

# The Petersburg Story

A Case Study of Urban School Reform

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Southern Initiative Algebra Project  
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## PREFACE

The story of the Algebra Project in Petersburg, VA, is a story of how the citizens of a community came together to put a floor beneath their children, to give them crawl space to access a quality education. It is a story of how students took advantage of that crawl space to open a door of opportunity and show those in power that they were capable of high achievement, of how their work set the stage for more quality and rigor in their school coursework, not just for themselves but also for their peers. It is a story that continues.

This story began in 2005 when Dr. Renee Hill and Dr. Dirk Philipsen, co-directors of the Institute for the Study of Race Relations at Virginia State University (VSU), invited Algebra Project Director Robert Moses to make a presentation at a conference at VSU, "Closing the Gap-Diversity in Education". This presentation resulted in the Institute's inviting the Algebra Project to participate in a workshop at VSU to introduce the Algebra Project concepts to teachers of mathematics and instructional leaders from several school districts in the area of the university. Robert Moses and his son, Omowale Moses, responded to that invitation. Omowale was director of the Young Peoples Project, Inc., (YPP) an independently incorporated youth component of the Algebra Project.

These events were of historic significance. Unexpectedly, certain icons and pioneers of the Civil Rights Movement began linking together. Dr. Renee Hill is the daughter-in-law of Civil Rights legal icon, the late Attorney Oliver Hill, one of the lead attorneys with Thurgood Marshall in *Brown vs. Board of Education 1954*. His son, Dr. Oliver Hill, spouse of Dr. Renee Hill, was the chair of VSU's Psychology Department. Robert Moses is the Civil Rights leader who led the fight for voting rights in Mississippi in the 60s and presently is one of the leaders in the fight for quality education for all students in this country. One of the schools in the district is named after one of the most dynamic leaders in the history of the Civil Rights Movement, Reverend Vernon Johns; his niece was one of the lead plaintiffs in the *Brown* case.

This first meeting was followed by two more, involving Algebra Project staff members, VSU department heads and faculty members, community leaders, Petersburg City Public Schools (PCPS) administrators and faculty members, city officials and business representatives. One of these meetings was held in the historic First Baptist Church, one of the primary meeting places during the Civil Rights Movement of the 60's. These meetings caught the attention of another visionary leader in the community, Handy Lindsey, director of the Cameron Foundation. He believed in the citizens of Petersburg and was looking for ways to improve the conditions in the area, especially in health and education. He felt that the Algebra Project could offer solutions to some of the local problems in education.

This document will show how what began as an exchange of ideas among a handful of people from VSU, such as Dr. Renee Hill, Dr. Oliver Hill, Dr. Wesley Hogan, Dr. Gerald Burton, Dr. Dawit Haile and Dr. Cheryl Adeyemi; teachers and administrators from PCPS such as Ms. Gwen Price, Dr. James Victory, and Mrs. Annie Mickens, school teacher and mayor of the City of Petersburg; and other community leaders developed into a planning group called the Design Team. This Design Team became the foundation of the movement that has evolved into a regional initiative involving five additional school districts.

This document will share strategies used to bring this diverse community together through SIAP's Community and Site Development Team (CSDT) in partnership with community-based organizations and the faith-based community, explain how the culture of teaching was changed by SIAP's Professional Development Team in partnership with the faculty of VSU, and chronicle how the culture of learning was changed by all components working together with the support of a strong youth mentoring program provided by YPP and the students from VSU in partnership with SIAP. This report illustrates the true meaning of it takes a whole community to educate a child. It also demonstrates what it takes to bring together a community to make this happen.

The development of these partnerships provided a means of leveraging funding to supplement Cameron Foundation's financial support. For five years, PCPS paid stipends to their teachers who attended the summer professional development institutes and Saturday workshops. Dominion Virginia Power provided funding to support the youth component during the 2007-2010 school years. VSU supported the Community Development Summit during the

summer of 2007 by funding a four-day Community Development Summer Institute for 50 local community leaders, VSU students, and PCPS students and teachers.

