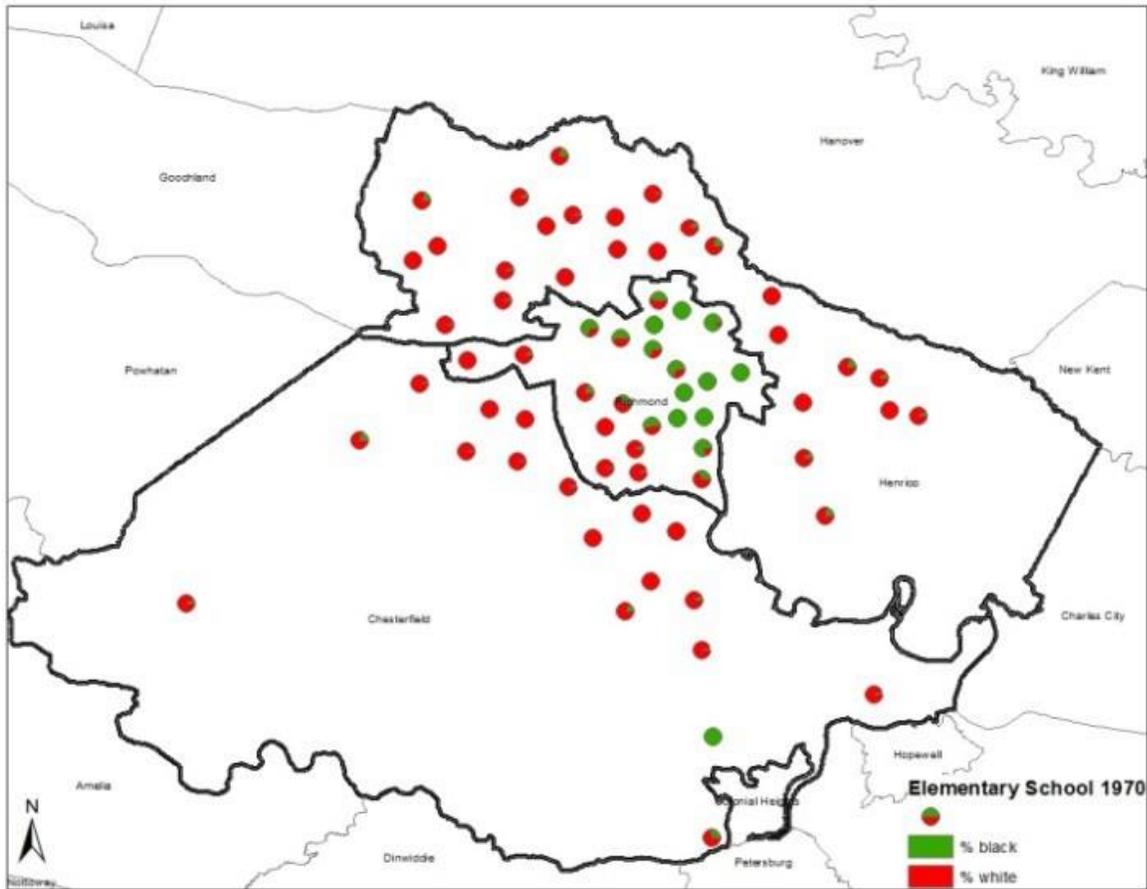


Figure 1. Richmond, Henrico and Chesterfield Enrollment by Race, 1970.

Source: Bradley v. Richmond, 1972

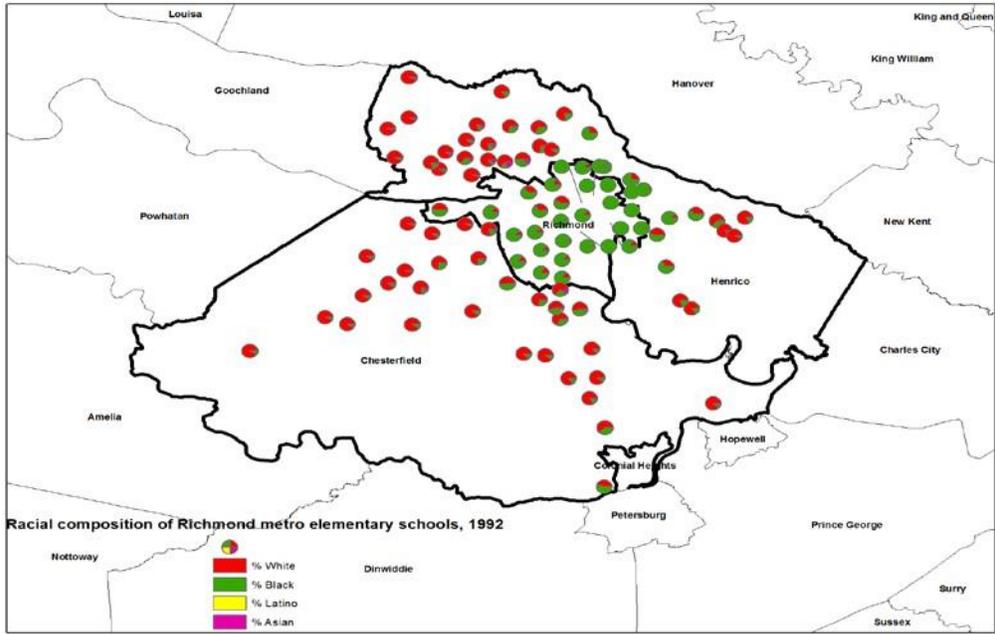


Figure 2. Richmond, Henrico and Chesterfield Elementary Enrollment by Race, 1992.

Source: NCES Common Core of Data.

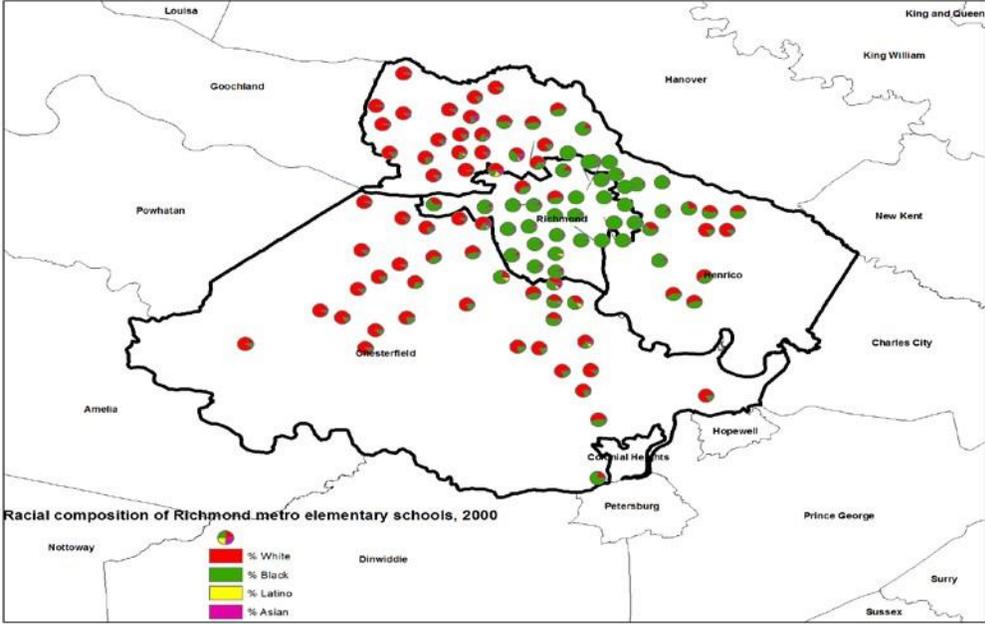


Figure 3. Richmond, Henrico and Chesterfield Elementary Enrollment by Race, 2000.

Source: NCES Common Core of Data.

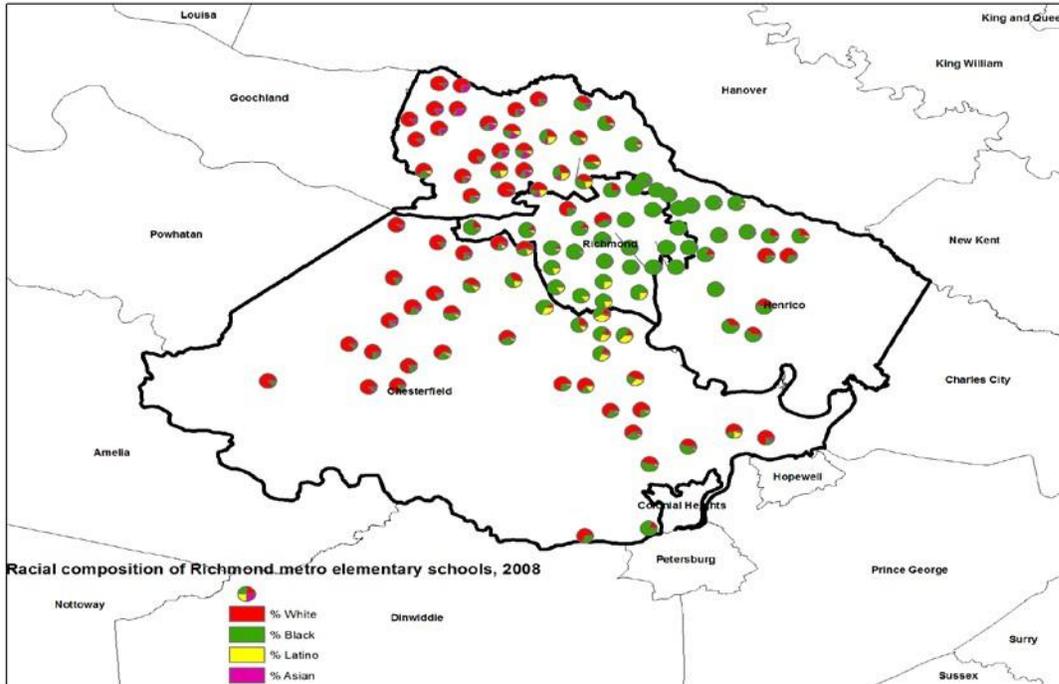


Figure 4. Richmond, Henrico and Chesterfield Elementary Enrollment by Race, 2008.

Source: NCES Common Core of Data.

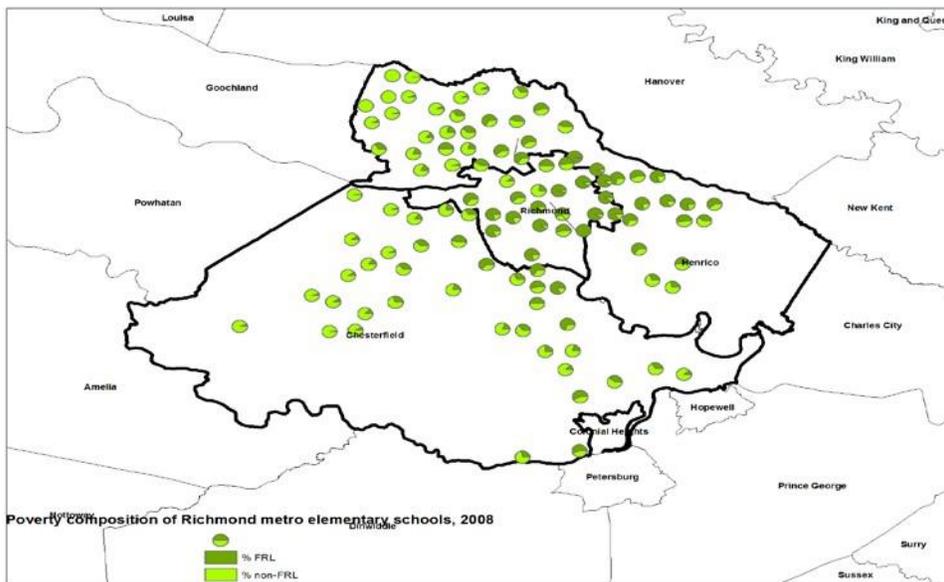


Figure 5. Richmond, Henrico and Chesterfield Elementary Enrollment by Free and Reduced Priced Lunch Status, 2008. Source: NCES Common Core of Data.

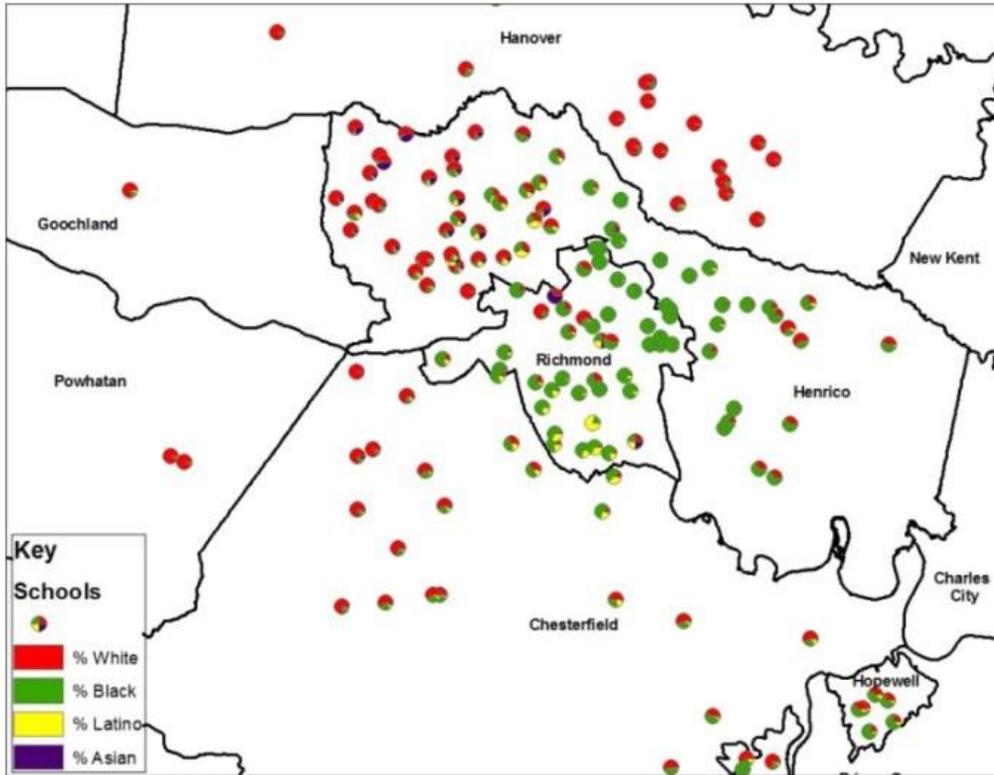


Figure 6. Richmond Area Elementary Enrollment by Race, 2013.

Source: Virginia State Department of Education.

More than six decades of research indicate that racially and economically separate schools disadvantage all students (see, e.g., Braddock, 2009; Linn and Welner, 2007; Mickelson and Bottia, 2010). In contrast, well-designed diverse schools offer increasingly important benefits – not the least of which is experience navigating across the racial and economic fault lines in our society (Hawley, 2007; Wells and Crain, 1994) and student preparation for the nation’s multicultural citizenry and global economy.

Given these realities, drawing students across area school divisions is fundamentally critical to reducing isolation by race and poverty and to increasing opportunities for learning amidst a wide array of experiences and backgrounds. **CodeRVA will be the first regional magnet school in Virginia with an explicit emphasis on promoting access, equity and diversity.**

3. Magnet School Theme: Computer Science/Information Technology

Spurred by a 2015 Virginia Department of Education grant competition to design an innovative high school experience that also addresses local workforce needs, a working group of representatives from ten school divisions, area universities, and community colleges came together under the leadership of Dr. James F. Lane, now superintendent of Chesterfield County Public Schools, to investigate high school redesign models. The educators were joined by members of the Greater Richmond Technology Council (RVATech), a 501C(6) association of 150+ local area businesses and organizations working together to ensure the continued growth of central Virginia's technology-based economy.

The group's work was informed by a 2014 effort in which the area's education and industry leaders applied to the U.S. Department of Labor for a grant to reduce the need for employers to hire foreign workers on H-1B visas. At that time, a study by Chmura Economics and Analytics determined that all economic and employment data pointed decisively to Computer Science/Information Technology (CS/IT) as the greatest area of unmet need, both from the lack of a career preparation pipeline and the number of unfilled employment opportunities available now and projected in the future (Chmura 2016).

Chmura Analytics also overlaid industry demand with career areas that offer workers the ability to achieve economic self-sufficiency. The results indicated that 8 out of 10 STEM occupations are in the CS/IT cluster, and range in average income from \$50,200 to \$124,300. The report underscored specifically the importance of creating and expanding educational offerings that increase access to employment opportunities in these critical fields for underrepresented people and distressed communities (Chmura 2016).

The demand for high level software developers and systems engineers is enormous. The Bureau of Labor Statistics projects 19.9% growth from 2014 to 2024, which is higher than most other job categories and second in projected median salary (Bureau of Labor Statistics 2016). A study funded by Microsoft reports that there are 120,000 new jobs created in the United States each year that require the skills of workers with degrees in computer science. The U.S. education system, however, produces only 49,000 such degrees annually, creating a gap of 71,000 available jobs (Microsoft 2012).

Not all jobs calling for digitally-literate workers, however, require a four-year degree. *Crunched by the Numbers*, a report by Burning Glass Technologies (2015) highlights demand in the middle-skill job market. Middle-skill jobs are roughly defined as those that require more than a high school education but less than a bachelor's degree. Comprising 39% of U.S. employment, these types of careers have supported a middle class lifestyle for generations. Middle-skill jobs that require digital skills such as those in medical billing and operating computerized drill presses are growing at a faster rate than others. Currently, nearly eight in ten middle skill jobs require significant interaction with a computer, including some level of programming or coding. Digitally intensive jobs in advanced manufacturing, medical electronics, civil engineering, and a vast array of other industries pay more than jobs that do not have a digital component, offering on average, 18% more per hour.

Within Virginia, estimated increases in demand by industry cluster indicate that by 2030, there will be over 65,000 middle and high skill CS/IT jobs in the Richmond metropolitan area requiring an associate's degree or higher that will go unfilled at the current rates of degree attainment (Chmura 2016). These include employment in health care, finance, advanced manufacturing, engineering, and other high-wage, high-demand fields. Establishing a new

educational infrastructure that creates a digitally-literate workforce capable of filling these jobs will improve economic outcomes for both students and the region.

The terms computer science and information technology are frequently used interchangeably or linked together as a career cluster. For the purposes of this application, “Computer Science” (CS) refers to the knowledge and skills necessary to design and create technology, as distinct from “Information Technology” (IT), which falls under the larger umbrella of computer science, and primarily focuses on the use of technology through applications and hardware. CodeRVA Regional High School is focused on developing the skills and knowledge necessary for students to create, as well as use, multiple forms of technology.

4. Next Generation High School Redesign Model

Upheavals in the job market and increasing globalization have prompted new questions about the ability of the traditional American high school to prepare students for the demands of the 21st century. A growing body of research is giving rise to a new generation of high school models that rethink the use of time and classrooms, leverage technology to advance learning, and move evidence of learning away from standardized testing toward competency-based progression through standards, subjects, and grade levels.

As part of CodeRVA’s two-year planning process, partners examined this research, visited model schools, and worked with area employers to design a next generation high school for the Richmond region. Multiple discussions with parent groups and community forums gauged interest in the school’s model and solicited input to its design. Resulting changes to the design suggested by parents include an increased emphasis on academic support in the online environment, greater support for the non-traditional learner, and a phased transition from traditional to student-centered learning.

The school's instructional model will comprise a rigorous curriculum grounded in computer science, self-paced learning through a combination of blended coursework (facilitated online and face-to-face), project-based learning, dual enrollment and hands-on work experience.

Assessment of student learning will be competency-based, allowing maximum flexibility for students to work at their own pace, and will coincide with exploration of career and postsecondary educational pathways. Complex problem-solving ability, creative thinking, and the ability to work easily across lines of difference will flow from well-designed collaborative projects, conscious attention to social-emotional learning, and educationally-related service learning opportunities. Through partnerships with community colleges and area employers, CodeRVA students will earn college credits, industry certifications, and participate in paid work experience, emerging at the end of four years fully prepared for post-secondary enrollment in two or four-year institutions and/or employment in high-demand, high-wage careers.

Summary: CodeRVA Regional High School, a new innovative magnet school acknowledges

- the region's history of segregation and the resulting minority isolation in the area's urban – and increasingly inner ring suburban – schools,
- the necessity of a diverse and non-traditional educational experience to prepare all students for 21st century employment and citizenry, and
- the need for proactive strategies to attract and retain underrepresented minorities and females in STEM careers

Extensive outreach, a carefully weighted, lottery-based selection process that requires only interest on the part of potential students, free transportation, and comprehensive wrap-around supports address issues of equity and opportunity across the region and ultimately, a lack of diversity in the technology workforce.

COMPETITIVE PRIORITY 1: NEED FOR ASSISTANCE

1. The costs of fully implementing the magnet schools project as proposed;

The nature of CodeRVA’s magnet theme – preparation for careers in the high-demand, high-wage field of computer science – and the innovative nature of the new school, carry significant and varied cost implications. While the partnering divisions are fully committed to creating the new school and have allocated local resources to its operation, many of the components described in this proposal are focused on providing access to a career path in an enriched environment that will result in greater engagement and an increased likelihood of success among underrepresented minorities. Full implementation of the magnet program and its early ability to recruit, support, and retain a diverse population of students from twelve partnering school divisions for the purposes of reducing minority isolation is dependent on supplemental funding. These costs include additional personnel, technology, instructional resources, and professional development in new concepts and practices.

The **supplemental funding** needed to establish and institutionalize a fully optimized magnet program is **\$5,992,078** over four years, after which, the school anticipates reaching **full sustainability**. Explained in detail in Quality of Project Design and in the Budget Narrative, these projected costs are deemed necessary and essential to successful implementation of this comprehensive plan and are heavily weighted toward supporting the school’s most vulnerable students.