Many of the participants continued to work with the Design Team, the youth initiative and the Dialogue to Action program of the Community and Site Development component of the program throughout the project. The National Science Foundation (NSF) provided approximately \$540,000 of content and skills development to members of the Petersburg High School (PHS) Mathematics Department during the 2007-2010 school years. That resulted in their exposure to ten weeks of summer institutes at Cornell University, Jackson State University, Syracuse University and the University of Chicago under the direction of world renowned mathematicians Dr. Ed Dubinsky, Dr. David Henderson, and Dr. Greg Budzban. These mathematicians also visited PCPS classrooms and worked with the teachers.

Invaluable volunteer hours were provided by members of the Design Team that met monthly from 2007 through the present, by teachers attending extra hours for meetings and after-school programs, by ministers and their churches that gave space for meetings and workshops and by parents and community leaders in countless other ways.

At the conclusion of the AP/SIAP implementation, math pass rates had increased across the board and all PCPS schools were accredited except one; 50% of the 2007-2008 PHS mathematics teachers now instruct college students at least part-time and a mathematics dual enrollment program was instituted that over a 2-year period earned all 30 participating students 7-14 college credits in mathematics.

This endeavor demonstrates how such a concerted effort can make a difference. It offers a solution to closing gender and racial gaps in educational performance in the State of Virginia, and even the nation. The “pipeline from cradle to prison” can give way to a “pipeline from cradle to success.”



David J. “Dave” Dennis, Sr.  
Founder and CEO  
Southern Initiative Algebra Project

## Introduction

The Algebra Project began in Petersburg in 2006. It was a six-year planning and implementation process intended to transform mathematics teaching and learning and create community-based supports to ensure the success of students who score in the lowest quartile on standardized tests. This sub-population of students is largely low-income children of color who historically have been ill-served in the nation's schools.

*The Petersburg Story* is written to inform educators, activists, policy makers, funders, parents and others of the important features, strategies, challenges and outcomes of the Algebra Project in Petersburg. The story holds powerful lessons for reform in schools and communities serving the highest need and traditionally most underserved segments of our student population.

Section I presents a history of the Southern Initiative Algebra Project, its various iterations over the past two decades, its theory of action, and its change model. Section II describes the project setting – the city of

Petersburg, its history and current state, and the school division – when the Algebra Project entered.

Section III describes the project's activities and work in Petersburg from 2006 to 2012. Section IV presents major outcomes, and Section V, lessons learned and implications for future growth and transformation.

The story emerges from a careful examination of multiple data sources: documentation maintained by the Southern Initiative Algebra Project, reports from the school division to the Cameron Foundation; interviews with participants, supporters, local government officials, faith-based groups and other stakeholders; focus group discussions with teachers and community members; records of meetings with school and division personnel, the Design Team, and faculty members and administrators at Virginia State University (VSU); and others. Student achievement data were retrieved from the Virginia Department of Education official website and school division reports.

# I. The Southern Initiative Algebra Project: Who We Are

## THE FOUNDING AND ROOTS OF CHANGE

The Southern Initiative Algebra Project (SIAP) began as a program of The Algebra Project, Inc. (AP, Inc.) in 1994. Bob Moses founded AP, Inc., in the early 1980s to “help close the gap between universal free public education and universal completion of a college preparatory mathematics sequence in high school.” (Moses and Cobb, 2001)

Initially called the Southern Initiative *of the* Algebra Project, SIAP was based in Jackson, MS, and administered by Positive Innovations under the leadership of David Dennis, Sr. From 1994 to 2000, SIAP developed 42 Algebra Project sites in eight states throughout the South, and involved over 4,000 teachers and 50,000 students in whole school mathematics education reform. The goal, with a focus on African American students, was to have every student succeed in Algebra I by the end of the 8<sup>th</sup> grade and complete the full sequence of college preparatory mathematics courses in high school.

SIAP became a separate 501(c)(3) organization in 2002 and continued with its particular brand of the Algebra Project which had been so highly effective in engaging large numbers of educators, students, and lay community members in school reform work throughout the South. Then in 2005, SIAP merged back into The Algebra Project, Inc., but continued its work under David Dennis’ leadership as AP, Inc.’s, National Site Development Director.