TABLE 3: Estimated MSAP Project Cost					
Category					
Personnel	\$576,251	\$800,391	\$816,098	\$552,070	\$2,744,810
Fringe	\$217,699	\$307,450	\$313,576	\$210,605	\$1,049,330

Travel	\$22,340	\$24,500	\$27,250	\$29,500	\$103,590
Equipment	\$35,000	\$85,000	\$50,000		\$170,000
Supplies	\$26,200	\$353,700	\$190,050	\$178,600	\$748,550
Contractual	\$265,775	\$275,925	\$260,875	\$221,075	\$1,023,650
Other	\$19,500	\$19,500	\$19,500	\$19,500	\$78,000
Indirect	\$14,097	\$22,529	\$20,541	\$15,175	\$72,342
Totals	\$1,177,313	\$1,889,447	\$1,698,342	\$1,226,976	\$5,992,078

2. The resources available to the applicant to carry out the project

Without MSAP federal funding, CodeRVA will not reach its full potential as a magnet school. While the Virginia Department of Education (VDOE) and Governor Terry McAuliffe are active proponents of high school redesign efforts (see attached letters of support), the General Assembly appropriated only enough funding to award five planning grants (2015) for High School Innovation designs at \$50,000 each and five one-year implementation grants (2016) of \$50,000 each. The VDOE was very clear that there is and will be no additional state funding for the new school models. The other four innovation awardees proposed to reconstitute existing high schools, each with existing facilities, staff, and infrastructure. Of the five grantees, only CodeRVA is designed as a new, stand-alone innovative regional school focused on offering equity of access to underserved populations.

Regional schools are not new to Virginia; inter-division Governor's Schools are well-established and exist to offer a degree of choice to students in smaller divisions. Both Maggie L. Walker Governor's School (MLWGS) in central Richmond and Appomattox Governor's Schools in Petersburg serve students in similar jurisdictions as the proposed CodeRVA but the Governor's Schools recruit, screen, and enroll only students that are identified as gifted and

talented as determined by previous academic history and entrance exams. The presence of MLWGS in central Richmond, however, offers a significant resource to CodeRVA: a regional school transportation network funded by the local school divisions.

The greater Richmond metropolitan area encompasses 4,578 square miles with public transportation available only in the city and immediate Richmond area. Like most post-war suburbs, the surrounding counties are heavily dependent on automobiles. Because of the distances involved and the lack of alternatives, each of the divisions with students enrolled at MLWGS offers free bus transportation to and from their home divisions. CodeRVA will leverage this existing resource to enable students from across the region to participate in the new innovative regional school regardless of economic background or parents' ability to provide transportation; and without the barrier of a history of high academic achievement.

CodeRVA will open in 2017-18 (MSAP Year I) to 49 – 9th graders and 42 – 10th graders for a total of 91 students. Year I is unique for two reasons: 1) Enrolling 9th and 10th grade students: In future years, the school will enroll only incoming 9th grade students, but because of the uncertainties associated with such a unique high school model, a decision was made early in the planning period to recruit from a broader applicant pool. 2) A cohort of 91 students: The first year's number of students was limited by individual school divisions' budgets. At \$9,750 per student, the startup operating costs were higher than anticipated and divisions were unable to commit to the 100 slots originally envisioned for Year I.

Both of these anomalies will be resolved in Year II. The level of interest demonstrated by the unanticipated number of applications and the success of the first lottery selection have buoyed confidence in the school's ultimate ability to achieve its vision. Estimated annual enrollments follow:

TABLE 4: CodeRVA Annual Enrollment						
School Year	MSAP	9th Grade	10th Grade	11th Grade	12th Grade	Total
2017-18	Year I	49	42			91
2018-19	Year II	100	49	42		191
2019-20	Year III	100	100	49	42	291
2020-21	Year IV	100	100	100	49	349
2021-22	Post MSAP	100	100	100	100	400

As the school grows and reaches full capacity, division superintendents (and tax payers) expect the per student costs to be similar to those at existing Governor’s Schools. CodeRVA tuition in 2018-19 is budgeted at \$8,500 in Year II, with modest 2% increases for inflation through Year V. Based on these estimates, the following operating budgets are assumed:

TABLE 5: Local Operating Funds				
School Year	MSAP	Enrollment	Calculation	Operating Budgets
2017-18	Year I	91	91 x \$9,750	\$887,250
2018-19	Year II	191	191 x \$8,500	\$1,623,500
2019-20	Year III	291	291 x \$8,670	\$2,522,970
2020-21	Year IV	349	349 x \$8,850	\$3,088,650
2021-22	Post MSAP	400	400 x \$9,000	\$3,600,000

While the early annual operating budgets are sufficient to open the doors of the school, provide core content teachers, and basic instructional resources, it is insufficient to create the highly supportive, technologically rich environment envisioned for CodeRVA in its early years. These local operating funds will support the following basic needs:

- **Facilities:** After an extensive search, planning team members identified a large ADA-accessible office space within a 5-minute drive of MLWGS that is being re-purposed as CodeRVA Regional High School. The need for the school to be centrally located in the region, and in proximity to MLWGS to leverage its transportation network, had a significant impact on CodeRVA’s overhead costs as commercial real estate in central Richmond is in high demand and commands a premium. The remodeled space will offer the open, flexible environment conducive to CodeRVA’s innovative instructional model and sufficient space to accommodate the school’s needs as it grows. Local funds are being used to lease the space as well as provide for basic infrastructure needs such as utilities, phone service, and internet access.
- **Instruction:** Teachers in the core content areas will facilitate and support students’ online and blended learning. Beginning with three full-time certified teachers and growing to at least twelve as the school grows, teachers with multiple endorsements will teach blended courses, provide assistance to students as they move through online courses, and provide small group instruction and support. CodeRVA’s local operating budget will also support teachers for special needs students and for Limited English Proficient (LEP) students. Resources are insufficient, however, to provide adequately for the multi-tiered instructional support staff identified in this proposal: MSAP-funded Academic Case Managers will develop one-on-one relationships with students over their CodeRVA careers and will facilitate the research-supported innovative practices of student-centered, personalized learning and project based learning. Intervention specialists in mathematics and reading will provide intensive support to students with academic gaps in their backgrounds.

- **Other Staff:** Local funds are budgeted to support Virginia’s Standards of Quality for support staff, including a scheduling counselor, a school nurse, and an office manager. In the absence of MSAP funding, however, staff to support the integration of computer science concepts across the curriculum and a counselor focused on developing students’ workforce skills would be absent, as would a full-time computer science teacher until the school grows sufficiently to support the positions.
- **Outreach and Marketing:** The CodeRVA Executive Director and partnering school divisions will continue to disseminate information and materials on the unique opportunities provided by CodeRVA. Without the MSAP-funded Outreach Coordinator, however, the extensive recruitment and parent engagement plans detailed here will be compromised, reducing the ability of CodeRVA to ensure the participation of underrepresented students, including minorities, females, English Language Learners, and students with disabilities.
- **Curriculum:** Partnering division instructional and curriculum specialists are completing a curriculum framework for blended and integrated coursework that will facilitate students’ accelerated completion of high school requirements. Going forward, local funds will be used to support CodeRVA teachers as they develop and deliver lesson plans that integrate the curriculum frameworks with resources provided by the contracted online content delivery system, as well as pay subscription fees for courses that are offered completely online. Supplemental MSAP funding would facilitate the highest quality, most engaging online coursework and supplemental resources as well as development of unique CodeRVA-specific integrated courses for students.
- **Professional Development:** Although ongoing pedagogical professional development

for CodeRVA teachers will be provided through local funds and partners, the training and support in student-centered, personalized learning, project based learning, social-emotional learning, and the embedded coaching proposed in this application would not be feasible, nor, critically, would the training and best practices to be provided by Magnet Schools of America and IDRA (Intercultural Development Research Association) Virginia's regional Equity Assistance Center.

- **Equipment and Technology:** Instruction and practice in coding, computational thinking, modeling, and simulation will require powerful laptops for student use. At local funding levels, students can be provided with Chromebooks, but this equipment does not have the technological power to prepare students for their future careers. With MSAP funding, the Chromebooks provided to students for Year I will be replaced in Year II with more powerful laptops. The Chromebooks will be retained for student use in the event of loss or as temporary replacements.

3. The extent to which the costs of the project exceed the applicant's resources;

Based on available estimates and budget projections, the state-of-the-art student-centered innovative magnet high school will need a total of **\$14,114,448** to operate for a four-year period. Anticipated revenues in Years I-IV are **\$8,122,370**, creating a gap between local funding and full optimization of **\$5,992,078**. Partnering divisions are committed to the school but cannot afford the per student tuition that would guarantee the school's early success as a magnet school that recruits, enrolls, and supports a diverse population from varying socio-economic and cultural backgrounds. Budget projections do, however, indicate that the school will reach full sustainability at 400 students, with all MSAP-funded instruction and support personnel absorbed by local funding.

TABLE 6: CodeRVA – Full Implementation					
	Year I	Year II	Year III	Year IV	Post-MSAP
Fully Implemented	\$2,064,563	\$3,512,947	\$4,221,312	\$4,315,626	\$3,591,046
Region I Commitments	\$887,250	\$1,623,550	\$2,522,970	\$3,088,650	\$3,600,000
Extent that Costs Exceed Resources	\$1,177,313	\$1,889,447	\$1,698,342	\$1,226,976	-\$8,954

4. The difficulty of effectively carrying out the approved plan

The Richmond region proposes to implement an innovative magnet school program that will recruit traditionally underrepresented minority and female students for education and preparation that lead to high-paying, high-demand careers and/or post-secondary education. The school is being designed to identify, engage, enroll, and retain youth who are interested in the possibilities offered by a unique instructional environment. Accomplishing the project’s goals, and adequately addressing the long term outcome of building a diverse technology workforce prepared to navigate a rapidly shifting society, will require a diverse student body, a technology-rich environment, flexible and responsive learning spaces, real-world experiences, and culturally-aligned instructional practices and curriculum delivery.

While the resources needed are significant, 20 months into the development process, the potential of the school has generated regional, statewide, and national attention. The plan is ambitious and feasible as both a proof-of-concept and as a model of what an innovative, equity-driven high school can be. Federal funding will make it possible to introduce a completely new high school model in Virginia that addresses historic issues of segregation and poverty, and contributes to the region’s economic prosperity.

COMPETITIVE PRIORITY 2—NEW MAGNET PROJECT & EVIDENCE BASE

1. New Magnet Project

CodeRVA is a completely new, next generation magnet high school designed to better prepare students for careers in computer science while addressing the nature of segregation and minority isolation in the greater Richmond region. No locality in Virginia has received a federal Magnet Schools Assistance grant, and magnet schools such as those traditionally supported through the MSAP are non-existent in central Virginia. Although the website PublicSchoolReview.com lists 47 Virginia high schools as magnets, most are programs within schools that are designed to appeal to and attract high-achieving students to a specialized area of interest. All have application procedures that entail pre-requisite coursework, minimum grade point averages, teacher recommendations, and/or interviews. Only one, Community High School in Richmond, states a preference for high-achieving students who are also low-income. While these schools increase student and parental choice, none have the explicit goal of increasing access, equity, or diversity. As a result, these “specialty centers” have little to no impact on historic patterns of economic and racial segregation and in fact often exacerbate them. When it opens in September 2017, CodeRVA will offer a critically important model of admissions and recruitment that will inform other schools of choice in the area.

2. CodeRVA Evidence-Base:

In addition to its emphasis on high school innovation and preparing central Virginia’s workforce for the rapidly growing field of computer science, CodeRVA is fundamentally committed to fostering racial and economic school integration in a highly segregated region. The inter-district school is designed to facilitate desegregation across school boundary lines and to promote academic and social gains for students. The innovative high school format also

builds dual enrollment opportunities into the curriculum, an intervention which has been linked to academic achievement in high school and college, as well as school completion and attainment. Evidence for each of these assertions is shown below and the referenced full studies are attached in Appendix 6.

CodeRVA's inter-district design is similar to Connecticut's inter-district magnet programs, arguably the nation's leading national example of voluntary desegregation across school district boundary lines. Controlling for selection bias by using data to track over 500 students who both won and lost the admissions lottery to Connecticut's inter-district magnet schools (n=54), a quasi-experimental 2009 study provided moderate evidence to indicate that central city students attending an inter-district high school experienced positive effects on math and reading achievement (Bifulco, Cobb & Bell, 2009). Using student survey data from 16 schools, a separate evaluation by the same authors found that 12th grade central city magnet school students reported higher levels of attendance, a stronger peer academic environment and more cross-racial friendships than city students in non-magnet schools and that all magnet students reported better relationships across racial lines than non-magnet students in the city and suburbs (Cobb, Bifulco & Bell, 2009). The study also found that Connecticut's inter-district magnet schools were effective in shifting the peer environments for city students, who, on average, attended schools with higher shares of white students, higher test scores and lower shares of low-income students. In other words, Connecticut's inter-district magnets effectively reduced racial and economic isolation for the city students attending them. Given CodeRVA's comparable inter-district, city-suburban design and focus on reducing racial and economic isolation, we expect, and will measure, that CodeRVA will promote similar outcomes around achievement, social/emotional learning and peer diversity.

The relationship between reduced racial and economic isolation and improved academic achievement is underscored by a new descriptive study based on over 100 million test score records from students in grades 3-8 enrolled in public schools from 2009-2012 in approximately 320 U.S. metros (Reardon, 2016). Examining 16 different measures of segregation, Stanford professor Sean Reardon found that racial disparities in exposure to poverty in schools is the most significant correlate of achievement gaps. This study provides promising evidence that schools like CodeRVA, which is working to reduce black and Hispanic students' high exposure to low income students, will also reduce achievement gaps.

Finally, CodeRVA's programmatic emphasis on dual enrollment is linked to a number of important attainment and achievement outcomes for students. *Early College, Early Success: Early College High School Initiative Impact Study* (Berger, Garet, et al. 2014) is listed in the What Works Clearinghouse as "Meets WWC Standards without Reservation" and "Showing at Least One Statistically Significant Positive Finding." This 2014 randomized control trial involving 2,458 high school students in five states yielded strong evidence that students experiencing a dual enrollment intervention were significantly more likely to graduate high school (improvement index=9), enroll in college (improvement index=12) and obtain a college degree (improvement index=38) (Berger et al., 2014). The same study also indicated that students experiencing the dual enrollment intervention had significantly higher achievement in English language arts (improvement index=6). The project's evaluation will measure similar outcomes given CodeRVA's commitment to students' participation in dual enrollment courses offered through local community colleges as part of the school's design to ensure that students graduate with progress towards, or completion of, an associate's degree.

COMPETITIVE PRIORITY 3—SELECTION OF STUDENTS

From its conceptual beginning, CodeRVA Regional High School has proposed to use a weighted lottery process for student selection to ensure equity of access for all students. In preparation for the first year's selection of students, the CodeRVA Executive Director contracted with the Alves Educational Consultants Group (AECG) in November 2016 to design, test, and implement a diversity conscious admissions lottery and enrollment process. The outcome is a clear and transparent system for recruiting and selecting students to achieve socioeconomic diversity through the use of computer software (Ashley 2014).

Originally, the school's diversity targets were established at +/- 10% of regional demographics. The success of the first year's lottery selection, however, has prompted CodeRVA to set a more ambitious diversity goal of a student population that is within +/-5% of the overall socioeconomic (SES) and racial/ethnic makeup of the participating school divisions. In the selection process, lottery weights are applied first to race-neutral SES indicators. These factors include self-reported data on students' family income, highest educational attainment level of parent/guardian(s), and the number of adults and children in the students' household, along with students' free and reduced price meal eligibility. The lottery application also collects information on racial/ethnic background, academic achievement level, and sex. Race is considered only if racial diversity goals cannot be met through the use of race-neutral indicators. Since the purpose of the weighted lottery is to ensure that students who are traditionally underrepresented in computer science fields gain representative access to the school, female applicants may also receive priority. More detailed information on CodeRVA's evidence-based definition of SES and the actual mechanics of the lottery is provided In Competitive Priority #4.

Lotteries that give priority to students who are traditionally hard to attract to schools of choice are better able to ensure that a school meets its racial and SES diversity goals compared to straight lotteries that are solely dependent upon the diversity of the applicant pool mirroring the diversity of the community being served. As the first year’s applications were received, real-time monitoring of the diversity of the applicant pool allowed the CodeRVA Executive Director to adjust his outreach and marketing efforts to increase the number of applications from target middle schools and communities. Going forward, it will be critical to maintain those efforts, particularly in the early years when the reputation and identity of the school is first being established. To ensure that CodeRVA continues to meet its diversity goals, the school’s planners have developed an extensive outreach and recruitment plan to be executed by a full-time staff person who will work with partners to build awareness and interest among underrepresented populations.

COMPETITIVE PRIORITY 4 – RACIAL INTEGRATION AND SOCIOECONOMIC DIVERSITY

CodeRVA is designed to increase racial integration by taking into account SES diversity in several important and evidence-based ways. The inter-division model enables the school to overcome deeply rooted racial and economic separation among Central Virginia’s school systems. The Richmond area is not an outlier—the vast majority of racial school segregation today occurs because students attend different school systems, not just different schools within systems (Reardon and Yun 2002; Clotfelter 2004; Bischoff 2008; Fiel 2013; Straub and Phillips 2013; Fiel 2015). As such, magnet schools like CodeRVA, designed to attract students across multiple systems, are critical.

CodeRVA is also committed to the use of a weighted lottery that takes into account a variety of SES factors, including parent/guardian educational level, family income, number

of children and adults in a household, and eligibility for free and reduced priced meals (FRM). Using these nuanced and interrelated measures allows administrators to more accurately assess a multi-dimensional characteristic like SES (NFES 2015; Reardon, Yun and Kurlaender 2006) rather than relying solely on the limited measure of eligibility for FRM. This measure suffers from a number of drawbacks, including its somewhat arbitrary cut-off point (families just above the eligibility level are not demonstrably different from families just below), increasingly inaccurate data as children grow older and more aware of potential stigma (Marples and Spillman 1995), and recent shifts in data collection practice (Barshay 2015).

CodeRVA's weighted lottery will help the school meet its racial and economic diversity goals through the following process: The lottery algorithm is designed to fill the Grade 9 seats that have been allocated to each school division in accordance with the region's percentages for low, medium and high income households and its males and females. Based on the pool of applicants, students are first identified as low-, medium-, or high-SES according to the students' family income and parents' or guardians' highest educational attainment. Low-, medium-, and high-SES students are defined using the categories below:

- **Low-SES Students** are students whose family gross income is below \$50,000 and their parents' or guardians' highest educational attainment is predominately a high school diploma, GED, or less than high school.
- **Medium-SES Students** are students whose family gross income is between \$50,000 and \$99,999 and their parents' or guardians' highest educational attainment is predominately some college, an associates' degree, or a BA degree.
- **High-SES Students** are students whose family gross income is \$100,000 or higher and their parents' or guardians' highest educational attainment is comprised mostly of parents with a Master's degree, Doctorate, or advanced professional degree.

A weighted controlled choice computer algorithm is used to select applicants for CodeRVA. To ensure the integrity and objectivity of the CodeRVA application and lottery assignment process, a transparent and “points-based” computerized lottery assignment algorithm is used to assign the students in accordance with their socioeconomic status and the number of seats that are allocated to their participating school division. A unique random number is computer generated for each applicant which represents the “base points” that an applicant will have toward being assigned to CodeRVA.

The algorithm is further programmed to give applicants additional points that are added to their random number in relation to a number of socioeconomic and other factors including monthly income levels, specific educational attainment levels, number of adults in the household, and number of minor children in the household. Under the algorithm, applicants from each socioeconomic group that have the highest point scores are assigned before applicants with fewer point scores from their respective SES grouping. If the use of multiple SES factors in the algorithm does not allow CodeRVA to meet its racial diversity goals, race may still be taken into account. Given the strong—though imperfect—correlation between race and poverty in the Richmond region, however, we expect the race-neutral lottery to help produce racial diversity (Reardon et al. 2006).

Controlled choice lotteries have been used to successfully meet and maintain racial and economic diversity goals in many different divisions, included Wake County, NC, Cambridge, MA, Champaign, IL, Louisville, KY and Berkeley, CA (Bhargava, Frankenberg, and Le 2008; Potter, Quick, and Davies 2016). CodeRVA will continue to work with AECG throughout the project period to update the lottery selection process to reflect current regional demographics and adjust the algorithms to optimize final assignment results.

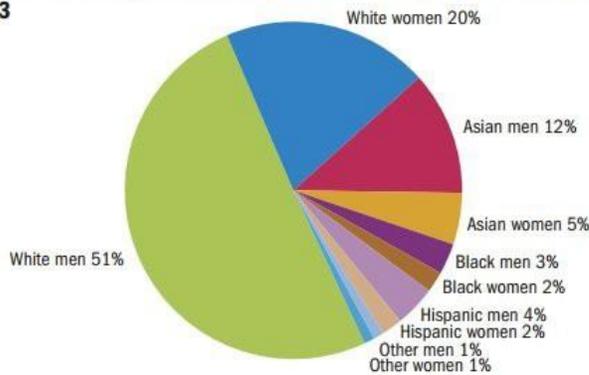
PROGRAM NARRATIVE

(A) DESEGREGATION

1. The effectiveness of plan to recruit students

Ample data exist to support the dearth of minority and females in the current technology sector and in the educational pipeline leading to careers in technology. According to the National Center for Science and Engineering Statistics, those working in science and engineering fields are overwhelmingly white and male, with women comprising only 30% of the total.

**Scientists and engineers working in science and engineering occupations:
2013**



NOTE: Hispanic may be any race. Other includes American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, and multiple race.

Without conscious and strategic intervention, there is little indication the future workforce will be any more diverse. Given that these jobs are frequently an entry point into a solidly middle class life, the extent to which this employment sector is not diverse continues to exclude minorities from a key economic opportunity.