In 2010, SIAP, with AP, Inc., Board approval, again branched off from AP, Inc., reconstituting under the name Southern Initiative Algebra Project. The organization continues to work throughout the South with the roster of trainers and consultants that had made its work so successful in the past. It continues to maintain close ties to AP, Inc., its philosophy, goals, and program implementation.

## THE THEORY OF ACTION

When Bob Moses turned his attention to middle school algebra in the 1980s, reportedly only 11 percent of public school students in the United States were prepared for college-level mathematics. The percentage was considerably lower among African American, Latino, Native American and poor students. Juxtaposed against the rapidly increasing demands of the global economy and the Information Age, mathematics competency was more than an education issue; it was a citizenship issue, a civil rights issue on par with the voting rights issues of the 1960s.

SIAP’s model has evolved with substantive adaptations of Moses’ initial conception but remains grounded in the philosophy and theory of change that led to AP, Inc’s founding. SIAP believes that:

- *Every* child has a *right* to a quality education.
- Access to a quality education necessitates equitable access to college and careers, the gateway to which is algebra.

- Quality education is a purposeful, collective responsibility of local, state, and federal governments in authentic collaboration with parents, students, and communities.

## THE VISION

SIAP’s vision is to see that *every* community has a high-quality public education system that ensures the success of *every* child. SIAP is committed to ensuring that underserved children can enter college and STEM focused majors without the need for remediation.

## THE MODEL

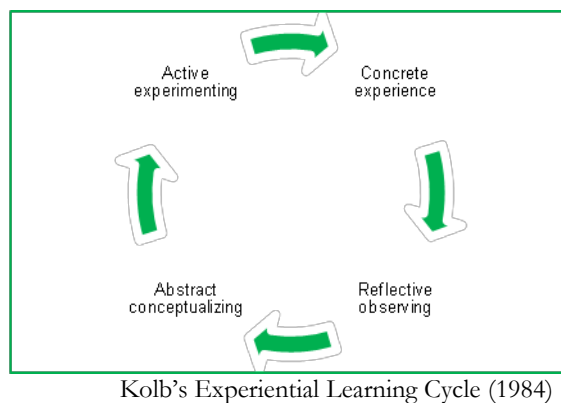
Bringing SIAP’s vision to fruition requires intensive and sustained work in schools *and* communities. It requires changing teacher practice and increasing teacher content knowledge and expectations of children and of themselves. It requires increasing and diversifying parent and community engagement that translates into higher expectations and increased student achievement and success. It requires partnering with higher education institutions, community-based organizations, local governments and others to increase student access to effective teachers, to train and support new and emerging leaders, and to build or enhance community-based structures to expand and reinforce student learning.

SIAP grounds its work largely in the socio-political experiences of the Civil Rights Movement and AP, Inc’s five-step curricular process. Like AP, Inc., it links its intellectual roots to the ideas of thinkers like John Dewey, Kurt Lewin, and Jean Piaget. David Kolb used

the collective thinking of these scholars to explain the dynamic process of experiential learning, noting that:

Learners, if they are to be effective, need four different kinds of abilities--concrete experience abilities, reflective observation abilities, abstract conceptualization abilities and active experimentation abilities. That is, they must be able to involve themselves fully, openly, and without bias in new experiences. They must be able to reflect on and observe their experiences from many perspectives. They must be able to create concepts that integrate their observations into logically sound theories, and they must be able to use these theories to make decisions and solve problems. (Kolb, 1984 p. 30)

Figure 1. Experiential Learning Cycle



SIAP made notable adaptations to the Algebra Project model, including extending the application of Kolb’s learning cycle beyond student and teacher learning to community-based adult learning and organizing, focusing on whole school reform, and developing and implementing a K-16 change model in collaboration with Historically Black Colleges and Universities.

In 2006, with the support of the Cameron Foundation, SIAP began implementing its model in Petersburg, VA, with an expanded PreK-16 focus.

The work in Petersburg centered around four SIAP program components – Professional Development, Community and Site Development, Youth Initiatives and Higher Education Partnerships – described below.