The College Board's 2014 *Report to the Nation* on the ethnic and gender distribution of students taking the 2013 AP Computer Science exam are shown in the graphic below: 54.2% of those taking the exam were white and 81% were male. Those of Asian heritage are the second largest group at 28.3%. African Americans and Hispanic/Latino represent 4.2% and

9.0% respectively. In Virginia, 1,655 AP Computer Science exams were administered in 2013, only 16 of which were taken by African American girls.



AP Computer Science A Exam Takers 2013

(College Board 2014)

The second major issue revealed in this report is the fact that fewer AP Computer Science exams are taken than in any other subject. For example, there were 22,273 CS exams taken compared to 366,641 AP U.S. History exams. Although the statistics are improving, as recently as 2013, Code.org reported that only 25% of U.S. K-12 schools offered any level of programming instruction and only 1% of U.S. students enroll in computer science coursework.

Students traditionally begin to identify their career choices in late middle school and early high school. To identify an interest in a career pathway, students need to connect to a subject early on. Consequently, the availability of computer science courses is critical to building a technology workforce. Success in computer science degree programs requires substantial pre-college education and skills development, particularly in mathematics. A lack of preparation and encouragement in the middle school and even elementary levels continues to result in a lack of interest in computer science programs later in students' educational careers (Hoffman 2016). Without widespread availability of age-appropriate sequential coursework that attracts and prepares students, computer science is not on students' radar except through informal

exposure (after school enrichment, summer camps, etc.) or family connection to the field, both less prevalent in low-income populations.

Nor are K-12 schools prepared to provide coding or computer science coursework. Only seven states have any recognized standards for computing at the K-12 level. Computer science courses may count only for electives or not at all toward graduation, thereby reducing interest on students' part. Compounding the issue is a dearth of those qualified to teach computer science. This problem is two-fold: lack of a pathway to teacher certification in computer science, and the high demand for CS employees. Few of those trained in CS choose to enter teaching given their ability to earn substantially more in the private sector.

The reasons for minority and female's low participation in STEM fields in general and computer science specifically have been the subject of countless studies, but findings usually point to lack of exposure, lack of role models, and/or a perception of not fitting the stereotype of a programmer (CSM 2016). To respond to these obstacles, recruitment to CodeRVA will be broad-based and multi-pronged, seeking over time to address both institutional and specific barriers to enrollment.

Recruitment Plan: Developing the Pipeline – To address the region's institutional issues, CodeRVA High School's founding partner CodeVirginia (<http://www.codevirginia.org>), the local nonprofit partner of Code.org (<https://code.org/>) is actively engaged in advocacy to promote computer science across Virginia. CodeVirginia's advocacy was instrumental in the General Assembly's 2016 passage of legislation that will embed computational thinking and computer science across Virginia's Standards of Learning. CodeVirginia and Virginia Commonwealth University's School of Education (VCU-SOE) are also working to develop graduate coursework toward an endorsement that will increase the

number of teachers qualified to teach computer science. Finally, CodeVirginia has trained more than 800 teachers statewide in embedding computational thinking into the elementary classroom, and to teach stand-alone secondary courses with an endorsement in secondary mathematics.

CodeVirginia and the Richmond Technology Council (RVATech) are both strongly committed to increasing access in low-income communities through support for low or no cost summer and after school coding camps designed to dispel stereotypes and broaden appeal. Through topics such as computer animation, game building, music composition, robotics, and other traditional and non-traditional applications of coding, children ranging in age from elementary to upper middle school are introduced to basic programming languages and non-gender-stereotyped projects. For example, CodeVirginia’s E-Textile Creations Camp “combines crafting with technology to express personality. Participants sew with conductive thread and use LED lights to create a functioning piece of technology.” RVATech sponsors the annual “Techsters” coding event for middle school girls, and member organization Capital One sponsors C1 Coders in low income middle schools across the region.

With CodeVirginia’s assistance and advocacy campaigns, participation in Code.org’s national awareness campaign Hour of Code has exploded across the Richmond region. In December 2017, every school in the CodeRVA consortium conducted some activity related to coding. The Richmond City Council has issued proclamations for the past four years promoting the Hour of Code and National Computer Science Week, and last year, hosted a Star Wars-themed Jedi Prom, tying computer science to the launch of the most recent Star Wars movie and highlighting its female protagonist.

Recruitment Plan: CodeRVA Regional High School – While all of these initiatives increase opportunities for exposure and will build awareness and interest in attending CodeRVA in the long-term, an extensive recruitment plan has also been developed to ensure a diverse applicant pool for the school’s early years. It is critically important to the school’s identity and success that it not become perceived as a school for white males. Many of the region’s STEM-focused Governor’s Schools and high school specialty centers remain effectively segregated by race and gender because of historic patterns of eligibility, application, and enrollment. Without strategic intervention and targeted outreach to underrepresented populations – that is informed by the lottery software’s real-time demographic characteristics of the applicants – CodeRVA risks becoming identified as a school for “brogrammers.”

To implement this recruitment plan, CodeRVA staff will include an experienced marketing and outreach coordinator who will develop presentations that emphasize the school’s culture of equity, diversity, and support to those traditionally underrepresented in computer science. The outreach coordinator will conduct the following activities:

- **Parents and Community:** Presentations offered through parent groups, community organizations, and churches that provide information on the range and variety of careers in computer science and the earnings potential in CS-related occupations. Partnering school divisions will aid the outreach coordinator in identifying and scheduling presentations.
- **Education Professionals:** Presentations to elementary and middle school counselors and special education coordinators across the region on careers and earning potential, certifications and degrees available at various educational levels, and information specific to CodeRVA such as the application and selection process, and the range of supports in

place that will help students succeed in the non-traditional high school environment.

These sessions are especially important given the lack of precedent for an equity-based choice model in the Richmond area.

- **Youth Programs:** Presentations to community-based after school program staff such as the Boys and Girls Clubs, the YMCA, and 21st Century Community Learning Center sites to encourage coding activities and clubs, and to recruit potential applicants. Each of these organizations has a focus on serving low income and underserved young people.
- **Industry:** Developing industry and educational partnerships to recruit and train teachers and volunteers to offer after school coding clubs in school and community based locations.

Finally, in collaboration with business partners and participating school divisions, comprehensive marketing plan targeting parents and students in late elementary and middle school grades is being designed that will include the following media and outlets:

- A CodeRVA website with relevant information on the weighted lottery, admissions process, the availability of free transportation, coursework, internships, careers, and earnings potential. Links will be placed on all partnering division middle school sites. The current website is located at www.coderva.org and will be updated with more information as the school launches.
- Promotional videos produced by CodeRVA students in English and Spanish will be posted on the website to highlight their projects and interactions with area leaders.
- Print materials in multiples languages for placement in the Outreach office, school counseling offices in participating divisions, and community sites.
- A comprehensive social media presence including Facebook, Twitter, Instagram, Google+, Tumblr and others that arise.

- All photographs and visual images will reflect multiple races, ethnicities, and genders.
- Materials will be developed highlighting characteristics of computer science careers that have been proven to be appealing to girls, including those that are socially relevant, enhance creativity, provide opportunities for collaboration, and offer flexibility in location and industry type.

2. How the school will foster interaction among students

Research indicates that purposeful integration operates to the benefit of all students and integration and multicultural exposure have been shown to be beneficial as well. A recent report from The Century Foundation states that “students’ exposure to other students who are different from themselves and the novel ideas and challenges that such exposure leads to improved cognitive skills, including critical thinking and problem solving.” The report continues that, “ninety-six percent of major employers say that it is important that employees be comfortable working around colleagues, customers, and/or clients from diverse cultural backgrounds” (Wells, Fox, and Cordova-Coba).

The benefits of integrated schools do not automatically accrue once a diverse group of students is brought together, however. Four key conditions first theorized by Harvard psychologist Gordon Allport in 1954 and confirmed through hundreds of national and international studies since, help foster positive contact among students from different backgrounds (Pettigrew and Tropp 2006). These include: meaningful, frequent and equal status contact between the different groups, working cooperatively toward shared goals and strong leadership visibly supportive of the contact.

Given the educational and career benefits of a diverse student population, CodeRVA has developed early strategies to create the conditions that will foster intergroup understanding

and collaboration among a student body drawn from geographically and culturally diverse backgrounds. To help nurture and promote the leadership and culture required for successful, diverse schools where all children are given equal status, training and support to teachers, staff, and students will be provided by Magnet Schools of America, IDRA, Virginia's Equity Assistance Center, and the Virginia Center for Inclusive Communities (VCIC) in each year of the grant. VCIC assists schools, businesses and communities across Virginia to overcome prejudices in all forms and achieve success through inclusion. Workshops will help students and staff understand how stereotypes, bigotry, and prejudice can negatively affect the school. Participants will gain enhanced skills in conflict resolution, coalition building, group facilitation and diversity management.

To foster cooperative contact among different groups of students, project based learning (PBL) will be used by students to apply their learning to challenging, real-world problems. Key to PBL's approach is students working in diverse, collaborative groups for an extended period of time to investigate and respond to a complex problem. PBL is an iteration of collaborative learning, long used as a proven means to improving intercultural relationships. "Organizing learners into culturally heterogeneous teams, giving them tasks requiring group cooperation and interdependence, and structuring the activity so that teams can experience success comprise extremely powerful means of enhancing group relations" (Cotton 1993). Researchers note that participating in collaborative learning activities not only increases number of cross-cultural contacts and friendships students identify, but also the depth and importance of those friendships. Marked decreases in intergroup tension are noted as well, both by observers and by cooperative learning participants (Cotton 1993).

Together with project based learning, social and emotional learning (SEL) will be used as

both an instructional strategy and a method for promoting equal status student interaction and empathy. As defined by CASEL (the Collaborative for Academic, Social and Emotional Learning), programming grounded in SEL is based on the understanding that the best learning emerges in the context of supportive relationships that make learning challenging, engaging and meaningful (CASEL 2015).

Explicit instruction will occur in the five SEL competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making; and will be reinforced throughout the school’s learning practices, projects, social interactions, and community service activities. Establishing a culture of respect and relationships will be foundational to achieving a sense of unity and belonging in a school drawing from a wide range of incomes and backgrounds. Over the long term, SEL assists in developing more positive social behaviors and peer relationships, fewer disciplinary problems, less emotional interactions and corresponding academic success.



Well-designed collaborative projects at CodeRVA will also be facilitated through the use of Active Learning Center (ALC) equipment and practices. The school’s non-traditional layout in a former office space provides for a commons area, open spaces, and smaller rooms that are conducive to creating student-centered, technology rich learning environments. Tables, chairs, student desks, and whiteboard room dividers will all move easily and can be quickly

reconfigured for lecture, small group work, or individual research. Multiple wall-mounted white boards will be distributed around the perimeter of commons areas and rooms to provide space for collaborative design work, and technology will be provided so that student computer displays can be switched rapidly to display on video screens around the room or in collaborative spaces.

More frequently found in the university environment, ALCs are making their way into next generation high schools as a strategy for fostering collaboration and engagement. Central Michigan University converted a number of its classrooms to increase the retention and persistence of students in the STEM disciplines. Their experience indicates that ALCs contribute to increased class attendance, improved student performance when instructors move to active, student centered teaching methods, increased conceptual understanding when compared to lecture classes, drastically reduced failure rates, especially for women and minorities, and increased opportunities that strengthen student-to-student relationships, which benefit collaborative project outcomes (Beichner, et al. 2007). CodeRVA teachers will be trained to minimize potential challenges associated with ALC, which can include noise and other distractions that may impact individuals with certain learning disabilities.

Capital One, one of CodeRVA's founding corporate partners, has donated a wealth of contemporary furniture and fixtures from their corporate offices, including informal seating, adjustable height tables, rolling stools and lighting fixtures. These donated materials present a non-traditional appearance for a school and will serve as the foundation for the school's Active Learning Centers to be supplemented by MSAP-requested AV technology, student seating, and mobile partitions.

3. How the school will ensure equal access and treatment

Building on the approaches of interest-based, weighted lottery admissions, extensive recruitment, free transportation, and carefully-designed cross-cultural interaction outlined previously, CodeRVA will implement a range of personalized strategies designed to help all students achieve, with awareness of and support for those whose backgrounds, learning differences, or preferences have not prepared them for the computer science focus of the school. At the most basic, CodeRVA's online and blended learning platforms offer greater opportunities for equitable access and inclusion than the traditional classroom. Coursework will be self-paced and students may take whatever time is necessary to master the subject matter. Teachers can supplement online instruction with additional methodologies, content and resources to ensure that all students have the opportunity to succeed.

All teachers and staff will participate in extensive training in inclusive practices, social and emotional learning and best practices in designing and assessing projects. Included in each of these trainings will be specific strategies for supporting the academic achievement and success of underrepresented minorities and girls in computer science. Attention will be given to culturally and gender inclusive language and examples.

Tiered academic and behavioral strategies will be established from building level (Tier I) to check-ins (Tier II) to intensive support to those most in need (Tier III). Academic Case Managers (ACM) will be hired to assist each student in creating his or her personalized learning plan, and will provide on-going support to Tier II and Tier III students and those with specialized learning needs. The presence of ACMs is a research-proven strategy for closing achievement gaps in multi-cultural settings (Kannel-Ray, 2009). With equal attention given to building relationships with their students, and providing academic support, ACMs will work

to identify barriers and gaps in student learning; and coordinate resources to flexibly address those gaps as the needs of students grow and change.

4. The effectiveness of all other desegregation strategies

The previous sections provide a detailed discussion of the evidence base supporting the use of an inter-division magnet model, weighted lottery admissions, and a nuanced definition of SES that corresponds to the reduction of racial isolation, along with the provision of free transportation and an extensive recruitment and outreach plan. All are fundamental elements of a strong choice-based desegregation plan (Orfield and Frankenberg 2013).

As important as these elements are, bringing students together is just one essential component of a school designed to prepare students for postsecondary and work success in the heterogeneous 21st century. Equally important to the school is an inclusive culture of equitable opportunity and achievement. To that end, CodeRVA teachers will be trained to use practices and curricula that incorporate and celebrate difference. Diversity will be seen as an asset to the learning community. Due to its unique approach and commitment to diversity, equity, and inclusion, the program will not employ tracking or other isolating within-school practices. To the contrary, instruction focused on collaborative work through the use of project based learning and an active learning environment will foster interactions between students and build relationship across lines of difference. Through its relationship with external stakeholders, the school will also provide extra- and cross-curricular opportunities for students and staff alike to learn from one another.

(B) PROJECT DESIGN

1. How the magnet school will improve student academic achievement

CodeRVA Regional High School will be unique in Virginia and potentially the nation. This innovative project encompasses 1) twelve independent public school divisions working in unison to reduce minority isolation and provide equity of access to an unparalleled educational opportunity, 2) partnerships with local industry to provide workplace experiences and internships in high-demand fields, 3) accelerated high school completion, an associate's degree, and paid work experience, and 4) efforts to grow the region's workforce of underrepresented minorities and females in computer science.

In addition to its unique premise, CodeRVA has in place all five elements identified by the U.S. Department of Education's publication "*Successful Magnet High Schools: Innovations in Education*", prepared by WestEd in 2008 and published on the Department's website, the school is 1) innovating for excellence, 2) promoting equity 3) forging strong community partnerships, 4) designing a rigorous academic program, and 5) building a culture of high quality teaching. The determination that CodeRVA should address issues of equity in the region was driven by recognition of disparities in opportunity for minority and lower socioeconomic status students. Wide variances in funding, areas of concentrated poverty and a lack of adequate public transportation all contribute to a disparity of access to enriched educational resources.

Aggregate data from the region show significant achievement gaps between minority students and the white majority. These gaps generally hold true within individual schools, individual school divisions, and across the state. In the chart below, composite pass rates on the 2016 Reading and Mathematics Standards of Learning (SOL) assessments show

substantial differences between minority and white students. Of equal concern, but less frequently highlighted, is the lower achievement of students who are identified as economically disadvantaged. In Virginia, the common proxy for this category is eligibility for free or reduced price meals; and the chart below indicates a significant gap in achievement rates between those identified as economically disadvantaged and those who are not.

TABLE 7: SOL Pass Rates by SES and Ethnicity			
% Pass Rate	White	Minority	Econ. Disadvantaged
English SOLs	88.1%	74.7%	67.1%
Math SOLs	87.7%	77.4%	69.8%

While recognizing that scores on Virginia’s Standards of Learning assessments are only one measure of student learning, this disparity in achievement highlights both the need for a different instructional model and for more comprehensive methods of assessing student performance.

To address these concerns, CodeRVA will be the first school in the Richmond region to adopt a whole-school student-centered learning model. Student-centered learning is characterized by four elements: 1) Learning is personalized 2) Learning is competency based 3) Learning takes place anytime, anywhere, and 4) Students exert ownership over their learning. Research by the Students at the Center project, part of the nonprofit Jobs for the Future, is indicating that student-centered learning is particularly beneficial for students of color (Chiles 2015).

Particularly well-suited to an online and blended environment, personalized learning means that students determine the direction and pace of instruction. At CodeRVA, students

and faculty will co-design learning goals that are consistent with state standards, and will address those standards continuously through the learning process. Students will have ownership of the pace of their learning and how they will demonstrate mastery of standards. Each student will be provided with a laptop computer to enable anytime, anywhere access to online courses and curricular resources, adaptive assessments, collaborative forums, and project management resources. To facilitate this student-driven model, school space will be flexible with a combination of open and private spaces and technological resources that maximize opportunities for collaboration, creativity, and spontaneity.

As stated in the Overview, CodeRVA is designed to operate as a year-round school. Expanded learning time over the calendar year will allow students to accelerate or extend the time needed for individualized mastery of content and progression within the four-year structure. During the first two years, multiple online courses and competency-based progression will speed completion of rigorous high school coursework. Computer science learning will be integrated into all curricular content, with the application of computational thinking as an integral component of relevant, student-designed projects that build complex problem solving skills and creative thinking. In years three and four, partnerships with community colleges will give students access to dual enrollment coursework leading to an associate's degree and area employers will provide paid part-time employment to that further develops their digital knowledge and skills. The intent is that CodeRVA students will emerge at the end of four years with a high school diploma, an associate's degree, industry certification(s), and practical experience in the workplace.

Each student's school experience (varying during the junior and senior years while completing college coursework and workplace experience) will include:

- Access to a personalized learning plan in which students identify goals, access resources and supports, submit work, and track their progress,
- Daily and weekly “instructional playlists” that incorporate diverse learning resources including online coursework, texts, videos, peer-to-peer coaching and one-on-one tutoring and input from teachers, college instructors, and industry experts so that students master the content needed to become college and career ready,
- Use of adaptive assessments to guide students and teachers in short-term goal-setting,
- Project based learning grounded in real-world, relevant challenges to develop a sense of community and self-efficacy,
- Interdisciplinary projects that promote students’ development of competence on cross-curricular standards across multiple subject areas,
- Daily reading time that provides choice in reading selections and delivery methods,
- Daily math content learning and practice through instruction, curricular resources, tutoring and/or group work,
- Daily computer science learning integrated into all curricular content,
- Weekly or more frequent meetings one-on-one with his or her academic case manager (ACM).
- Development of skills and habits in communication, confidence, presence, collaboration, critical thinking, flexibility, time management, and leadership that facilitate post-secondary education and employment success.
- Group and community work that develops and nurtures social and emotional

awareness, empathy for others, and relationship-building skills, and

- Sustained exposure and relationships with area employers to assist in the development of long-term career planning and goal-setting,

This broad-based system of instruction and supports will meet each student where s/he is, with whatever background experiences and knowledge s/he brings. Background knowledge, cultural backgrounds, and varied learning preferences can be accommodated through truly differentiated instruction. Online and blended learning platforms provide greater opportunities for equitable access and inclusion than the traditional classroom by presenting instruction that is adaptive and responsive to the individual student's immediate learning need. Additionally, each student entering CodeRVA will be assigned an academic case manager (ACM), a teacher with special training in diagnostics and prescriptive assessment, who will stay with that student throughout his or her career at the school. Charged with identifying the human and digital resources each student needs to pursue his or her individual learning plan, ACMs will focus on the student's academic success.

A learning management system designed to support PBL and competency based progression will provide the ACMs and all teachers with ongoing feedback and data on individual student progress. Adaptive coursework, certified teachers, academic case managers, and remediation specialists will provide multiple methods of instruction in content and context, enabling each student to rise to the level of a rigorous curriculum. The goal will be to maximize student growth and individual success as measured by personal, not age-or classroom-based benchmarks.

Academic Coursework: Core content instruction in language arts, history, math, and science will be integrated and cross-curricular. Some courses will be combined to both accelerate completion and promote broader understanding of interrelated concepts. Project-

based learning (PBL) forms the core of the school’s instructional model across all content areas, while computational thinking, pattern recognition, and data analysis will be integrated into all coursework. In Language Arts and History content, for example, computational thinking will be reinforced through the integration of decomposition (breaking a complex problem or system into parts that are easier to understand), pattern recognition in literature and historical events, creation, representation, and analysis of data generated in the process, identifying the variables involved in using data representation and proposing solutions based on analysis.

Mathematics: CodeRVA’s intense focus on preparation for computer science careers makes content mastery in Mathematics critical to student success. In addition to blended learning and small group instruction facilitated by a certified mathematics teacher, a mathematics intervention specialist will be on site to assess students’ individual levels of need, identify supplemental resources, and to provide remediation and one-on-one tutoring and small group support. Personalized learning and student agency will be fostered through these multiple methods of instruction and support, as well as varying the amount of time necessary for mastery and rapid feedback through adaptive assessments. By providing these intense supports, CodeRVA will be able to offer combined math progressions that enable students to complete high school graduation requirements within their first two years of enrollment and gain competencies in computer science concepts and programming.