### **Professional Development for Teachers, Leaders, and Higher Education Faculty**

SIAP provides intensive professional development to ensure that teacher practice and content knowledge enable every child to succeed in mathematics and related content areas. Implemented in Petersburg over five years, the program included:

- A hands-on, two- to three-week summer institute each year, grounded in the Algebra Project pedagogy, mathematics content, and state and national standards;
- Academic-year institutes, content workshops, and classroom visits;
- A week-long capacity-building institute and internship with SIAP trainers for higher education faculty and teacher leaders to sustain the work beyond SIAP's on-site involvement; and
- On-line coaching in a professional learning community with teachers from multiple sites.

Key attributes of the professional development model include vertical collaboration across grade spans; multi-level coaching, classroom modeling, co-teaching; learner-focused interaction; content scaffolding; and lesson studies within a safe and non-threatening professional learning community.

### **Community and Site Development**

SIAP connects schools and communities in an effort to surround children with strong supports. This effort

## **KEY ATTRIBUTES OF THE SIAP PROFESSIONAL DEVELOPMENT MODEL**

Vertical Collaboration  
Scaffolding of Content  
Non-Threatening Atmosphere  
Learner-Focused Interaction  
Multi-Level Coaching

brings together community- and faith-based groups; child and family agencies and advocates; school-, district-, and state-level educators; philanthropists; and others in a **Design Team** to:

- Create a success-oriented expectation and climate for all children and especially for the most vulnerable;
- Build and sustain out-of-school supports and extended learning opportunities to augment the work of schools;
- Bridge gaps, structure or restructure relationships, acquire or rearrange assets and transcend cultural divides to ensure every child's access to quality education; and
- Train and support indigenous leaders for necessary elements of the work.

### **Higher Education Partnerships**

SIAP partners with higher education institutions to provide up to 14 hours of college credits for high school students in participating schools. In many instances, as in Petersburg, this involves enhancing the school's curricular offerings with higher level mathematics courses that fill the gap between the time



students complete the mathematics courses required for graduation and the time they enter college. It gives students a head start on STEM-related majors and ensures that they can enter college without the need for remediation. Students entering careers rather than college also benefit from the higher level courses that enhance the school's offerings.

The higher education partnerships also support teacher professional development in mathematics content knowledge, certification, and preparation to teach dual enrollment and Advanced Placement courses. They provide a broad range of extended learning opportunities for school-aged children, including summer camps to stem learning loss during out-of-school time.

### Youth Initiatives

SIAP believes that youth activism and mentoring are important to ensuring that every child has a real chance at a quality education. To that end, SIAP leverages the power of peer pressure and tiered mentoring to increase students' commitment to and demand for higher level mathematics. Specifically, the project:

- Partners with schools, community- and faith-based organizations, and higher education institutions to identify youth leaders in middle and high school grades and college;
- Trains youth leaders in summer institutes and workshops that explore the historical, cultural, political and sociological aspects of community, mathematics content, effective mentoring strategies, tutoring rooted in Algebra Project pedagogy and games, organizing and advocacy; and

- Establishes or partners with existing community-based programs to provide high-quality learning opportunities for students with the goal of stemming summer learning loss and building enthusiasm around mathematics and college going.

SIAP is “staffed” by a diverse group of highly trained, experienced, and accomplished educators and community organizers. (See Attachment I) They represent both rural and urban settings and have a unique combination of school and community building knowledge and expertise. Operating under the mantra of “quality education as a civil right,” they are bound together by their commitment to ensuring the success of every child, regardless of his or her background or circumstance.

## II. Petersburg, Virginia: The Community, the School, and the Context for Change

### THE PETERSBURG COMMUNITY

#### A Rich History

Petersburg is arguably one of the most historically significant cities in the United States. Archeological digs have found evidence of native settlements dating back to 6500 BC. When the English arrived in Virginia in 1605, the area was home to the Appamattuck, a tribe of the Powhatan Confederacy. Strategically located near the junction of the Appomattox and James rivers, it was already an important trade center among indigenous people.

In 1645, the English built Fort Henry and established a trading post in what would become the city of Petersburg. Fort Henry marked the treaty frontier between the native people and white settlers. For the next half century, it was the only point in the state where natives could get authorization to cross eastward into white territory and where whites could be authorized to cross westward into native territory.