Mathematical Investigations I contains content from both Algebra I and Algebra II, and will be taught in a blended learning format, with practice and reinforcement available from online resources such as Kahn Academy, BrainPop, and others. *Mathematical Investigations II* will integrate Geometry and Trigonometry curricula, with an emphasis on two and three dimensional reasoning skills and the use of geometric models to solve problems. Additional mathematics

courses will be available through online resources such as Edgenuity/Compass Learning, including discrete mathematics, pre-calculus, and calculus, with support provided through facilitation and tutoring. Blended learning, online learning, and small group instruction will occur simultaneously with mathematics and computer science-related projects that reinforce specific concepts and study.

Computer Science: All mathematics courses will integrate and reinforce computational thinking and coding skills, while introductory computer science classes will provide students with experiences in computer programming techniques to solve problems set up as mathematical models. Computer science offerings will range from a basic Introduction to Computer Science to AP Computer Science A, with a number of online courses available in specific topics such as web development, game design, cyber security, and database administration supported and facilitated by math and computer science teachers. Instruction in specific programming languages will vary according to interest and projects.

Because of this intensive CS curriculum, funding is requested through MSAP to provide CodeRVA staff and students with laptops that are more powerful than the laptops, Chromebooks or iPads currently in use in some of the region's high schools. To enable the level of coding, modeling, and simulation described above, laptops will be purchased with higher speed processors, high speed graphics, and more memory than would be needed in the traditional high school environment.

Language Arts/History: Project-based learning will have a particularly strong presence in the Language Arts/History program in which courses incorporating literature, history, research, and writing will enable students to build competencies while developing an understanding of the complex and interwoven nature of the human experience. Two courses have been developed that

parallel Virginia's current 9th and 10th grade requirements. These and all courses at CodeRVA are being designed to help students transition from the passive learning they have likely experienced in their elementary and middle school years to personalized, self-directed learning, with student agency and choice increasing as they progress through their high school requirements.

Global Studies is an interdisciplinary synthesis of history, literature, and dramatic texts designed to foster curiosity and creativity. The course aims to develop students' social, aesthetic, and cultural literacy as well as their communication skills by incorporating the essential elements of geography and global history from pre-history to the 16th century. Initial readings will occur online with student agency and choice promoted through selection of specific texts. Teacher-facilitated small groups will deepen understanding and provide the foundation for each student's selection of a historical topic for in-depth research using primary and secondary sources. Following a PBL framework, students will complete their investigation and relate their learning to a current context through final group projects.

American Studies will encourage students to develop an appreciation of the artistry of literature as well as develop an ability to reflect critically on their reading of Virginia and US History fiction and nonfiction texts. This course is designed to enable exploration and promote independent and critical thinking based on a thorough understanding of topics such as exploration and colonization, cultural interactions, and the economic, social and political impact of significant events in the United States. Small groups will be created across ethnic and gender lines to promote cross-cultural collaboration on PBL projects.

Additional literature and history courses will be available online, with onsite teacher support, for students to explore areas of personal interest such as playwriting, specific types of literature,

or more detailed examination of a historical era. Students who need additional support in reading and writing strategies will meet one-on-one and in small groups with a reading intervention specialist.

Science: *Scientific Investigations I* will offer a challenging curriculum that incorporates Biology modeling and simulation. Collaborative projects and extensive analysis of current scientific literature and research will be used to promote in-depth understanding. The course of study will focus on attributes common to all living organisms and include biochemistry, genetics, evolution, matter, chemical properties and chemical equations. ***Scientific Investigations II*** will incorporate Physics modeling and simulation using the same instructional techniques and topics of earth and solar system, energy, climate change, geological processes, and renewable and non-renewable resources. Interactive technology that empowers students to create realistic and useful simulations using their own data and variables will be an integral component of the science curriculum while also emphasizing the central role of computer science as an essential tool of the modern scientist.

This combination of rigorous, engaging coursework, technological resources, collaborative projects, and extensive academic, social, and emotional supports will ensure that CodeRVA students meet the requirements of Virginia's Standards of Learning but will also promote much deeper understanding than is assessed on a standardized test. CodeRVA will give all students, including underrepresented minorities and girls, a firm foundation for college and career.

2. The applicant has the resources to operate beyond the length of the grant

a. Commitment of Partners:

Superintendents from each of the twelve partnering school divisions have committed to the ongoing support and sustainability of CodeRVA Regional High School and the voluntary desegregation plan as demonstrated by the signed Memorandum of Understanding and letters of commitment found in Appendices 1 and 2. Also attached in Appendix 5 are the formal Constitution and Bylaws of CodeRVA High School, which detail the operating relationship between partnering divisions and CodeRVA. Included in the Bylaws is a description of the mechanism by which each division will provide operating support to the magnet school. As shown in Article X (page 6), Funding, Sections 1 and 2, the signatory partners agree that:

Section 1. Student Slot Allocation

The number of student slots allocated to Partnering School Boards will be approved by the Board upon the recommendation of Executive Director of CodeRVA and the Superintendents' Advisory Council in October during budget preparations for the following fiscal year.

- Each Partnering School Board will be required to commit to a minimum number of allocated student slots by December 1 for the following fiscal year.
- During April immediately preceding the new fiscal year, adjustments to increase minimum number of allocated slots to a Partnering School Board may be made in coordination with the Executive Director of CodeRVA.

- For budgeting, staffing and scheduling purposes, on the first school day in May, immediately preceding a new fiscal year, the number of allocated student slots assigned to a Partnering School Board will be locked. This number will be no fewer than the minimum number agreed to in December. Partnering School Boards will be required to pay the tuition of the
- Pending budget approval, tuition invoices for the new fiscal year will be mailed to Partnering School Boards no later than May 15.
- Tuition payment for the allocated student slots are payable by July 15

Section 2 – Tuition Payments

Tuition will be determined by the Board upon the recommendation of the Superintendents’ Advisory Council in conjunction with the Executive Director of CodeRVA and will be communicated to each Partnering School Board’s Superintendent by November 1 preceding the new fiscal year. Each Partnering School Board, and any Additional Party or Parties, shall provide, each fiscal year, tuition for each slot allocated to their school division.

This model of shared governance and funding structure is well-established in Virginia. More than forty sites throughout the state are identified as Governor’s Schools, nineteen of which are fully operational academic year schools. These are inter-division specialized schools that provide opportunities to gifted students beyond those available in the home school and are jointly governed and financed by the participating localities.

In fiscal 2016-17, each partnering division committed \$15,000 to cover limited initial costs, including the salary of the Executive Director, legal services, and the identification and

lease of a facility. For the first year of operation (2017-18), the slots per division were first allocated based on proportional enrollment: for example, Chesterfield enrolls approximately 30% of students region-wide while Hanover enrolls approximately 10%. Divisions then opted to add or reduce the number of slots as their individual budgets allowed. The total of 91 students in the first year was based on budget constraints across the division and unknown demand. For Year I, partnering divisions have committed to contributing \$9,750 per student because continuing startup costs and absence of scale. After the first year, partnering divisions expect CodeRVA to operate at an annual tuition rate similar to Maggie L. Walker Governor’s School, which is \$8,000 in 2016-17. As the average cost per K-12 student in Virginia in 2014-15 was \$11,523, the proposed tuition costs are reasonable and realistic.

TABLE 8: 2017-18 Slot Allocation by Division

Division	2017-18	2018-19	2019-20	2020-21	2021-22
Chesterfield	29	59	89	119	149
Colonial Heights	2	4	6	8	10
Dinwiddie Co	2	4	6	8	10
Hanover Co	8	18	28	38	48
Henrico Co	19	41	63	85	107
Hopewell	4	8	12	16	20
New Kent Co	3	7	11	15	19
Petersburg	2	4	6	8	10
Powhatan Co	2	5	8	11	14
Prince George Co	3	6	9	12	15

Richmond	15	31	47	63	79
Sussex	2	4	6	8	10
TOTALS/YEAR	91	191	291	349	400

Based on the projected annual enrollment and tuition estimates, the following 12-month local operating budget is assumed (Table 9 is a duplicate of Table 5):

TABLE 9: Local Operating Funds				
School Year	MSAP	Enrollment	Calculation	Operating Budgets
2017-18	Year I	91	91 x \$9,750	\$887,250
2018-19	Year II	191	191 x \$8,500	\$1,623,500
2019-20	Year III	291	291 x \$8,670	\$2,522,970
2020-21	Year IV	349	349 x \$8,850	\$3,088,650
2021-22	Post MSAP	400	400 x \$9,000	\$3,600,000

In the school’s early years, this estimated funding will adequately provide for the basic operation of the school, including facilities, administrative staff and teachers, and provision of core content in a blended learning environment. Federal funding is requested to supplement this budget to provide the technology-rich, innovative learning environment described in this proposal, as well as the wrap-around instructional and behavioral support staff that will ensure the success of each student, regardless of background or experience. In Years IV and V, as the school comes to full enrollment, MSAP-funded instructional and support staff will be moved into the operating budget, reaching **full sustainability** by school year 2021-22.

Also over the years of federal support, the comprehensive and multi-faceted professional development plan and embedded coaching detailed below will build capacity within the

administration and core instructional staff sufficiently that the school will be capable of continuing to operate and demonstrate the success of its innovative instructional and equity-based model within four years.

b. Evidence of Commitment and Support

In addition to the partnering school divisions’ commitment, the following stakeholders have also demonstrated their support and commitment by providing letters that can be found in Appendix 3.

- Virginia’s Governor Terry McAuliffe has expressed strong support as shown in the attached letter.
- Virginia’s highest ranking education officials, Dr. Steven R. Staples, Superintendent of Public Instruction, Virginia Secretary of Education Dr. Dietra Trent, and President of the Virginia Board of Education Dr. Billy Cannaday are enthusiastic and committed supporters of CodeRVA at the state education agency level and have provided letters of support.
- Key industry partners have provided letters of support and commitment, including the Richmond Technology Council (RVATech), Maxx Potential, CodeVirginia, CarMax and Capital One.
- J. Sergeant Reynolds Community College and John Tyler Community College have demonstrated their participation through membership on committees that are working to align curriculum and prepare for dual enrollment access. Officials have expressed support through the attached letters. Additional involvement and support from institutions of higher education are indicated by letters from Virginia Commonwealth University and the University of Richmond.

- Finally, letters from Dr. Gary Orfield, UCLA Graduate School of Education; Co-Director, The Civil Rights Project at UCLA, Dr. James E. Ryan, Dean of Faculty in Harvard’s School of Education, and Dr. Richard D. Kalenberg, Senior Fellow at The Century Foundation, all of whom are academic and policy experts on school choice and school desegregation, are included to demonstrate both the strength of CodeRVA’s desegregation plan and the need for such a model in the Richmond area.

Award of the initial \$50,000 Innovative High School planning grant from the Virginia Department of Education carried with it a commitment of support from the state to address CodeRVA’s requested waivers from certain regulatory barriers to school operation, including use of subject-based Carnegie units which will be replaced by cross-curricular standards of attainment using progress monitoring, waiver of seat time requirements toward a Carnegie unit, flexibility in pacing, and competency-based assessments. Virginia is a right-to-work state the regional school board has complete autonomy in hiring processes and labor contracts.

3. PROFESSIONAL DEVELOPMENT PLAN

As a new, innovative regional magnet school, CodeRVA’s professional development plan is extensive, intense, and sustained. The new school’s staff will comprise experienced administrative leaders, certified teachers, and qualified counselors but all will require training in working together as a team and in implementing the magnet school strategies identified in this proposal. Without the sustained professional development, the school risks being unable to escape the gravitational pull of traditional instruction and structure.

Non-MSAP funded staff will begin professional development this summer, with MSAP-funded staff brought into all scheduled trainings as they are hired. Once the full staff is in place, all staff will attend all trainings together to build relationships, establish a common

vocabulary, and develop working norms that can be sustained after the federal funding ends.

A discussion of the types of professional development to be conducted, the audience, and provider (if not required to be bid) are detailed below. The specific schedule, intensity, and duration of professional development offerings will be established as contractors are identified and scheduled. Both the local and MSAP budgets include funding for substitutes to allow teachers to attend professional development throughout the grant period. In all cases, initial training will be conducted on site in the form of workshops or other face-to-face modality, with on site and/or virtual support and coaching by the provider available through the year. Additionally, one individual school staff member will be assigned responsibility for serving as a resident coach for one or more of the training content areas to further reinforce understanding and practice on a day-to-day basis. This combination of expert-provided training and embedded coaching by MSAP-funded staff will ensure institutionalization of the innovative instructional strategies and student support systems after federal funding ends.

- **Magnet Schools of America:** The CodeRVA School Board will contract with US DOE contractor Magnet Schools of America to provide professional development for the CodeRVA Magnet School Project Director (MSPD), ED, teachers, and support staff in, at minimum, Magnet School Leadership, Culturally Responsive Teaching, and Cultural Competency Assessment and Development. Dr. Genevieve Siegel-Hawley, VCU Assistant Professor in Educational Leadership sits on the CodeRVA Advisory Council and will continue to play an active role as the school grows. Dr. Siegel-Hawley has conducted extensive research on magnet schools and has spoken at MSAP and MSA conferences. Her knowledge and expertise in desegregation strategies will continue to guide the operation of the school and provide support to staff.

- **IDRA-EAC:** CodeRVA will contract with Intercultural Development Research Association, the federally-funded Equity Assistance Center serving Region II, the South Central Collaborative for Equity, which includes Virginia and surrounding states. IDRA will provide content-related professional development to CodeRVA staff on specific classroom needs as they are identified.

- **Virginia Center for Inclusive Communities:** VCIC is an award-winning nonprofit located in Richmond and a member of the National Federation for Just Communities coalition. VCIC’s professional development work helps teachers navigate diversity issues in the classroom, specifically looking at curriculum,



discipline, and overall school policies. VCIC will work with CodeRVA on Navigating Class in Schools, Navigating Race in Schools, Creating a Sense of Belonging, and Engaging Diverse Families. Two-day workshops will be followed by three 90-minute workshops during the school year to help educators sustain their focus on educational equity while also responding to emerging challenges. Administrators will participate in VCIC’s Educational Equity Initiative which prepares leaders to eliminate disparities in all areas of school life including achievement gaps, under-enrollment in honors and advanced placement courses, higher rates of suspension, and lower graduation rates.

- **Student-Centered Learning Environment:** The CodeRVA School Board will contract with an educational consulting group experienced in developing and nurturing innovative and effective environments that support all learners. Over the first months of Year I, the consulting group will work with the CodeRVA to complete a strategic

visioning and design process that will carry the school through the implementation of the school's personalized learning vision. The resulting design template will address monthly instructional and operational goals, policy implications, needed resources, professional development needs, implementation steps, and success metrics through Year IV. The in-depth professional development plan will create a sustainable knowledge and practice base that will ensure the continuation of the school as a student-centered, personalized ecosystem.

Simultaneously with the visioning process, all instructional and support staff will participate in professional development in assisting with the development and implementation of each student's learner profile and learning pathway as evidenced through competency-based progression. Specific professional development and training will occur in transitioning from a traditional teacher-centered to a student-centered environment, preparing students to work in a personalized and blended learning environment, classroom management in an innovative setting, and developing authentic assessments for the blended learning environment. The Lead Academic Case Manager will have responsibility for providing on-going coaching and support for implementation of the student-centered environment.

Also as part of this initial year's process, the consulting group will work with administrators, faculty and parent representatives to develop a comprehensive communications plan through which students, educators, and parents will fully understand learning progressions, outcomes, expectations, and how each student is able to achieve mastery in personalized learning tracts. Responsibility for implementation of the communications plan will lie with the Outreach Coordinator.

- **Project Based Learning:** A national leader in integrating project-based learning will work with CodeRVA teachers and staff to create school-wide processes and structures that support PBL. Teachers and staff will complete an introduction course during which certified coaches will work with teachers to practice skills and identify resources to transform classrooms from lecture-based, teacher-centered spaces into student-centered inquiry-based environments that introduce lifelong learning skills. Teachers will learn how to design, assess, and manage projects that engage and motivate students. Beyond the initial training, certified PBL coaches in Chesterfield County Public Schools will provide on-going support and consultation to CodeRVA teachers on PBL best practices as a partner contribution to the project.
- **Social Emotional Learning:** Training in Social and Emotional Learning will be conducted by a nationally-recognized provider who will provide an overview of SEL, practice in facilitating student-driven discussions, and motivation and engagement strategies. On-site training will be followed by resource materials and access to online modules and support. The CodeRVA Counseling Coordinator (hired through local funds) will have responsibility for on-site coaching and support to teachers following the training.
- **Regional Summit:** To inform regional administrators and partners of issues related to equity, and to build support for reducing minority isolation, CodeRVA will host an annual “Excellence through Equity” summit. The goal of the summit will be to cultivate a culture focused on growth and improvement across Region I. Attendees will have the opportunity to develop shared language and understanding and to identify tangible ways for the region to improve equity.

4. STRONG THEORY, LOGIC MODEL AND PERFORMANCE MEASURES

The logic and vision guiding CodeRVA, the first regional magnet school in Central Virginia, is supported primarily by the integration theory of choice (Orfield and Frankenberg 2013). This theory holds that the constitutional rights of underrepresented minority groups can be protected through the use of popular programmatic or theme-based offerings designed to attract diverse families (Orfield and Frankenberg 2013). When successful, choice under this framework yields sustainable desegregation – and the benefits that flow from it.

Research indicates that well-designed magnet schools, including inter-division magnet schools, can effectively reduce minority group isolation (Enberg et al. 2011) and produce important academic (Gamoran 1996) and social/emotional gains (Cobb, Bifulco, and Bell 2009). Quasi-experimental evidence also links magnet schools to higher graduation rates (Silver and Saunders 2008); experimental evidence links dual enrollment programs to positive educational attainment outcomes (Berger et al., 2014). If leaders and teachers are trained to structure the school to meet Gordon Allport's four conditions that promote positive contact between different groups, further social/emotional gains such as increased tolerance and the reduction of prejudice are likely (Pettigrew and Tropp 2006). More general desegregation research indicates that critical short- and long-term academic, social, and civic benefits flow to all students attending racially and economically diverse schools. A recent, large-scale descriptive study also indicates that public schools working to reduce racial disparities in exposure to school poverty will likely help close achievement gaps (Reardon, 2016). Also guiding this regional magnet school is the belief that these benefits, combined with the focus on technological capabilities for the 21st century workforce, will provide preparation for students to live, work, and thrive in diverse settings. The school will offer a unique array of experiences to provide the problem-solving, collaboration, and communication skills that will make students of today leaders of the multicultural and global community of tomorrow.

TABLE 10: CodeRVA Logic Model

TABLE 10: CodeRVA Logic Model					
INPUTS		OUTPUTS		OUTCOMES	
RESOURCES	ACTIVITIES	PARTICIPATION	SHORT TERM (Year 1)	MID TERM (Years 2 and 3)	LONG TERM (Years 4+ / Post Grant)
<p><i>What we will invest . . .</i></p> <p>Funding:</p> <ul style="list-style-type: none"> o US Department of Education MSAP Grant o Per Pupil Funding from Partner LEAs <p>Resources:</p> <ul style="list-style-type: none"> o 1:1 Devices o Active Learning Classrooms o Curriculum <p>Other Commitments:</p> <ul style="list-style-type: none"> o Time o Facilities o Research Base <p>Partners and Personnel:</p> <ul style="list-style-type: none"> o Partner Division Staff o CodeRVA and Division Administrators o CodeRVA Teachers and Support Staff o Industry Partners o IHEs o Magnet Schools of America o Other Training Providers per purchasing requirements o MERC (Evaluator) 	<p><i>What we will do . . .</i></p> <p>CodeRVA Preparation</p> <ul style="list-style-type: none"> o Design and implement weighted lottery o Design personalized online and blended CS curriculum for use AL classrooms. o Design and implement marketing and recruitment plan o Recruit and hire teachers, school leaders and staff o Provide professional development in fostering intercultural interaction, personalized learning, embedding CS, SEL, PBL o Development of a funding model that will allow for sustainability past the life of the MSAP grant 	<p><i>Who we will reach . . .</i></p> <p>CodeRVA Recruitment</p> <ul style="list-style-type: none"> o School Counselors o Parents o CBOs o MS Students o CodeRVA Teachers o CodeRVA Support Staff <p>CodeRVA Implementation</p> <ul style="list-style-type: none"> o Year I: 2017-18 (Opening) <ul style="list-style-type: none"> ▪ 49- 9th & ▪ 42-10th grade students o Year II: 2018-19 <ul style="list-style-type: none"> ▪ 191 -9th-11th grade students ▪ Add staff to serve larger population o Year III: 2019-2020 <ul style="list-style-type: none"> ▪ Grow to 291 students ▪ Continue to add staff o Year IV: 2020-21 <ul style="list-style-type: none"> ▪ Grow to 349 students ▪ Continue to add staff to support full implementation o Post MSAP: 2021-22 <ul style="list-style-type: none"> ▪ Grow to 400 students 	<p><i>Immediate results . . .</i></p> <p>Student Outcomes</p> <ul style="list-style-type: none"> o Improved academic performance on mathematics, computer science & coding skills. o Increased knowledge/interest in CS Careers <p>School Diversity Outcomes</p> <ul style="list-style-type: none"> o Diversity targets for applications by females & URM met <p>School/Curriculum Design Outcomes</p> <ul style="list-style-type: none"> o Completed accelerated high school curriculum scope & sequence o Completed associate’s degree vertical alignment <p>Professional Development Outcomes</p> <ul style="list-style-type: none"> o Improved understanding of and preparation for effective implementation of CodeRVA personalized CS curriculum. o Improved understanding of magnet school strategies and support for URM and female students <p>Regional Outcomes</p> <ul style="list-style-type: none"> o Increased regional support for magnet schools and understanding of the importance of reducing minority isolation and shared best practices of integration model of school choice. o Enhanced partnership across public and private sector leaders. 	<p><i>Intermediate results . . .</i></p> <p>Student Outcomes</p> <ul style="list-style-type: none"> o Improved academic performance on mathematics, ELA, computer science & coding skills. o Improved SEL dispositions and skills (e.g. engagement, collaboration, leadership) o Decreased disparity in URM achievement and SEL outcomes. o Improved % of CodeRVA students who complete college credits. o Meeting target numbers for student placement in paid work experience. <p>School Diversity Outcomes</p> <ul style="list-style-type: none"> o Meeting diversity targets for applications and enrollment by female & URM students within 10%. o +90% retention of female & URM students <p>School/Curriculum Design Outcomes</p> <ul style="list-style-type: none"> o Successful acceleration of HS coursework through online & blended learning <p>Professional Development Outcomes</p> <ul style="list-style-type: none"> o Improved understanding of and effective implementation by CodeRVA staff of (1) personalized CS curriculum, and (2) strategies for building tolerance and understanding across diverse learners within a CS curriculum. <p>Regional Outcomes</p> <ul style="list-style-type: none"> o Increased regional support for magnet schools and understanding of the importance of reducing minority isolation and shared best practices of integration model of school choice. o Enhanced partnership across public and private sector leaders. 	<p><i>Distal impacts . . .</i></p> <p>Student Outcomes</p> <ul style="list-style-type: none"> o Improved overall student achievement and decreased race/ethnic/SES disparities. o Meeting target % of CodeRVA students completing college credits. o Improved % of student placement in paid work experience. o 100% Graduation and post-secondary enrollment/employment rate. <p>School Diversity Outcomes</p> <ul style="list-style-type: none"> o Meeting diversity targets for applications and enrollment by female & URM students within 5%. o +90% retention of female & URM students <p>School/Curriculum Design Outcomes</p> <ul style="list-style-type: none"> o Ongoing development and successful implementation of personalized learning <p>Professional Development Outcomes</p> <ul style="list-style-type: none"> o Ongoing development of staff understanding and effective implementation of (1) personalized CS curriculum, and (2) strategies for building tolerance and understanding across diverse learners within a CS curriculum. <p>Regional Outcomes</p> <ul style="list-style-type: none"> o Increased percentages of URM students in CS workforce. o Increased regional engagement in the development of magnet schools designed to reduce minority isolation. o Enhanced partnership across public and private sector leaders. o Sustained financial support for CodeRVA and other magnet schools through public and private sector sources.

TABLE 11: CodeRVA Performance Measures and Target Outcomes

Performance Measures	Project Objectives	Activities/Process Measures	Outcomes
GPRA #1 Reduce Minority Group Isolation	Increase the number of applications to CodeRVA from underrepresented minorities and females	<ul style="list-style-type: none"> • Hire Outreach Coordinator • Conduct school and community presentations • Support development of pipeline in middle school coursework • Support increasing the number of out of school enrichment opportunity in low SES communities 	Reach target percentage of total URM applications Year I: 36% (baseline) Year II: 36% Year III: 36% Year IV: 36% From Females: Year I: 30% (baseline) Year II: 40% Year III: 45% Year IV: 50%
	Increase the percentage of URM	<ul style="list-style-type: none"> • Hire a MSAP Project Director to put into place structures to support underrepresented minorities 	Reach target percentages of demographics among

	and female students who elect to enroll in CodeRVA	and females <ul style="list-style-type: none"> • Implement weighted lottery selection • Implement Professional Development plan focused on personalized learning, reducing minority isolation, and Social-Emotional Learning 	enrolled URM students <p>Year I: +/- 5% of avg.</p> <p>Year II: +/- 5% of avg.</p> <p>Year III: +/- 5% of avg.</p> <p>Year IV: +/-5% of avg.</p> <p>Females:</p> <p>Year I: 45% (baseline)</p> <p>Year II: 46% of school</p> <p>Year III: 48% of school</p> <p>Year IV: 49% of school</p>
GPR #2 Increase achievement among Racial/Ethnic Minorities in Reading/English Language Arts	Increase the percent passing rate in R/LA among underrepresented minorities	<ul style="list-style-type: none"> • Hire MSAP-funded teachers, Academic Case Managers, Intervention Specialists, and Support Services Coordinator • Provide Professional Development in and implement whole school student-centered personalized learning strategies 	Increase aggregate percent passing of Black, Hisp. and Econ. Disadv. subgroups in R/LA from Year I baseline <p>Year II: 5%</p> <p>Year III: 7%</p>

		<ul style="list-style-type: none"> • Provide all students equal access to the same high quality curriculum 	Year IV: 10%
<p>GPR #3</p> <p>Increase achievement among Racial/Ethnic Minorities in Mathematics</p>	<p>Increase the percent passing rate in Math among underrepresented minorities</p>	<ul style="list-style-type: none"> • Hire MSAP-funded teachers, Academic Case Managers, Intervention Specialists, and Support Services Coordinator • Provide Professional development in and implement whole school student-centered personalized learning strategies 	<p>Increase aggregate percent passing of Black, Hisp. and Econ. Disadv. subgroups in Math from Year I baseline by:</p> <p>Year II: 5%</p> <p>Year III: 7%</p> <p>Year IV: 10%</p>
<p>GPR #s 4 & 5</p> <p>Reduce federal funds per/pupil cost and Sustain CodeRVA after federal funding ends</p>	<p>Utilize CodeRVA evaluation results to increase public knowledge of and support for CodeRVA innovative model and</p>	<ul style="list-style-type: none"> • Utilize external evaluator to analyze data both qualitative and quantitative on the outcomes and impact achieved by CodeRVA • Publicize impact of innovative high school design model to garner private support 	<p>Increase each year the amount of non-federal funding dedicated to CodeRVA by project partners as measured by per pupil tuition and industry</p>

	magnet school goals		<p>support:</p> <p>Year I: \$887,250</p> <p>Year II: \$1,623,500</p> <p>Year III: \$2,522,970</p> <p>Year IV: \$3,088,650</p>
<p>GPR #6</p> <p>Increase the number of CodeRVA students who meet high school graduation requirements after federal funding ends</p>	<p>Collect and analyze data on CodeRVA high school completion rates and post-secondary status relative to their peers in regional high schools</p>	<p>When CodeRVA is fully implemented, collect and maintain data on an ongoing basis:</p> <ul style="list-style-type: none"> • Percent of students who complete high school graduation requirements within two calendar years of entering CodeRVA • Percent of students who complete an AS degree within four calendar years of enrollment • Percent of students entering post-secondary enrollment and location • Percent of students entering post-secondary employment and location 	<p>The anticipated long-term outcome is that 100% of CodeRVA students will graduate high school and continue into post-secondary and/or employment.</p> <p>These individual outcome targets will be established in Years IV+, after grant funding has ended.</p>

(C) QUALITY OF MANAGEMENT PLAN

1. The adequacy of the management plan to achieve the objectives

Efficient operation of CodeRVA and management of the Magnet School Assistance program will occur through the organizational structure described below and shown on the following organization chart.

CodeRVA School Board: Overall legal responsibility for CodeRVA rests with its School Board. Composed of one member of each of the twelve partnering divisions' school boards, the CodeRVA School Board identifies and adopts the policies necessary for the school to achieve its academic and desegregation goals. The School Board oversees the Superintendents' Advisory Council.

Superintendents' Advisory Council: The superintendents of each of the participating divisions form the Superintendents' Advisory Council, which is responsible for strategic direction and operation of CodeRVA. The Council meets monthly to hear the Executive Director's report and consider recommendations from standing advisory committees detailed below regarding policy, personnel, operations, and budget.

- **Parent & Student Services Committee:** Charged with providing support and guidance to the school on issues related to parent communications, support, and participation, transition services from disparate counties and school divisions, and moving from traditional instruction to personalized learning. In addition to CodeRVA and division counseling representatives, this committee will comprise members of the Parent Council to be formed when the school opens. A major focus of both this committee and the Parent Council will be developing family support services for CodeRVA's Low-SES students and parents.

- **Budget & Logistics Committee:** Charged with providing support and guidance to the Executive Director on issues relating to facilities, student transportation, and meals.
- **Policy Committee:** Charged with determining how existing state policies align with CodeRVA’s flexible instructional model, developing and proposing to the Virginia Department of Education any waivers to existing state policies, and drafting any such waivers for School Board consideration and approval.
- **Higher Education Committee:** Charged with coordinating and communicating with partnering community colleges and four year universities to ensure curriculum alignment, student credit attainment, and teacher qualifications.
- **Business and Industry Advisory Council:** Input from this group is channeled through the CodeRVA Executive Director serving on the Board of the Richmond Technology Council (RVATech), and the Executive Director of RVATech attending CodeRVA Superintendent Advisory Council Meetings. Current and new industry partners will continue to provide input and resources to ensure that industry trends are reflected in the school’s instruction and planning.

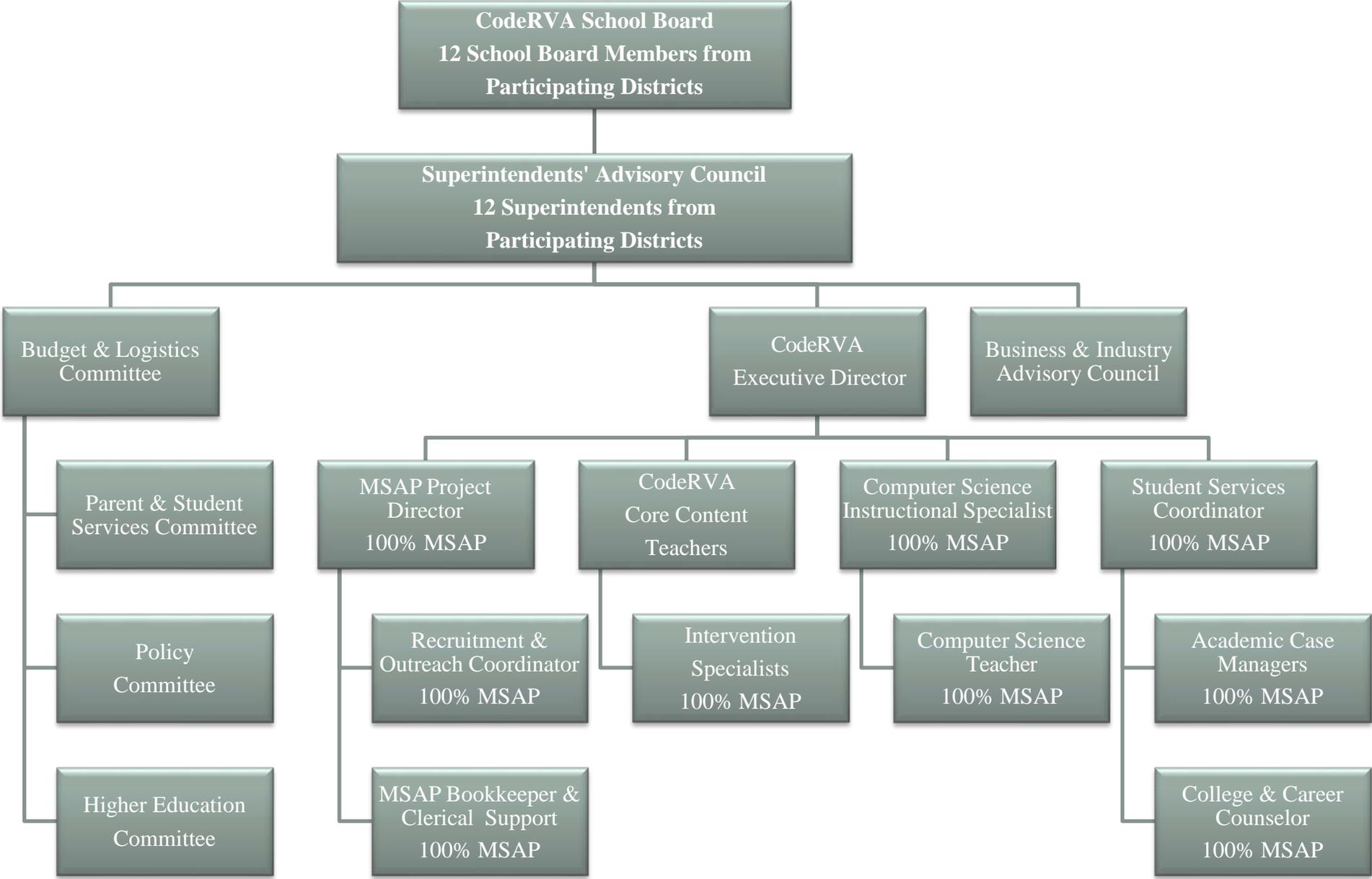
CodeRVA MSAP Management: Fiscal and programmatic responsibility for the project described in this proposal will rest with the CodeRVA Superintendents’ Advisory Council, supported by the Financial and Human Resources Departments of Henrico County Public Schools. The current chair of the Superintendents’ Advisory Council is Dr. James F. Lane, superintendent of Chesterfield County Public Schools, the largest division in the partnership. Dr. Lane initiated the original High School Innovation Planning grant proposal to the Virginia Department of Education, and has been the driving force behind shaping CodeRVA’s vision and structure. More detail on Dr. Lane and other key personnel both internal and external to

CodeRVA will be provided in the section on Quality of Personnel.

CodeRVA Regional High School is led by an experienced Executive Director who reports to the Superintendents' Advisory Council and serves as the school's principal and instructional leader. This position is locally funded through the regional partnership. Responsible for the day-to-day operation of the school and supervision of all faculty and staff, the Executive Director will ensure that each student is provided with the necessary instruction and supports to successfully complete CodeRVA and graduate ready for postsecondary success. In collaboration with the MSAP Project Director, the Executive Director will ensure that MSAP-funded staff are supervised and contribute to the overall goals of the project.

Day-to-day responsibility for implementing the grant's activities will rest with the full-time MSAP Project Director, who will report to the CodeRVA Executive Director, and maintain lines of communication with all MSAP-funded personnel. The Project Director will have the appropriate level of authority and responsibility to direct the MSAP project and will be directly responsible for meeting the project's technical and programmatic requirements, ensuring compliance with applicable policies and regulations (federal and local), and monitoring progress toward project goals. The Project Director will also meet regularly with external partners and the project Evaluator to facilitate ongoing improvements to the project.

**CODERVA
ORGANIZATION CHART – YEAR I**



2. CodeRVA Timeline and Implementation Plan:

All described MSAP-funded activities will begin with award in October 2017, with planning and preparation occurring in the upcoming months. Immediately upon receipt of award, the CodeRVA Executive Director will post and hire all MSAP-funded staff specified in this application. A description of major activities and milestones leading to the opening of the school in September 2017, including an analysis of the first applications to CodeRVA and subsequent lottery selection is shown immediately below. A timeline showing major grant-funded activities and responsible staff follows.

Previously: July 2015 - June 2016 First Planning Year: With receipt of the High School Innovation Planning grant, various committees were formed to research instructional models and logistics. Updates and discussions were held regularly with parent groups, regional principals, and counselors as details on curriculum, school calendar, design of the lottery and launch of the school were considered and finalized.

July 2016-Present - Start-Up: The CodeRVA School Board consisting of a representative from each of the participating divisions' school boards met for the first time in August 2016. With a \$50,000 Innovative High School Implementation grant and \$180,000 in startup funds from the participating divisions, the Board hired Michael Bolling as the school's Executive Director in September 2016. Since then, Mr. Bolling has formalized the governance and committee structures, finalized the school's Constitution and Bylaws and Governance and Operations documents, identified and leased a facility, and conducted innumerable presentations to parent, community, and business groups. The CodeRVA School Board formally adopted the CodeRVA Constitution and Bylaws and Governance and Operations policies in December 2016, confirming the region's commitment to the school. These documents are attached as evidence of

commitment to implement an inter-district magnet school.

For the school's first year, the CodeRVA School Board decided to accept both 9th grade and 10th grade students to expand the school's potential applicant pool as the interest level in such a unique educational environment was unknown. Parents and students applying and selected for enrollment this fall have been clearly informed that the school is in its first years. They are fully aware that the full innovative design of the school, including accelerated completion of high school credits and completion of an associate's degree within four years, will be limited in the school's first few years, but opportunities for college credit and paid work experience are guaranteed to all enrollees entering in 2017.

First Applicant Pool: In November 2016, the CodeRVA School Board contracted with Michael Alves of AECG to create and implement the transparent controlled-choice application and lottery admissions process. The first application window opened January 9, 2017 and closed on February 24, 2017. A key feature of the AECG on-line application software system is the real-time information pertaining to the demographic characteristics of the applicant pool by school division and grade level that were provided to the Executive Director on a daily basis throughout the application period. As a result of this feedback, Executive Director Michael Bolling was able to schedule additional outreach and recruiting events in communities that were not adequately represented in the applicant pool, including a targeted effort toward girls at individual schools and region-wide. After each presentation, there was a discernable increase in applications from those communities, which increased the diversity of the applicant pool substantially.

At the end of the application period, a total of 756 applications had been received for the 91 available slots, significantly out-performing expectations and confirming that there is a strong

demand for this type of innovative learning environment. CodeRVA leaders were also immensely pleased that the socioeconomic and the racial/ethnic demographics of the applicants mirrored regional demographics, indicating that the school’s message of diversity and inclusion had been heard across the region. Based on the success of the first year’s lottery selection, the original target of +/-10% variance with regional demographics has been reduced to +/-5%.

As shown in the next table, 22.5% of the students that applied to CodeRVA are from households earning between \$25,000 and \$50,000, almost equal to the regional percentage in that income band; and almost 14% of applicants were from households earning less than \$25,000.

TABLE 12: Applicant Pool	Regional Data		CodeRVA Applicants	
	Number	Percent	Number	Percent
Total households	435,907		756	
Below \$25,000	83,740	19.2%	104	13.8%
\$25,000 to \$49,999	99,459	22.8%	170	22.5%
\$50,000 to \$74,999	80,646	18.5%	149	19.7%
\$75,000 to \$99,999	57,029	13.1%	133	17.6%
\$100,000 to \$199,999	90,908	20.9%	175	23.1%
\$200,000 or more	24,125	5.5%	25	3.3%

Educational attainment data were slightly less comparable: only 15.7% of CodeRVA applicants are from households with no post-secondary education compared to 37.4% of the region, suggesting more work needs to be done to convey CodeRVA’s range of educational pathways.

TABLE 13: Applicant Pool	Regional Data			
	Number	Percent	Number	Percent
Population 25+ years	783,142		756	
None that apply	91,426	11.7%	23	3.0%
High school graduate or GED	201,534	25.7%	96	12.7%
Some college, no degree	165,187	21.1%	163	21.6%
Associate's degree	54,111	6.9%	93	12.3%
Bachelor's degree	169,140	21.6%	223	29.5%
Graduate or professional degree	101,744	13.0%	158	20.9%

Applicants were also asked to self-report on an optional field if they qualified for free or reduced meals: 29.8% checked that field. Household income, educational attainment, and eligibility for free/reduced meals form the criteria for Low SES selection in the lottery.

Racial and ethnic characteristics of the applicant pool were even closer to regional percentages, with 8.9% of applicants reporting as Hispanic compared to a regional enrollment of 10.6%. African American applicants exceeded regional percentages at 38.9% compared to 36%. White applicants were slightly fewer than the regional population: 49.9% compared to 53.9%. In general, however, the racial/ethnic makeup of the applicant pool fell well within +/- 5% of the regional makeup.

TABLE 14: Applicant Pool	Regional Data		CodeRVA Applicants	
	Number	Percent	Number	Percent
Hispanic/Latino of any Race	19,950	10.6%	67	8.9%
Native Am/Alaskan Native	1,501	0.8%	4	0.5%

Asian	8,562	4.5%	23	3.0%
Black	68,080	36.0%	294	38.9%
Pac Islander/Hawaiian	431	0.2%	2	0.3%
White	101,816	53.9%	377	49.9%
Two or more races	8,551	4.5%	56	7.4%

The one category in which the percentage of applicants was not within the +/- target was gender: in spite of additional targeted recruitment directed toward girls during the application window, applicants remained divided at 70.0% male and 30.0% female. This reflects the previous statistics on underrepresentation of girls in STEM, and confirms that much more will need to be done to recruit girls to CodeRVA. It also underscores the need to set long-term strategies in place that develop and sustain girls' early interest in coding and computer science.

Lottery Selection and School Enrollment: The first lottery selection was held March 10, 2017. The enrollment data presented below is effective as of that date, although students had until March 24 to confirm their intention to attend. The demographics shown here are not likely to change significantly, however, as the selection process will automatically confirm the next most comparable student. For example, if a mid-SES Hispanic female from Henrico County was selected but chooses not to attend, the next wait-listed mid-SES Hispanic female from Henrico will be sent an acceptance letter.

As described previously, the selection process and algorithms give greater weight first to applicants from households with lower income and educational attainment, then gender, and if necessary to attain diversity targets, race/ethnicity. When the selection lottery was run, CodeRVA was able to meet its SES and racial/ethnic diversity targets without adjustment, confirming the area's correlation between race and poverty.

After the lottery selection without weights for gender produced an enrollment of 30% girls, school stakeholders concluded that a gender-neutral process would not allow the school to reach its goal of reflecting the gender diversity of the region. Consequently, the consultant weighted the algorithm to select a higher percentage of girls than were represented in the applicant pool. As noted previously, there remained concern that without a roughly proportionate number of girls, the school would become known as predominantly male, develop a male-dominant culture, and create a self-perpetuating cycle that further dissuades girls from applying. With the weights, however, the reverse will hopefully be true: girls will see themselves reflected in the school's admissions and culture, thereby creating a virtuous cycle of interest from younger females in the region.