Settlers brought African slaves to the Virginia colony at Jamestown in 1619 where they were purchased by John Rolfe. Slaves worked in tobacco fields alongside English servants and evolved Rolfe's fledgling enterprise into the "New World's" first "cash crop."

Rolfe's great grandson, a successful tobacco merchant, built a tobacco warehouse and brought African slaves to neighboring Pocahontas Island in 1731. By the beginning of the Revolutionary War, Petersburg had

secured its prominence in the Atlantic World with a bustling commercial and industrial economy undergirded by slave labor and tobacco. Claiming a third of the domestic and international tobacco exports, Petersburg would later establish one of the nation's first railroads and secure an even more prominent position as a transportation hub.

Many of Petersburg's slaves purchased their freedom by working in tobacco warehouses and related industries for hire. Consequently, Petersburg had proportionately the largest population of free Africans in Virginia. Many of them settled on Pocahontas Island where they could earn a living on the river and in business. Pocahontas would also become the largest settlement of free Blacks in the country and an important station on the Underground Railroad.



Two of the original homes on Pocahontas Island

The Virginia General Assembly formerly incorporated the town of "Petersburgh" and neighboring Blanford on December 17, 1748. Shortly thereafter, it incorporated Pocahontas. Both Blanford and Pocahontas were later annexed and became neighborhoods within the city of Petersburg.



Late in the 18<sup>th</sup> century, Petersburg’s African American residents established two of the nation’s first African American churches—First Baptist Church and Gillfield Baptist Church. First Baptist Church was home to the area’s first school for African Americans and provided leadership training in education, politics, and business.



Joseph Jenkins Roberts

Many of Virginia’s former slaves and free blacks resettled in Liberia, West Africa. Joseph Jenkins Roberts, a Petersburg resident of African descent, became the first black governor and the first president of Liberia. His brother became the country’s first black bishop.

Petersburg’s political, economic, and educational prominence and the significant contributions of its African American community continued into the 20<sup>th</sup> century. A nexus for the Civil Rights Movement, the city’s legacy includes such giants as Virginia Gray, Reverend Wyatt T. Walker, and Attorney Oliver Hill along with more contemporary figures like basketball great Moses Malone, actor Blair Underwood, and award-winning rap artist Trez Songz.

Petersburg’s rich public education history began with the opening of its first public school in 1821. In 1880, Peabody High School became the state’s first public high school for African Americans. The city’s Black leaders led the charge for the state to charter the Virginia Normal and Collegiate Institute, now Virginia State University. The Institute was the nation’s first fully state-supported four-year institution of higher learning for African Americans. Petersburg also boasts the first mental health hospital for Blacks in the world, the nation’s first Memorial Day celebration, and the state’s first African American mayor. Residents Charles Sherrod and Dion Diamond were charter members of the Student Nonviolent Coordinating Committee (SNCC) and Wyatt T. Walker founded the Southern Christian Leadership Conference.

### A Present Need

Despite its illustrious past and crucial role in the struggle for racial justice and educational equity, Petersburg has been in a state of decline for the past four decades. Like many urban areas, its plight can be attributed largely to white flight, disinvestment, and systematic destabilization of black communities through federally-sponsored Urban Renewal.

The 2000 US Census recorded Petersburg's population as 33,740. African Americans made up 79% of the population and Whites made up 18.5%. By 2011, the estimated population had declined to 32,420 and was 79.1% African American and 15.1% White. The non-White Hispanic population more than doubled over that same period, from 1.4% in 2000 to an estimated 3.8% in 2010. Of persons twenty-five years old and over, only 70.8% have completed high school compared to 86.6% for the state as a whole. Only 13.9% of the city's residents have a bachelor's or higher degree, compared to 34.4% of residents statewide. (US Census 2011 Quick Facts)

Petersburg is the fourth most fiscally stressed locality in Virginia (Commission on Local Government) with a median household income (\$28,851) that is only 60% of the median for the state as a whole (\$47,677). The city has the highest incidence of HIV/AIDS in the state and, according to the state Health Department, 24% of the population has chronic liver disease. More than 80% of students entering the school system come from single-parent families (The Phoenix Project) and 75% receive free or reduced priced meals.