TABLE 15: CodeRVA Year I	Regional Data		CodeRVA Students	
	Number	Percent	Number	Percent
Hispanic/Latino of any Race	19,950	10.6%	14	15.3%
Native Am/Alaskan Native	1,501	0.8%	1	1.1%
Asian	8,562	4.5%	3	3.3%
Black	68,080	36.0%	30	33.0%
Pac Islander/Hawaiian	431	0.2%	0	0%
White	101,816	53.9%	39	42.9%
Two or more races	8,551	4.5%	4	4.4%
Female	90,156	47.7%	42	46.2%
Male	98,785	52.3%	49	53.8%
Regional School Enrollment	188,941		91	

Continuation of the technical assistance and data management services provided by the Alves Educational Consultants Group, Ltd (AECG) is essential for ensuring and sustaining the success of CodeRVA's diverse admissions strategy. Additional services to be provided by AECG over the project period and in support of the MSAP include: 1) fully automating the wait list manager software module, upgrading the on-line real time application software module to allow for pre and post lottery applications, and automating the lottery assignment module to facilitate multiple simulations; and 2) continuing to analyze the lottery applicant pool by Division, Grade, SES factors, gender and racial/ethnic group in relation to the region's targeted percentages, defining the under-represented applicant groups for targeted recruitment and community outreach, conducting multiple controlled choice lottery assignment simulations during the application period and adjusting the "weighted" algorithm to optimize the final assignment results, and the production of detailed applicants and assignment reports that will inform and facilitate the implementation and evaluation of the MSAP project.

CodeRVA will open to its first cohort of students on September 5, 2017 (MSAP Implementation Year I) with an enrollment of 91 – 9th and 10th grade students. In MSAP Year II, these students will be joined by 100 new incoming 9th grade students for an enrollment of 191 students, and increasing by 100 - 9th grade students each year through school year 2021-22 when the school will reach full enrollment. By MSAP Year IV, the school's first cohort will have made good progress toward attaining an associate's degree through dual enrollment coursework, participated in paid work experiences, and begun to move into post-secondary education and careers.

TABLE 16: YEAR I: CodeRVA IMPLEMENTATION PLAN 2017-2018

Activity	Staff	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Governing School Board meets	Exec Director	X			X			X			X		
Superintendents' Advisory Council meets	Exec Director	X	X	X	X	X	X	X	X	X	X	X	X
RVATech Advisory Council	Exec Director	X			X			X			X		
CodeRVA High School opens Sept 5, 2017 and in operation: Cohort I – 49-9 th grade & 42-10 th grade students	Exec Director & locally funded staff	X	X	X	X	X	X	X	X	X	X	X	X
Notice of Grant Award	CodeRVA	X											
Fiscal Agent posts positions and hires Year I Project Staff	HCPS	X	X										
Magnet School Project Director in place	CodeRVA		X										

Activity – Year I	Staff	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Technology and other equipment specified & bid	Exec Director & MSPD	X	X										
All MSAP Year I Project Staff in place	Exec Director & MSPD		X	X									
Contracts for all professional development issued	Exec Director & MSAP		X	X									
Professional Development Schedule & Calendar finalized with contractors	MSPD				X	X							
Professional Development in all strategies	CodeRVA Staff & Contractors					X	X	X	X	X	X	X	X
Implement student centered, learning environment with increasing fidelity	CodeRVA teachers & staff				X	X	X	X	X	X	X	X	X

Activity – Year I	Staff	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Evaluator collects Cohort I data and establishes baselines	VCU-MERC				X	X	X	X	X	X			
Student recruitment for Year II	Outreach Coordinator		X	X	X	X	X						
Year II Application window	ED & MSPD				X	X	X						
Additional technology and equipment installed	Contractor							X					
Year II Enrollment Selection	ED & MSPD						X	X	X	X			
Revisions to Lottery process if necessary	AECG									X	X		
First summer trimester held	CodeRVA Staff									X	X		
Curriculum revisions, additions	MSPD, ED								X	X	X	X	
CodeRVA and MSAP Year II opens to Cohorts I & II 191 students	CodeRVA Staff												X

YEAR II CodeRVA IMPLEMENTATION PLAN – 2018-2019

Activity	Staff	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
School Board, Advisory Councils meet as in Year I	Exec & MSPD	X	X	X	X	X	X	X	X	X	X	X	X
Progress Reports to US ED as required	MSPD & VCU-MERC	X			X			X			X		
Implement student centered, personalized learning environment	CodeRVA teachers & staff	X	X	X	X	X	X	X	X	X	X		X
ACMs work with students on personal learning plans	ACMs	X	X	X	X	X	X	X	X	X	X		X
Online, blended, and project-based learning occurs	CodeRVA teachers & staff	X	X	X	X	X	X	X	X	X	X		X
Tutoring, remediation, & academic support	ACMs, Teachers & Intervention Specialists	X	X	X	X	X	X	X	X	X	X		X

Activity – Year II	Staff	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
College & career preparation begins	College & Career Counselor	X	X	X	X	X	X	X	X	X	X		X
Cohort I - 11 th grade students take dual enrollment courses for college credit	Dual Enrollment teachers	X	X	X	X	X	X	X	X	X	X		X
Year III Student Recruitment	Outreach Coord.		X	X	X	X	X						
Year III Application window	ED & MSPD				X	X	X						
Year III Enrollment Selection	ED & MSPD						X	X	X	X			
Revisions to Lottery process if necessary	AECG									X	X		
Data collection	Evaluator	X	X	X	X	X	X	X	X	X	X	X	
Evaluation reports	Evaluator	X			X			X			X		
Professional Development continues	Internal coaching	X	X	X	X	X	X	X	X	X	X	X	
Curriculum revisions, additions	MSPD, ED,									X	X	X	

Activity –Year II	Staff	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Summer Trimester	Staff									X	X		
PD - Magnet Schools	All Staff											X	
PD – VCIC and SEL	All Staff											X	
PD - Personalized Learning	All Staff											X	
CodeRVA & MSAP Year III opens to 291 students													X
YEAR III CodeRVA IMPLEMENTATION PLAN - 2019-2020													
School Board, Advisory Councils meet as in Year II	Exec & MSPD	X	X	X	X	X	X	X	X	X	X	X	X
Progress Reports as required	MSPD	X			X			X			X		
Implement student centered, personalized learning environment	CodeRVA teachers & staff	X	X	X	X	X	X	X	X	X	X	X	
ACMs work with students on personal learning plans	ACMs	X	X	X	X	X	X	X	X	X	X	X	

Activity – Year III	Staff	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Online, blended and project based learning occurs	CodeRVA teachers & staff	X	X	X	X	X	X	X	X	X	X	X	
Tutoring, remediation, & academic support	ACMs, Teachers & mentors	X	X	X	X	X	X	X	X	X	X	X	
College & career preparation	Coll. & Career Counselor	X	X	X	X	X	X	X	X	X	X	X	
Cohort I - 11 th grade students take dual enrollment college courses	CodeRVA staff	X	X	X	X	X	X	X	X	X	X	X	
Cohort I – 12 th grade students continue with dual enrollment and begin paid work experience	CodeRVA Staff and Maxx Potential	X	X	X	X	X	X	X	X	X	X	X	
Data collection	VCU-MERC	X	X	X	X	X	X	X	X	X	X	X	
Evaluation reports	VCU-MERC	X			X			X			X		

Activity – Year III	Staff	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Professional Development support continues	Internal Coaches	X	X	X	X	X	X	X	X	X	X	X	
Year IV Student Recruitment	Outreach Coord.		X	X	X	X	X						
Year IV Application window	ED & MSPD				X	X	X						
Year IV Enrollment Selection	ED & MSPD						X	X	X	X			
Curriculum revisions, additions	MSPD, ED,									X	X	X	
Summer Trimester	Staff									X	X		
PD - Magnet Schools	All Staff											X	
PD – VCIC, SEL & PBL	All Staff											X	
PD - Personalized Learning	All Staff											X	
CodeRVA and MSAP Year IV open to 349 students													
YEAR IV CodeRVA IMPLEMENTATION PLAN – 2020-2021													
School Board, Advisory Councils meet as in Year III	Exec & MSPD	X	X	X	X	X	X	X	X	X	X	X	X

Activity – Year IV	Staff	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Progress Reports as required	MSPD	X			X			X			X		
Implement student centered, personalized learning environment	CodeRVA teachers & staff	X	X	X	X	X	X	X	X	X	X	X	
Cohort I dual enrollment and paid work experience continues		X	X	X	X	X	X	X	X	X	X	X	
ACMs work with students on personal learning plans	ACMs	X	X	X	X	X	X	X	X	X	X	X	
Online, blended and project based learning occurs	CodeRVA teachers & staff	X	X	X	X	X	X	X	X	X	X	X	
Tutoring and academic support	ACMs & staff	X	X	X	X	X	X	X	X	X	X	X	
College & career preparation	Coll. & Career Counselor	X	X	X	X	X	X	X	X	X	X	X	
Data collection	Evaluator	X	X	X	X	X	X	X	X	X	X	X	

Activity – Year IV	Staff	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Evaluation reports	Evaluator	X			X			X			X		
Professional Development support continues	Internal Coaches	X	X	X	X	X	X	X	X	X	X	X	
Year V Student Recruitment	Outreach Coord.		X	X	X	X	X						
Year V Application window	ED & MSPD				X	X	X						
Year V Enrollment Selection	ED & MSPD						X	X	X	X			
Curriculum revisions, additions	MSPD, ED,									X	X	X	
Summer Trimester	Staff									X	X		
First Cohort of CodeRVA Students Graduate										X			
Reinforcement PD in all strategies	All Staff											X	
CodeRVA Year V opens to 400 students													X

2. How the applicant will ensure a diversity of perspectives

With over 40 actively participating members, the primary strength of CodeRVA's Advisory Committees is in their collective knowledge, experience, and breadth of perspectives.

Educational leaders include superintendents, division administrators, curriculum specialists, educational technology specialists, and teachers from the twelve participating school divisions.

These divisions range in size from 2,500 to 60,000 students and contain every type of public high school in Virginia. Representatives from two local universities and two community colleges ensure that CodeRVA's curriculum will prepare students for post-secondary-level work. These higher education representatives review proposed high school curricula, plan for new dual enrollment courses, and create vertical articulation with multiple career and college pathways.

The Board of Directors of business partner RVATech (the Richmond Technology Council) consists of Chief Information Officers and Chief Executive Officers of 32 local area businesses and corporations, including Dominion Resources, Genworth Financial, the Federal Reserve Bank System and General Electric, as well as more nimble mid-sized and smaller shops. The general membership consists of over 150 regional firms. Representatives from RVATech serve as the voice of the region's employers, providing input into trends and identifying the skills and credentials workers need now and in the future.

Within the school, teachers and staff have time built into their contracts to meet regularly in Professional Learning Communities, which will form the venue for developing recommendations for instructional improvements in the school's operation.

Parent Input and Involvement: The Outreach Coordinator will have responsibility for recruiting a Parent Council, members of which will represent a cross section of families of CodeRVA students and representative of the socioeconomic, gender and racial/ethnic diversity

of the school. The Parent Council will meet formally at least quarterly to facilitate communication with school leadership. The Council will participate in strategic planning by providing parental viewpoints and feedback about the operation of the school, including suggestions for student supports, program procedures, and services to families. Representatives from the Parent Council will also serve on the Parent and Student Services Committee of the Superintendents Advisory Board to ensure parents' concerns and recommendations are heard. Because of the geographic distances between participating localities, video conferencing or other technological means will be used to minimize barriers to community members' participation in Council and committee meetings.

The Outreach Coordinator and administrative staff will also hold periodic meetings and events in participating school divisions' various localities to solicit input from and connect with parents who are not members of the Parent Council. To facilitate involvement among limited English speaking, disabled or otherwise marginalized populations, the Outreach Coordinator will contract with interpreters and other resources to enable participation by all parents/guardians.

(D) QUALITY OF PERSONNEL

1. The project director is qualified to manage the project

The MSAP Project Director (MSPD) will be a full-time, grant-funded position and will have responsibility for coordination and implementation of all aspects of the project. Reporting to, and in close collaboration with, the CodeRVA Executive Director, the MSPD will assist in hiring all grant-funded staff, including the Computer Science Instructional Specialist, Computer Science teacher, Intervention Specialists, the Student Services Coordinator, Academic Case Managers, the College and Career Counselor, and the Outreach Coordinator. Only the Outreach Coordinator and MSAP administrative assistant will report

directly to the MSPD; all instructional and student support staff will report directly to the Executive Director to ensure clear lines of authority and responsibility over instruction. All project staff will be 12-month employees to accommodate the needs of a year-round school.

The MSPD will manage all aspects of the CodeRVA project, ensure that the implementation timetable is reasonable and met, promote the project's desegregation plan, assist the Executive Director in integrating state curriculum standards with the innovative instructional practices of CodeRVA, work with others to develop and implement innovative theme-based curriculum and related instructional practices, and assist in coordinating professional development. This position will also be responsible for working with the external evaluator to monitor and track student progress to ensure magnet school performance measures are being met. Together with the MSAP administrative assistant, the MSPD will collect and maintain student data on attendance, mastery-based progression, progress toward completion, and other data needed for evaluation and federal reporting. Other responsibilities include:

- Working with the fiscal agent to ensure that purchasing procedures are followed in the selection and purchase of all equipment and technology
- Working with partnering divisions and the Project Evaluator in the collection and analysis of all necessary student achievement data
- Working with the Executive Director and Outreach Coordinator to evaluate the effectiveness of the CodeRVA desegregation plan and make revisions/changes as needed,
- Collaborating with the Superintendents' Advisory Council, committees and partners to ensure sustainability of the project after federal funding ends.

Qualifications for the position of MSPD have been established to ensure that the successful applicant will possess the commitment, knowledge, experience, and interpersonal skills needed to provide strong and effective leadership to the project. Following notification of the MSAP award, the fiscal agent will post, interview, and hire in accordance with the non-discrimination practices and hiring procedures of the school division. The candidate selected for the Project Director will have the following qualifications: 1) Advanced degree in education or related field, 2) Experience in grant implementation, 3) Experience as a school administrator, program director, or related position, 4) Demonstrated leadership in the development of programs and courses of instruction that substantially strengthen students' knowledge of academic subjects and marketable skills, 5) Experience in best practices in instruction and/or student services, 6) Experience and knowledge related to working with parents of different races, ethnic, social and economic backgrounds, 7) Knowledge of a school environment and regulations governing the operation of a public school, 8) Experience working with community-based organizations, cultural institutions, agencies, and other groups in initiatives related to innovative educational methods and practices, 9) Demonstrated abilities in areas associated with effective leadership; and 10) excellent interpersonal skills (see full job description in Appendix4 : Resumes and Job Descriptions).

2. Other Key Personnel

CodeRVA Executive Director: The Executive Director is chief administrator, principal, and instructional leader for the school. This position is responsible for facilitating staff and community collaboration efforts to ensure that CodeRVA and the school's magnet program is implemented as designed. The MSAP Project Director will report to the Executive Director and work collaboratively to coordinate local and MSAP-funded staff and resources.

The CodeRVA Executive Director position was filled in September 2016 by **Michael F. Bolling**, a veteran educator of 23 years focused on quality instruction. Prior to working with CodeRVA, Michael served at the Virginia Department of Education (VDOE) for seven years as Director of Mathematics and Governor's Schools. While at the VDOE, he worked to institutionalize computer science offerings in schools. Mr. Bolling is experienced in state and federal grant management, as well as gifted education, professional development, curriculum development, policy development.

Prior to working at the state level, Mr. Bolling worked for 15 years in teaching and educational leadership in the greater Richmond area, including seven years as an instructional supervisor in Chesterfield County and two years in Powhatan County. He also served for six years as a high school mathematics teacher at Atlee High School in Hanover County. Mr. Bolling is a 1994 graduate of Virginia Commonwealth University, where he completed his undergraduate and graduate studies, and has served as adjunct faculty in the School of Education since 2007. He has served in various leadership roles within many educational organizations including the National Council of Teachers of Mathematics, the Virginia Mathematics and Science Coalition, the Virginia Council of Teachers of Mathematics, and the Virginia Council for Mathematics Supervision, and has presented at the local, state, and national levels.

Dr. Gail B. Hardinge serves as Chair of the CodeRVA School Board. Dr. Hardinge is a Clinical Associate Professor and Executive Director of the STEM Education Alliance in the School of Education at the College of William & Mary in Williamsburg, Virginia. She has been an educator for thirty years, nineteen of which have been in K-12 public education and eleven in higher education. Her primary interests include the development, implementation and evaluation of STEM programs for K-12 students and implementing problem-based, job

embedded professional development for teachers and developing on-line support for students and teachers. She has been the principal investigator on grants and contracts exceeding more than \$9M with a focus on developing STEM programs in public education. In addition she was the lead evaluator on developing the STEM Student and Awareness Scale, an instrument for measuring the impact of STEM programming on middle and high school students. In addition to her grant work, she teaches classes in consultation, collaboration and conflict mediation, and supervises graduate students in school field placements. She is involved in a variety of leadership positions, serving in numerous local and regional boards and is actively involved in the development of an executive on-line program for graduate students.

Dr. James F. Lane: As architect and champion of CodeRVA, is vital to the success of the new school, providing the necessary executive sponsorship and supports for this effort. Currently Chair of the CodeRVA Superintendents' Advisory Council, Dr. Lane was appointed to the position of Chesterfield County Public Schools Superintendent in July 2016. Dr. Lane was named the 2016 Virginia Superintendent of the Year and the 2016 Richmond Technology Council Award Winner for Innovation in Education. He currently serves as the Chair of Virginia Superintendents' Region I Study Group and was instrumental in garnering support for the CodeRVA project, which resulted in the initial planning grant award.

Dr. Lane is an experienced regional collaborator who has been involved in the initiation, development, and successful launch of the Chesapeake Bay Governor's School, the Bridging Communities Regional Technical Center, and the Blue Ridge Virtual Governor's School. His leadership as Chair of Superintendent's Region I Study group has resulted in a new regional consortium to address the challenges of a growing number of children with autism.

Dr. Lane is the former Chairman of the Board of Directors for the Virginia

Commonwealth University (VCU) Metropolitan Educational Research Consortium and has served as chair or member of the Math/Science innovation Center, the Virginia School University Partnership, and numerous other education-related initiatives. He holds a doctorate in Education, Administration and Supervision from the University of Virginia and additional degrees from the University of North Carolina Chapel Hill.

Dr. Genevieve Siegel-Hawley is author of the recently published (May 2016), *When the Fences Come Down: Twenty-first Century Lessons from Metropolitan School Desegregation*, and Assistant Professor, Department of Educational Leadership in the School of Education at VCU. Dr. Siegel-Hawley has extensive knowledge and experience in the area of school desegregation. She has served as a Research Associate with the UCLA Civil Rights Project and the Harvard Civil Rights Project, and as a consultant and expert witness to school divisions and the U.S. Department of Justice in cases related to magnet schools and desegregation. Dr. Siegel-Hawley is a graduate of Richmond City Public Schools and has a Ph.D. in Education from UCLA, a M.Ed. from Harvard University, a Masters in Teaching from Johns Hopkins University, and a BA from the University of Virginia. Dr. Siegel-Hawley has had significant input into the school's design and the controlled-choice lottery, has provided input and guidance to this grant application on design of the voluntary desegregation plan and the research that confirms the value of magnet schools, and will continue to be closely involved as the school launches and grows.

Michael Alves is an educational planner and President of the Alves Educational Consultants Group, Ltd. He was previously the Project Director for Desegregation Assistance at the Massachusetts Department of Education and the Senior Equity Specialist for the Educational Alliance at Brown University. Mr. Alves has over thirty-five years of experience in designing

and implementing diversity conscious choice and residential-based student assignment plans and magnet schools admissions policies in numerous school districts throughout the United States. His work includes the nationally recognized socioeconomic integration and targeted school improvement plans in Champaign IL, Cambridge MA, Wake County NC, Charlotte-Mecklenberg County NC, Rochester NY, Manchester CT and recently implemented socioeconomic integration plan in White Plains NY. Mr. Alves has been an expert witness in several federal desegregation cases and is currently serving as the Court approved expert and overseer of the implementation the controlled choice desegregation plan in Fayette County TN. He has served as consultant to the U.S. Department of Justice, U.S. Office for Civil Rights, NAACP Legal Defense Fund, the Urban League, and numerous others. Mr. Alves will work with CodeRVA throughout the MSAP project period to ensure that the application and lottery process contributes positively to the school achieving its diversity goals.

Dr. Patrick Kinlaw is Superintendent of Henrico County Public Schools, which will serve as fiscal agent for CodeRVA. Dr. Kinlaw holds three degrees including a doctorate in educational leadership from the University of Virginia, a master's in education administration from East Carolina University and a bachelor's in education from East Carolina. Prior to joining HCPS, Dr. Kinlaw spent 12 years with Wake County Public Schools in North Carolina. He also spent time early in his career at Longwood University and East Carolina University. Henrico County Public Schools is the sixth largest public school division in the Commonwealth of Virginia. HCPS has 72 schools and program centers serving more than 50,000 students.

William B. Bowen, Assistant Superintendent for Finance and Administration for Henrico County Public School has over 28 years of experience working for state and local government agencies, with the past nine years in K-12 education. In addition to overseeing fiscal processes for CodeRVA, Mr. Bowen serves on the finance committee for Maggie Walker Governor's

School and the Math Science Innovation Center regional schools. Dr. Kinlaw and Mr. Bowen, will oversee all financial matters related to the Magnet School Assistance Program, ensuring that federal accountability regulations are met.

Dr. Yvonne W. Brandon served in 2015-16 as Executive Planning Director for CodeRVA and continued to work with the Superintendents' Advisory Council and standing committees to facilitate the school's opening and subsequent success. Dr. Brandon retired from her position as Superintendent of Richmond City Public schools in 2013 after three decades of experience as a teacher, counselor, principal, and assistant superintendent. Dr. Brandon has a doctorate in Education, Administration and Supervision from Nova University in Florida, a M.Ed. in counseling from Virginia State University and a BS from Randolph Macon in Virginia. Since her retirement, she has served as Executive in Residence with VCU, supporting the School of Education, and partnering with Richmond community educators to develop a School of Education Center focused on urban school leadership.

Other key members of various committees include

- **Robby Demeria**, Executive Director of RVA Tech and **Kim Mahan**, founder and CEO of Maxx Potential lead the Business and Industry Advisory Council.
- **Chip Cummings** Capital One Director of Human Resources, and **Mohammad Shamim**, Senior Vice President and Chief Technology Officer of CarMax.
- **Chris Dovi**, Executive Director for CodeVirginia leads the effort to integrate computer science concepts across the core curriculum, expanding and reinforcing student understanding of the universality of digital literacy.
- **Dr. David Myers**, Superintendent of New Kent Public Schools and Chair of the Budget and Logistics Committee

- **Eric Rhodes**, Director of Curriculum and Instruction for Richmond City Schools chairs the Policy Committee
- **Byron Bishop**, Director of Curriculum and Instruction for New Kent Public Schools chairs the Parent and Student Services Support Committee.
- **Dr. Jennifer Greif**, Director for Accreditation & Accountability, Hanover Co. Public Schools, chair of the Higher Education Committee. **Dr. Genene Lerosen** of Reynolds Community College and **Dr. William Fiege** of John Tyler Community College are engaged in the efforts to ensure that CodeRVA curriculum aligns with college admissions requirements

CodeRVA Regional High School Staff

In addition to the MSAP Project Director, the following non-instructional staff will be funded through MSAP:

Instructional Specialist for Computer Science: This position will be key to integrating input from industry partners into the CodeRVA curriculum, working with core content teachers to ensure that both computational thinking and real-world applications are embedded throughout coursework, projects, and service opportunities, and that teachers are prepared to implement these applications. The Computer Science teacher will report to the Instructional Specialist who will ensure that the CS teacher is prepared and effective in teaching and facilitating all levels of computer science coursework at the school. S/he will maintain close communication with industry partners to track trends in technology and workforce development, and to translate those trends into classroom experiences. This person will have a post-graduate license or endorsement in Computer Science or equivalent industry experience.

Academic Case Managers (ACM): one hired in Year I and two additional hired as student enrollment requires in Years II and III. Students will be assigned an ACM upon entry and remain with that person throughout their careers at CodeRVA, building long-term supportive relationships. The ACMs will work with students in designing and carrying through their personalized learning plans, meeting weekly to design instructional playlists that combine diverse resources to be used in completing course requirements and demonstrating mastery. The ACM will provide and/or coordinate additional tutoring or remediation as needed by students and will reach out to parents to remove barriers to achievement on an as needed basis. The Lead ACM will be responsible for serving as an embedded coach to other staff for personalized learning strategies, helping teachers adapt and develop their practices to empower students. All ACMs will possess post-graduate licenses with masters' degrees in education, counseling, or special education preferred.

College and Career Counselor (CCC): This position will be responsible for providing and coordinating resources and services that prepare students for the transition from CodeRVA into the workforce or post-secondary education. The CCC will work with students through their CodeRVA careers to develop the soft skills demanded in the workplace, including communication, time management, teamwork, networking, and professionalism. The CCC will also serve as the embedded instructional coach to teachers for project based learning, will coordinate with higher education and business partners to increase the variety of workplace experiences and internships; and will assist students in completing college applications, financial aid forms, and building a professional portfolio and resume. S/he will maintain close contact and communication with partners to track trends and developments in workforce training and potential certifications to be earned by CodeRVA students.

Outreach Coordinator: The Outreach Coordinator will be CodeRVA’s principal representative and primary contact for parents and the community. S/he will be responsible for publicizing CodeRVA and recruiting students that represent the diversity of the region. The Outreach Coordinator will conduct presentations in community-based locations, elementary and middle schools, and after school programs to build awareness, answer questions, and provide information about CodeRVA, building relationships with key counseling staff in middle schools to identify and actively recruit potential students. This position will also be responsible for coordinating with CodeVirginia, RVA Tech, and industry partners to expand the number and frequency of out-of-school computer science enrichment opportunities in underserved areas of the cities and counties.

3. Teachers are qualified to implement the special curriculum of the magnet school

Each teacher hired for CodeRVA Regional High School, whether funded by local or MSAP grant funds will be certified by the State of Virginia with expertise in their content areas necessary to carry out or facilitate the specialized curriculum designed for the school. Teachers will have a minimum of three years of successful experience in teaching students from diverse social, ethnic, racial and economic backgrounds, demonstrated knowledge of and experience in standards-based instruction and alignment of curriculum, instruction, assessment, and knowledge of and experience in meeting the special needs of students related to the education of minority group isolation. All teachers will have demonstrated ability to work collaboratively with other teachers, parents, and administrators. While not required, knowledge of and experience in personalized learning, project based learning, and innovative technology-based instructional strategies and techniques are an advantage.

Demonstrated proficiency and accomplishment in teaching integrated, heterogeneously

grouped classes of students from diverse ethnic, racial and socioeconomic backgrounds, experience in evaluation of student academic performance, especially the development and use of authentic assessment and/or competency based portfolios, are all highly desirable.

Teachers to be hired through MSAP include:

- **A Computer Science** teacher certified and endorsed to teach multiple computer science courses including but not limited to Introduction to Computer Science, AP Computer Science Principles, and AP Computer Science A.
- **A Mathematics intervention specialist** with specialized training in assisting students whose backgrounds may not have prepared them for the rigorous computer science curriculum, and
- **A Reading/Language Arts intervention specialist** with specialized training in assisting students who need additional support in accelerated humanities coursework.

(E) QUALITY OF THE EVALUATION PLAN

The evaluation will be coordinated by Dr. Jesse Senechal, Interim Director for the Metropolitan Educational Research Consortium (MERC), an independent research center based within Virginia Commonwealth University's School of Education. MERC conducts evaluation and applied research in the Richmond, Virginia metropolitan area in collaboration with local school districts, institutions of higher education, non-profits, and state agencies including the Virginia Department of Education and the State Council of Higher Education for Virginia. MERC's research and evaluation work has involved a range of quantitative, qualitative and mixed method designs. Dr. Senechal is also currently engaged as the lead evaluator for a federal Teacher Quality Partnership Grant, and a co-researcher on an IES Researcher Practitioner Partnership Grant. MERC has the technical resources to complete the

evaluation of the CodeRVA MSAP project in an unbiased, objective manner that meets existing standards for credible and effective research and evaluation.

1. Methods will produce evidence of promise

The proposed evaluation has two purposes. First, the evaluation is designed to provide summative information about the extent to which the CodeRVA Regional Magnet School shows evidence of promise in achieving its stated goals related to student achievement, reduction of minority isolation, school diversity, school and curriculum design, teacher professional development, and regional impact. Second, the evaluation will provide ongoing formative feedback to program leaders that can be used for performance monitoring and program development purposes. The evaluation will use a mixed method design that includes a robust quasi-experimental design (Shadish, Cook, & Campbell 2002) supported by comparative and case study (Yin, 2014) components. This design will allow for the development of strong causal claims about effects on student outcomes, while at the same time providing a multi-faceted descriptive analysis of the development of the school program within its social, cultural, political and economic contexts. The quasi-experimental component of the research design will use a control group of non-selected students from the school's weighted lottery system for admissions. Collection of multiple quantitative and qualitative data sources will allow the evaluation team to triangulate and cross-validate the findings from the experimental study as well as support the monitoring of treatment fidelity. Table 17 presents the evaluation questions. They are divided into the five evaluation foci.

TABLE 17. Evaluation Questions

TABLE 17. Evaluation Questions		
Evaluation Focus	Questions	
Student Outcomes	EQ1	How does attendance at the CodeRVA school impact student academic performance in English Language Arts, Math, and Computer Science?
	EQ2	How do predictive factors relating to on-time graduation (i.e, GPA, Attendance, behavioral incidence, college credit completion) of CodeRVA students compare with the control group?
	EQ3	How does attendance at CodeRVA impact the growth in student SEL dispositions and skills (e.g., tolerance, civic/social engagement, collaboration, leadership, etc.)?
	EQ4	What effect does CodeRVA’s curricular program have on achievement gaps between students of varying race/ethnic and socio-economic backgrounds?
	EQ5	How successful is CodeRVA at placing and supporting students through CS work experience placements?
School Diversity Focus	EQ6	To what extent does CodeRVA’s recruitment, application and lottery process achieve enrollment diversity that mirrors the regions’ school district demographics?
	EQ7	To what extent is CodeRVA able to retain female and underrepresented minority students to maintain enrollment diversity?
	EQ8	How do the school policies and elements of school and classroom

		culture support the principles of inclusion and diversity?
School/ Curriculum Design Focus	EQ9	How has the development of school design/curriculum (e.g., accelerated learning, personalized learning, PBL) supported overall goals of the school?
Professional Development Focus	EQ10	What impact does the Code RVA professional development program have on teachers' Pedagogical Content Knowledge related to the use of defined curricular strategies (e.g., PBL, personalized learning, SEL) and content areas (e.g., computer science)?
	EQ11	What impact does the school's professional development program have on the teachers' knowledge of strategies for building tolerance and understanding across diverse learners?
	EQ12	To what extent and how successfully are teachers transferring the knowledge from the CodeRVA professional development program into practice?
Regional Focus	EQ13	To what extent has CodeRVA prepared students for filling critical needs in the regional Computer Science workforce?
	EQ14	How have the marketing and outreach efforts of the school influenced the level of understanding of and support for magnet schools designed to address minority isolation and gaps in academic achievement?
	EQ15	In what ways has CodeRVA encouraged regional engagement in the development of additional projects that work to reduce minority isolation in schools?

	EQ16	How has the regional partnership between public and private sector actors emerged over the course of the grant implementation?
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2. Methods use objective performance measures related to the intended outcomes

To answer these questions, the evaluation team will collect a range of data for objective performance measurement and to develop an understanding of the development of the school over time. This includes secondary data from state, district, and school-level records; and primary data from existing, adapted and locally-developed instruments and protocols. Access to student-level data for the CodeRVA students and the control group students has been agreed to by the governing Superintendents Advisory Board of the school (see attached letters of support).

Prior to use as dependent measures in the evaluation effort, the technical adequacy of any new measures will be established. The prototypes of any new instrument will be field-tested with a sample comparable to the target group of subjects. When appropriate, conventional test development procedures (e.g., item analysis, computing difficulty indices, item validity coefficients, and reliability statistics) will be completed and the prototype measures will be revised as necessary to achieve reasonable and acceptable technical adequacy standards. For qualitative instruments, expert review and pilot testing will occur. Table 18 is a review of the data sources organized by type that indicates the aligned evaluation questions.

TABLE 18. Data Sources		
Data Type	Data Sources	Related Evaluation Questions
Publicly-	Virginia Standards of Learning Assessments – This will	EQ 1, 2, 4

available secondary data	include English Language Arts, Math, Science, and Social Studies, disaggregated by race/ethnicity, gender, and socioeconomic status. Publicly available data will be used to make regional and state comparisons.	
	Regional school and community demographic data – This will be pulled from Census, Virginia Department of Education, and Office of Civil Rights databases	EQ 6
	Regional workforce data – Publicly-available regional workforce data will be used to establish the regional economic context.	EQ 13
District and school-level data	Virginia Standards of Learning Assessments (Student-Level) – Student level standardized achievement data for English Language Arts, Math, Science, and Social Studies will be provided by the participating school districts. This data will be disaggregated by race/ethnicity, gender, and socioeconomic status of CodeRVA and control group students.	EQ 1, 2, 4
	Student course grades – Student grades will be collected quarterly and GPAs will be calculated and disaggregated as above.	EQ 2, 4
	Student attendance data disaggregated as above	EQ 2
	Student behavior data disaggregated as above	EQ 2
	Student application data – Application data will be collected and analyzed to determine the diversity of the applicant pool.	EQ 6

	Student enrollment data – School enrollment data will be collected to establish demographic comparisons within and between schools.	EQ 6
	CodeRVA student retention data disaggregated as above	EQ 7
	Other school data – As needed. For example, internship placement, parent participation, etc.	EQ 5, 12
Adapted assessments, measures, and instruments	Computer Science Content Assessment – In collaboration with the evaluation team, school curriculum leaders will identify and/or develop/adapt a common computer science assessment to measure growth in student CS knowledge and skills.	EQ 1, 2, 4
	Measure of Social Emotional Learning – The evaluation team will work with the school leaders to identify a common measure of Social Emotional Learning that captures key SEL constructs aligned with the school goals and curriculum (e.g., student engagement, civic/social responsibility, collaboration, leadership, comfort with diversity, etc.). Examples of possible instruments include the <i>Survey of Academic and Youth Outcomes (SAYO)</i> .	EQ 3
	Measures of professional knowledge growth - The evaluation team will work with the school professional development team to identify a common measure of professional knowledge growth aligned with the specific professional development program of the school.	EQ 10, 11

	Teacher observation protocol – The evaluation team will work with the school leadership and professional development team to identify an observation protocol that measures the extent to which teachers are successfully implementing targeted professional development strategies in practice. Instruments could include protocols such as the <i>Reformed Teaching Observation Protocol (RTOP)</i> .	EQ 12
Locally-developed surveys	Student survey – An annual locally-developed student survey will be used to understand the experience and perspectives of students attending the school. This survey will include validated measures of school climate such as the CCSR 5Essentials Student Survey.	EQ 5, 8, 9, 10
	Teacher/School-based Personnel survey – An annual locally-developed teacher survey will be used to understand the experience and perspectives of teachers and school-based personnel. This survey will include validated measures of school climate such as the CCSR 5Essentials Teacher Survey.	EQ 8, 9, 10, 11, 12
	Parent survey - An annual locally-developed parent survey will be used to understand the experience and perspectives of teachers and school-based personnel. This survey will include validated measures of school climate such as the CCSR 5Essentials Parent Survey.	EQ 3, 5, 8, 16
Qualitative	Student interviews / focus groups will be held twice a school	EQ 3, 5, 8, 9,

	year to gain perspectives on the student experience of the school program.	12
	Teacher/School-based Personnel interviews / focus groups will be held twice a school year to gain perspectives on the teacher experience of the school program.	EQ 8, 9, 10, 11, 12
	Key stakeholder interviews - Other key stakeholders will be interviewed on a regular basis to understand the experiences and perspectives of those highly involved in the implementation and operation of the school program. This could include interviews with individuals within the schools leadership structure, advisory board members and community partners.	EQ 5, 8, 9, 14, 15, 16
	Field Notes from site observations – The evaluation team will conduct regular observations and record field notes to understand better the operation of the school.	EQ 5, 8, 9, 14, 15, 16
	Public and school documents – Documents collected and analyzed will include meeting agendas and minutes, curriculum materials, and press about the school.	EQ 8, 9, 14, 15, 16

Evaluation Design Narrative

Below is a narrative that discusses the five interrelated components of the evaluation design.

a. Student Outcome Focus

To understand the effect of the school on student outcomes and possible disparities in achievement between groups, the evaluation will answer the following questions: (1) How does

attendance at CodeRVA school impact student academic performance in English Language Arts, Math, and Computer Science? (2) How do predictive factors relating to on-time graduation (i.e., GPA, Attendance, behavioral incidence, college credit completion) of CodeRVA students compare with the control group? (3) How does attendance at CodeRVA impact the growth in student SEL dispositions and skills (e.g., tolerance, civic/social engagement, collaboration, leadership, etc.)? (4) What effect does CodeRVA's curricular program have on achievement gaps between students of varying race/ethnic and socio-economic backgrounds? (5) How successful is CodeRVA at placing and supporting students through CS work experience placements?

The outcomes of interest for this component of the evaluation fall into three categories: academic achievement, Social Emotional Learning (SEL), and postsecondary success. Academic achievement will be measured through a number of measures including math and ELA scores on state standardized assessment (SOL), a Computer science assessment, and a predictive index of on-time graduation comprised of attendance, course grades, and behavioral data. The SEL outcomes will be measured with a validated measure of SEL outcomes to be determined. Because the evaluation will only be able to track a small cohort of students (n=45) into postsecondary, these outcomes will be measured primarily by descriptive and qualitative sources. In all cases, formative quantitative and qualitative data will be disaggregated and analyzed to identify trends and potential disparities in outcomes between differing subgroups including underrepresented minorities and female students.

The impact of CodeRVA on students will be determined using both quasi-experimental and comparative designs. The quasi-experimental design will be used for outcome measures that are available for the identified control group through district and school-level data sources (i.e., ELA and Math SOL scores, On-Time graduation). Comparative designs (pre-post test) will be used for

outcome measures that are only available for CodeRVA students (e.g., Computer Science Assessments, SEL measures, etc.).

The use of a weighted lottery system – in which all lottery members will not have equal probability of acceptance into CodeRVA – necessitates a more complex design to construct valid treatment-control comparisons. One approach is to use cluster-based stratification to match CodeRVA students with other lottery participants who have similar demographics (and, as a result, similar likelihood in the lottery system). Using quasi-experimental methods, a matched control group for each new cohort of CodeRVA students will be established on an annual basis by conducting a cluster analysis related to key elements of the lottery algorithm (e.g., SES, race, gender, etc.) (see above). The matched control group will be selected from the same cluster as each participant in an effort to closely match students based on their demographic profile. Depending on lottery pool size, the control group will be 2 to 3 times the size of the treatment group to ensure tighter matches, and address issues of attrition over time. To establish baseline equivalence on race/ethnicity, SES, prior academic achievement, school attendance, and behavioral data will be tested using WWC guidelines where baseline equivalence is satisfied if mean differences between groups are less than or equal to .05 standard deviations. If differences are between .05 and .25 standard deviations, statistical adjustments will be made during analyses (i.e., including a covariate). It should also be noted that two groups of students will be excluded from the control group selection. The first are students that come from or move to home school or private schools settings. The second excluded group will be students that enter other selective enrollment schools such as the regional Governor’s schools. In both cases the rationale is that we are interested in understanding the effect of CodeRVA in relation to traditional home district school options.

To determine differences in outcome between treatment and control groups, the data will be analyzed by grant year using a regression model that looks for effects related to treatment versus control group, and grade level, on individual outcomes of interest. The regression model will control for confounding variables including student’s home school district. A separate analysis will look for differences in student outcome across subgroup within CodeRVA using a regression model that looks for effects resulting from demographic differences in group (e.g., SES, race, etc.). This analysis could also be extended using treatment-by-demographic group interaction effects to compare the size of achievement gaps between student groups in CodeRVA to gaps between student groups in the matched control group. Table 19 illustrates the experimental design. The cohort of students accepted by lottery each year is represented by C. X represents the randomly-selected control groups. It should be noted that cohort 1 (C1) and control group 1 (X1) are divided into two sub groups (i.e., C1a, C1b, X1a, X1b). This reflects the fact that the first year cohort will include both grade 9 and grade 10 students, whose data will be analyzed separately. It should also be noted that the inclusion of grade 10 in cohort 1 will allow for a comparison of post-secondary outcomes in year 4 for that group.

TABLE 19: Student Outcome Research Design				
Outcome Measures	Year 1 (17-18)	Year 2 (18-19)	Year 3 (19-20)	Year 4 (20-21)
Experimental Design				
• ELA and Math SOL (annually)	C1a (n=45) C1b (n=45) X1a (n=90) X1b (n=90)	C1a (n=45) C1b (n=45) X1a (n=90) X1b (n=90)	C1a (n=45) C1b (n=45) X1a (n=90) X1b (n=90)	C1a (n=45) X1a (n=90)

<ul style="list-style-type: none"> On-Time Graduation Index (fall and spring) 		C2 (n=110) X2 (n=220)	C2 (n=110) X2 (n=220)	C2 (n=110) X2 (n=220)
			C3 (n=100) X3 (n=200)	C3 (n=100) X3 (n=200)
				C4 (n=100) X4 (n=200)
<ul style="list-style-type: none"> Graduation and Post-Secondary 				C1b (n=45) X1b (n=45)
Non-Experimental Design				
<ul style="list-style-type: none"> Computer Science Assessment (annually) SEL Measure (fall and spring) 		C1 (n=90)	C1 (n=90)	C1 (n=45)
		C2 (n=110)	C2 (n=110)	C2 (n=110)
			C3 (n=100)	C3 (n=100)
				C4 (n=100)

CodeRVA Student Cohorts - C1a, C1b, C2, C3, C4

Experimental Control Group Cohorts – X1a, X1b, X2, X3, X4

With the student outcome design, there are several points to highlight. First, since Year I funding will not start until October of 2017, data collection in the first year will be limited, for the most part, to systems-level data. Other data related to student outcomes, which will require

identifying and locally developing instruments, will not begin in full until Year II. Second, certain outcome measures will be collected on an annual basis (e.g., ELA and Math SOL scores), while others will be collected twice a year (e.g. SEL measures) to track change over time. As shown in the illustration, the design will also track growth in Computer Science knowledge and Social Emotional Learning for the CodeRVA students. Lack of standard assessments in these areas will not allow for the examination of these outcomes in the experimental design. To determine program effect on CodeRVA students on outcomes with the non-experimental design, analysis will involve pre-post design that uses regression to control for pretest scores. Within this design there will be opportunities, to determine differential effects between subgroups within the school (e.g., female vs. male, White vs. Non-White, etc.).

Ongoing formative feedback will allow for early identification of potential and actual barriers that impact the desired outcomes. Formative evaluation reports on the student outcome focus will be presented to the school leadership and discussed on a semiannual basis (January, May). This will allow for corrections and responses by the school instructional leaders to continuously improve the program strategies. Formative reporting will be discussed in more detail below.

b. School Diversity Focus

To determine the extent to which the CodeRVA school meets its goal of reducing minority isolation and promoting integration and diversity within the school the evaluation will address the following questions: (EQ 6) To what extent does CodeRVA’s recruitment, application and lottery process achieve enrollment diversity that mirrors the regions’ school district demographics? (EQ 7) To what extent is CodeRVA able to retain female and URM students to maintain enrollment diversity? (EQ 8) How do the school policies and elements of school and classroom culture support the principles of inclusion and diversity? This focus of the evaluation

will involve two components. First, using an analysis of CodeRVA student application, enrollment and retention data in relation to school targets and demographics across schools and the region, we will be able to determine student exposure to diverse school settings in relation to the student's zoned school. The analysis for this will involve a one-sample t-test that looks at the achieved diversity of CodeRVA in comparison with the composite averaged diversity of the control group schools. The examination of school diversity will also involve a mixed-methods case study (Yin 2014) of the school's policies and process of achieving and maintaining diversity, as well as the students' experiences of this school environment. The strength of this second component will come from the use of triangulation of data sources including school records, documents, locally developed surveys, and interviews and focus groups with purposeful maximum variation sample (Patton 2014) of students, teachers, and other key stakeholders. These qualitative data will provide an authentic look into the ongoing efforts to achieve diversity in the enrollment process and school operation. Qualitative data will be analyzed in Atlas.ti using thematic analysis (Miles, Huberman, Saladana 2013) and constant comparison (Strauss and Corbin, 1990). Quantitative data will be analyzed descriptively.

c. School Design Focus

In large part, CodeRVA is an experiment that involves redesigning the goals and structures of high school. For this reason, this evaluation will address the question: (EQ9) How has the development of school design/curriculum (e.g., accelerated learning, personalized learning, PBL) supported overall goals of the school? This question will be answered through the mixed-method case study (Yin 2014) component of the design. The design will involve developing propositions related to the schools logic model and theory of change, and then examining these propositions in relation to evidence of the program in practice that will come from multiple sources of data

including school records, documents, locally developed surveys, and interviews and focus groups with purposeful maximum variation sample (Patton 2014) of students, teachers and other key stakeholders. In this analysis we will look for possible disconnects between the program theory and the program in practice, The findings of this ongoing case analysis will be shared as part of the ongoing formative reporting to school leadership to support program development. The findings will also provide information about treatment fidelity for the experimental, quasi-experimental and non-experimental components of the design used to determine impact. Qualitative data will be analyzed in Atlas.ti using thematic analysis (Miles, Huberman, Saladana 2013) and constant comparison (Strauss and Corbin, 1990). Quantitative data will be analyzed descriptively.

d. Professional Development Focus

To determine the extent to which the school has met its professional development goals, the evaluation will address the following questions: (EQ10) What impact does the professional development program implemented by CodeRVA have on teachers' Pedagogical Content Knowledge related to the use of defined curricular strategies (PBL, personalized learning, SEL) and content areas (e.g., computer science)? (EQ11) What impact does the school's professional development program have on the teachers' knowledge of strategies for building tolerance and understanding across diverse learners within a CS curriculum? (EQ12) To what extent and how successfully are teachers transferring the knowledge from the CodeRVA professional development program into practice? The outcomes of interest for this component of the design are teachers' Pedagogical Content Knowledge for targeted professional development activities and changes to practice. To assess change in these areas evaluation data will be collected related to each of the professional development activities (e.g., content assessments, workshop

assessments, teacher interviews), and then a specific teacher observation protocols will be identified (e.g., Reformed Teaching Observation Protocol) or locally developed to gauge the extent to which teachers are integrating the PD knowledge into their practice. Data from surveys and observation protocols will be analyzed using descriptive statistics and thematic qualitative analysis. Ongoing formative feedback about the professional development program will be shared with school leaders through the semiannual formative evaluation reports.

e. Regional Impact

The CodeRVA project is designed, in part, to have a meaningful impact on the region. Regional impact includes possible effects on the computer science workforce, effects on the regional conversation around magnet schools and desegregation efforts, and effects on the regional cross sector partnerships. To assess the regional impact of the school, the evaluation will address the following questions: (EQ13) To what extent has CodeRVA prepared students for filling critical needs in the regional CS workforce? (EQ 14) How have the marketing and outreach efforts of the school influenced the level of understanding of and support for magnet schools designed to address minority isolation and gaps in academic achievement? (EQ 15) In what ways has CodeRVA encouraged regional engagement in the development of additional projects that work to reduce minority isolation in schools? (EQ 16) How has the regional partnership between public and private sector actors emerged over the course of the grant implementation? These questions will be addressed through the mixed method case study (Yin 2014) component of the design. The design will involve developing propositions related to the logic model and theory of change, and then examining these propositions in relation to multiple sources of data including regional press, public documents, and interviews and focus groups with purposeful maximum variation sample (Patton 2008) of key stakeholders. Qualitative data will

be analyzed in Atlas.ti using thematic analysis (Miles, Huberman, Saladana 2013) and constant comparison (Strauss and Corbin, 1990). Quantitative data will be analyzed descriptively.

f. Evaluation Reporting

Regular formative and summative evaluation reporting to school leaders will occur through the course of the grant on a regular basis. This will include semiannual formative evaluation reports – in January and May – on evaluation progress and preliminary findings, and annual summative reports on key findings related to the evaluation questions. The evaluation team will present evaluation reports to the school leadership team and advisory board to address questions and provide feedback that can be used to inform program development and implementation strategies. The evaluation team will also consult as needed on a regular basis with the school leaders to address questions about school performance and program development. Summative reports will be completed in the summer of each grant year (August). These reports will be presented to the school leadership and used for APR reporting to the federal funding agency. Summative reports will be the result of collaborative work between the MSAP Project Director and the evaluation team.

3. Extent to which the costs are reasonable

Timeline and Resourcing

Table 20 presents a timeline that illustrates evaluation activity over the course of the grant. Again, it should be noted that evaluation activity in grant year 1 will emphasize instrument development and setting up data systems, while the final grant year will focus on analysis and reporting. The resources for the project primarily consist of time dedicated to the research activities by a team of researchers and research assistants. This team will include an evaluation project manager, a lead evaluator, and a full time graduate research assistant. A breakdown of

evaluation costs are shown in the budget narrative. This evaluation plan has the potential to produce important findings that will inform the future development of

TABLE 20: CodeRVA Evaluation Timeline

TABLE 20: CodeRVA Evaluation Timeline							
	Instrument and Data System Development	Data Collection			Data Analysis	Reporting	
		Secondary Data	Survey	Qualitative		Formative	Summative
Year I							
Fall 2017	X						
Spring 2018	X			X	X	X	
Summer 2018	X	X			X		X
Year II							
Fall 2018	X	X	X	X	X	X	
Spring 2019		X	X	X	X	X	
Summer 2019		X		X	X		X
Year III							
Fall		X	X	X	X	X	

2019							
Spring 2020		X	X	X	X	X	
Summer 2020		X		X	X		X
Year IV							
Fall 2020		X	X	X	X	X	
Spring 2021		X	X	X	X	X	
Summer 2021		X			X		
Year V							
Fall 2021		X			X		X

REFERENCES

- Ashley, C. (2014). Socioeconomic Student Assignment Plans: Opportunities for Low Income Families and Racial Diversity in K-12 Public Schools. *Clearinghouse Review: Journal of Poverty Law and Policy*, 47, 11–12.
- Barshay, J. (2015, May 4). No Longer Counting Who's Poor in School. *Hechinger Report*, p. <http://hechingerreport.org/no-longer-counting-whos-poor-in-school/>
- Bhargava, A., Frankenberg, E., & Le, C. Q. (2008). *Still Looking to the Future: Voluntary K-12 Integration: A Manual for Parents, Educators, and Advocates*. Retrieved from <https://civilrightsproject.ucla.edu/research/k-12-education/integration-and-diversity/still-looking-to-the-future-voluntary-k-12-school-integration/naacp-still-looking-future-2008.pdf>
- Bifulco, R., Cobb, C. & Bell, C. (2009). Can Interdistrict choice boost student achievement? The case of Connecticut's interdistrict magnet school program. *Educational Evaluation and Policy Evaluation*, 31(4): 323-245.
- Bischoff, K. (2008). School District Fragmentation and Racial Residential Segregation: How Do Boundaries Matter? *Urban Affairs Review*, 44(2), 182–217. doi:10.1177/1078087408320651
- Braddock, J. (1980). The Perpetuation of Segregation Across Levels of Education: A Behavioral Assessment of the Contact-Hypothesis. *Sociology of Education*, 53(3), 187.
- Braddock, J. (2009). Looking Back: The Effects of Court-Ordered Desegregation. In C. Smrekar & E. Goldring (Eds.), *From the Courtroom to the Classroom: The Shifting Landscape of School Desegregation* (pp. 3–18). Cambridge, MA: Harvard Education Press.
- Braddock, J., & Eitle, T. (2004). The Effects of School Desegregation. In J. Banks & C. Banks (Eds.), *Handbook of Research on Multicultural Education* (pp. 828–846). New York, NY: John Wiley & Sons.

- Bradley v. School Board of City of Richmond, 416 U.S. 696 (1974)
- Brown-Jeffy, S. (2006). The Race Gap in High School Reading Achievement: Why School Racial Composition Still Matters. *Race, Gender & Class*, 13(3/4), 268–294.
- Bureau of Labor Statistics. (2016a, April 18). *Occupations with the most job growth*. Retrieved May 24, 2016, from http://www.bls.gov/emp/ep_table_104.htm
- Bureau of Labor Statistics. (2016b). *Occupations with the most job growth*. Retrieved from http://www.bls.gov/emp/ep_table_104.htm
- Berger, A., Garet, M., Hoshen, G., Knudson, J., & Turk-Bicakci, L. (2014). *Early College, Early Success: Early College High School Initiative Impact Study* Washington, DC: American Institutes for Research. (<https://ies.ed.gov/ncee/wwc/Study/84227>).
- Burning Glass Technologies. (2015, March). *Crunched by the Numbers*. Retrieved from <http://burning-glass.com/research/digital-skills-gap/>
- Butler, D. (2010). Ethnic Racial Composition and College Preference: Revisiting the Perpetuation of Segregation Hypothesis. *Annals of the American Academy of Political and Social Science*, 627, 36–58.
- CASEL. (2015). *What is Social and Emotional Learning*. Retrieved May 27, 2016, from Collaborative for Academic, Social, and Emotional Learning, <http://www.casel.org/social-and-emotional-learning>
- Chiles, N. (2015, July 8). Personalized Learning is Especially Good for Children of Color. *Hechinger Report*, p. <http://hechingerreport.org/personalized-learning-is-especially-good-for-students-of-color/>
- Chmura Economics and Analytics. (2016, February). *Bridging Richmond: Regional post-secondary attainment*. Retrieved from [http://bridgingrichmond.com/docs/regional-post-](http://bridgingrichmond.com/docs/regional-post-secondary-attainment)

secondary-attainment/

Clotfelter, C. (2004). *After Brown: The Rise and Retreat of School Desegregation*. Princeton, NJ: Princeton University Press.

Cobb, C., Bifulco, R. & Bell, C. (2009 January). *Evaluation of Connecticut's interdistrict magnet schools*. Storrs, CT: The Center for Education Policy Analysis at the University of Connecticut. Retrieved from: <https://assets.documentcloud.org/documents/1390103/cepa-evaluation-of-connecticuts-inter-district.pdf>

College Board. (2014, February). *AP Report to the Nation*. Retrieved from <http://apreport.collegeboard.org/>

Common core of data (CCD). Retrieved May 25, 2016, from National Center for Educational Statistics, <https://nces.ed.gov/ccd/>

Computer Science Major. (2016). *TECH DIVERSITY IN THE COMPUTER SCIENCE FIELD: RECRUITMENT, RETENTION AND RESOURCES*. Retrieved May 27, 2016, from ComputerScienceMajor.Org, <http://computersciencemajor.org/minorities-in-the-computer-science-field-recruitment-retention-and-resources>

Cotner, S., Loper, J., Walker, J. D., & Brooks, C. D. (2013). "It's Not You, It's the Room" - Are the High-Tech, Active Learning Classrooms Worth It? *Journal of College Science Teaching*, Vol. 42(6), 82–88. Retrieved from <http://www.cbs.umn.edu/sites/cbs.umn.edu/files/public/downloads/JCST-July2013.pdf>

Cotton, K. (1993, November). *Fostering Intercultural Harmony in Schools: Research Finding, Cotton; 1993*. Retrieved from <http://educationnorthwest.org/sites/default/files/FosteringInterculturalHarmony.pdf>

Dawkins, M. (1983). Black Students' Occupational Expectations: A National Study of the Impact of School Desegregation. *Urban Education*, 18(1), 98–113.

- DOE. (2012, November 13). *Magnet Schools Assistance Program*. Retrieved May 27, 2016, from Department of Education, <http://www2.ed.gov/programs/magnet/index.html>
- Edberg, J., Epple, D., Imbrogno, J., Sieg, H., & Zimmer, R. (2011). *Bounding the Treatment Effects of Education Programs That Have Lotteried Admission and Selective Attrition*. Retrieved from https://www.researchgate.net/publication/228451068_Bounding_the_Treatment_Effects_of_Education_Programs_That_Have_Lotteried_Admission_and_Selective_Attrition
- Fiel, J. (2013). Decomposing School Resegregation: Social Closure, Racial Imbalance, and Racial Isolation. *American Sociological Review*, 78, 828–848.
doi:10.1177/0003122413496252
- Fiel, J. (2015). Closing Ranks: Closure, Status Competition, and School Segregation. *American Journal of Sociology*, 121(1), 126–170.
- Frey, W. H. (2011, May). *0504 census ethnicity frey*. Retrieved from http://www.brookings.edu/~media/research/files/papers/2011/5/04%20census%20ethnicity%20frey/0504_census_ethnicity_frey.pdf
- Gamoran, A. (2009). Student Achievement in Public Magnet, Public Comprehensive, and Private City High Schools. *Educational Evaluation and Policy Analysis*, 18(1), 1–18.
doi:10.3102/01623737018001001
- Granovetter, M. (1979). The Idea of “Advancement” in Theories of Social Evolution and Development. *American Journal of Sociology*, 85(3), 489–515.
- Guryan, J. (2004). Desegregation and Black Dropout Rates. *The American Economic Review*, 94(4), 919–943.
- Hallinan, M. (1998). Diversity Effects on Student Outcomes: Social Science Evidence. *Ohio*

State Law Journal, 59(3), 733–754.

Hanushek, E., Kain, J., & Rivkin, S. (2009). New Evidence about Brown v. Board of Education:

The Complex Effects of School Racial Composition on Achievement. *Journal of Labor Economics*, 27(3), 349–383.

Harris, D. (2006, November). *Lost Learning, Forgotten Promises: A National Analysis of School*

Racial Segregation, Student Achievement, and “Controlled Choice Plans. Retrieved from

<https://www.americanprogress.org/wp-content/uploads/issues/2006/11/pdf/lostlearning.pdf>

Hawley, W. (2007). Designing Schools that Use Student Diversity to Enhance Learning of all

Students. In G. Orfield & E. Frankenberg (Eds.), *Lessons in Integration: Realizing the*

Promise of Racial Diversity in American Schools (pp. 31–56). Charlottesville, VA:

University of Virginia Press.

Hoffman, M. (2016). *Computer science for minorities*. Retrieved May 25, 2016, from Computer

Science Online, <http://www.computerscienceonline.org/cs-programs-for-minorities/>

Jencks, C., & Mayer, S. (1990). The Social Consequences of Growing Up in a Poor

Neighborhood. In *Inner City Poverty in the United States* (pp. 111–186). Washington, DC:

National Academy of Sciences.

Kannel-Ray, N. (2009). Academic Case Management: Promising Interventions for Closing

Achievement Gaps in Multicultural Settings. Retrieved from:

https://www.researchgate.net/publication/269709754_Academic_Case_management_Promising_Interventions_for_Closing_Achievement_Gaps_in_Multicultural_Settings.

Linn, R., & Welner, K. (2007). *Race-conscious Policies for Assigning Students to Schools:*

Social Science Research and the Supreme Court Cases. Retrieved from

http://www.naeducation.org/cs/groups/naedsite/documents/webpage/naed_080863.pdf

- Marples, C. A., & Spillman, D. M. (1995). Factors affecting students' participation in the Cincinnati Public Schools lunch program. *Adolescence*, 30(119), 745–753.
- McPartland, J., & Braddock, J. (1981). The Impact of School Desegregation on Going to College and Getting a Good Job. In W. Hawley (Ed.), *Effective School Desegregation* (pp. 141–154). New York, NY: Sage.
- Mickelson, R. (2008). Twenty-First Century Social Science on School Racial Diversity and Educational Outcomes. *Ohio State Law Journal*, 69, 1173–1228.
- Mickelson, R., & Bottia, M. (2010). Integrated Education and Mathematics Outcomes: A Synthesis of Social Science Research. *North Carolina Law Review*, 88, 993.
doi:<http://www.nclawreview.org/documents/88/3/mickelson.pdf>
- Mickelson, R., & Nkomo, M. (2012). Integrated Schooling, Life-Course Outcomes, and Social Cohesion in Multiethnic Democratic Societies. *Review of Research in Education*, 36(1), 197–238. doi:10.3102/0091732X11422667
- Microsoft. (2012). *A National Talent Strategy: Ideas for Securing US Competitiveness and Economic Growth*. Retrieved from <https://news.microsoft.com/download/presskits/citizenship/MSNTS.pdf>
- Miles, M. B., Huberman, A. M., & Saldana, J. (2013). *Qualitative data analysis: A methods sourcebook*. SAGE Publications.
- National Forum on Educational Statistics. (2015, June). *Forum Guide to Alternative Measures of Socioeconomic Status in Education Data Systems*. Retrieved from <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2015158>
- National Science Foundations. (2010). *Women, Minorities and Persons with Disabilities in Science and Engineering*. Retrieved from National Science Foundation,

<http://http://www.nsf.gov/statistics/wmpd/2013/digest/theme4.cfm>

- NCES. (2015). *School Composition and the Black–White Achievement Gap*. Retrieved from http://nces.ed.gov/nationsreportcard/subject/studies/pdf/school_composition_and_the_bw_achievement_gap_2015.pdf
- Newton, X. (2010). End of High School Mathematics Attainment: How Did Students Get There? *Teachers College Record*, 112(4), 1064–1095.
- Orfield, G., & Frankenberg, E. (2013). *Educational Delusions: Why Choice Can Deepen Inequality and How to Make Schools Fair*. Berkeley, CA: University of California Press.
- Page, S. (2007). *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools and Societies*. Princeton, NJ: Princeton University Press.
- Patton, M. Q. (2008). *Utilization-focused evaluation*. Thousand Oaks, CA: Sage Publications.
- Pettigrew, T., & Tropp, L. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology*, 96(90), 751–783.
- Potter, H., Quick, K., & Davies, E. (2016, February). *A New Wave of School Integration Districts and Charters Pursuing Socioeconomic Diversity*. Retrieved from <https://tcf.org/content/report/a-new-wave-of-school-integration/>
- Public School Review. (2016). *Virginia Magnet public schools*. Retrieved May 25, 2016, from Public School Review, <http://www.publicschoolreview.com/virginia/magnet-public-schools>
- Ready, D., & Silander, M. (2011). School Racial and Ethnic Composition and Young Children’s Cognitive Development: Isolating Family, Neighborhood and School Influences. In E. Frankenberg & E. DeBray (Eds.), *In Integrating schools in a Changing Society: New Policies and Legal Options for a Multiracial Generation* (pp. 91–113). Chapel Hill, NC: UNC Press.

- Reardon, S. (2016). *Russell Sage Foundation Journal of the Social Sciences* 2(5), 34-57.
- Reardon, S., & Yun, J. (2001). Suburban Racial Change and Suburban School Segregation, 1987—1995. *Sociology of Education*, 74(2), 79–101. doi:10.2307/2673164
- Reardon, S. F., Yun, J., & Kurlaender, M. (2006). Implications of Income-Based School Assignment Policies for Racial School Segregation. *Educational Evaluation and Policy Analysis*, 28(1), 49–75. doi:10.3102/01623737028001049
- Schofield, J. (2004). Review of Research on School Desegregation’s Impact on Elementary and Secondary Students. In J. A. Banks & C. Banks (Eds.), *Handbook of Multicultural Education* (pp. 597–617). New York, NY: MacMillan Publishing.
- Shadish, W. R., Cook, T. D. & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. New York: Houghton Mifflin Company.
- Silver, D., & Sanders, M. (2008). *What Factors Predict High School Graduation in the Los Angeles Unified School District?* Retrieved from <http://www.hewlett.org/uploads/files/WhatFactorsPredict.pdf>
- Stearns, E. (2010). Long-term Correlates of High School Racial Composition: Perpetuation Theory Reexamined. *Teachers College Record*, 112(6), 1654–1678.
- Stroub, K., & Philips, M. (2013). From Resegregation to Reintegration: Trends in Metropolitan School Segregation. *American Educational Research Journal*, 50(3), 497–531. doi:10.3102/0002831213478462
- Tashakkori, A., & Teddlie, C. (Eds.). (2010). *Sage handbook of mixed methods in social & behavioral research*. Sage.
- Teranishi, R., Allen, W., & Solorzano, D. (2004). Opportunities at the Crossroads: Racial Inequality, School Segregation, and Higher Education in California. *Teachers College*

Record, 106(11), 2224–2245.

Teranishi, R., & Parker, T. (2010). Social Reproduction of Inequality: Racial Segregation, Secondary Schools, and Postsecondary Opportunities. *Teachers College Record*, 112,

Trent, W. (1997). Outcomes of School Desegregation: Findings from Longitudinal Research. *Journal of Negro Education*, 66(3), 255–257.

VDOE: Fall membership data. (2015). Retrieved May 25, 2016, from Virginia Department of Education,

http://doe.virginia.gov/statistics_reports/enrollment/fall_membership/report_data.shtml

Vigdor, J., & Ludwig, J. (2007, March). *Segregation and the Black-White Test Score Gap*, Working Paper No 12988. Retrieved from <http://www.nber.org/papers/w12078>

Wells, A. S., & Crain, R. (1994). Perpetuation Theory and the Long-Term Effects of School Desegregation. *Review of Educational Research*, 6(4), 531–555.

Wells, A. S., Fox, L., & Cordova-Cobo, D. (2016, February). *How Racially Diverse Schools and Classrooms Can Benefit All Students*. Retrieved from <https://tcf.org/content/report/how-racially-diverse-schools-and-classrooms-can-benefit-all-students/>

WestEd. (2008, September). *Successful Magnet High Schools: Innovations in Education*. Retrieved from Successful Magnet High Schools: Innovations in Education