Homelessness is an obvious problem in Petersburg as children and families populate motels that once served the city's business, industrial, and tourism interests.

### **A Promising Future**

Petersburg's well-documented history, stately mansions, and strategic location are sparking a new renaissance in the city. The winds of change are strengthening as nearby Fort Lee expands to accommodate an estimated 20,000 new military families and investors take advantage of the low cost of historic properties.

(See <http://www.youtube.com/embed/y4bi07h1qTE>)

New businesses are thriving in once boarded up downtown buildings. Loft apartments and high-end condominiums house newcomers from around the country as studios and galleries complement the renewed interest in the arts.

There is a general sense in the community that improving the public schools will strengthen Petersburg's revival and deflect the potential loss of local control. There is also a strong sense that civic engagement and adult education are essential to stemming the gentrification that is clearly accompanying the city's revival.

### **PETERSBURG CITY PUBLIC SCHOOLS**

When AP, Inc./SIAP entered Petersburg in 2006, the city had nine schools that made up the Petersburg City Public School Division. Only one of the schools was fully accredited and seven had warnings in at least one content area. By 2012, two schools had been closed, grade configurations had been altered three times, and the district had hired four permanent and three interim superintendents.

The division's goal was to see that every one of its nearly 5,000 students acquired the skills, knowledge, and attitudes that would enable them to live, learn, and work productively in their home community and in a global society. To accomplish that mission, the division acknowledged that children must become the focal point of the community with parents, students, citizens, local government, service providers, higher education and community-based organizations all sharing in the development and implementation of

rigorous and relevant academic and support programs that draw strength from diversity, foster mutual respect, and improve community.

Despite that acknowledgement, there were wide and long-standing divides between the school division and the public. The division had been low-performing for many years and bore the disparagement of other school divisions, the State department of education, business interests, higher education institutions and even local residents. Parents felt alienated, advocates and service agencies felt shut out, and volunteers could not find an entry point.

The high illiteracy rate among adults, the socioeconomic status of students, and the racial makeup of the schools (99% African American) had to figure prominently in any plan to bridge the divides between the school and community and improve outcomes for children. These factors are powerful predictors of the quality of education that a school or division offers and, consequently, of standardized test scores, grade level retention, truancy, school suspension and dropout, and college attendance.

AP, Inc./SIAP believed that the schools' poor performance was *not* indicative of an innate inability of students to learn. Rather, it was an indication of the urgent need for radical change, of the need to embrace and intentionally address the academic and psychosocial needs of all of the city's children.

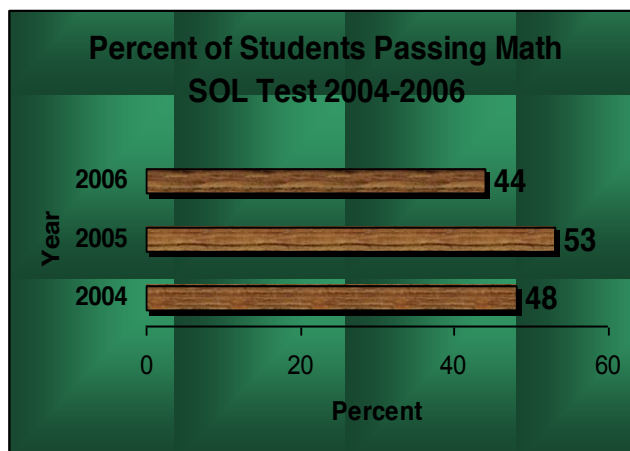
### The Need

Virginia measures the academic success of local schools and divisions against the state's Standards of Learning Objectives (SOL). An analysis of SOL data

for the three years prior to SIAP's entry shows more improvement at the elementary level than at the middle and high school levels with the 3<sup>rd</sup> grade showing the best results. Of the six elementary schools operating in 2006, five showed improvement in 3<sup>rd</sup> grade mathematics and four showed improvement in 5<sup>th</sup> grade mathematics.

Numerous supplemental services and tutorial programs had resulted in small achievement gains in some subjects, but the division was still disturbingly far from the state established benchmark of 70% pass rate across the division. Only 44% of students passed the mathematics SOL test in 2006, down from 48% in 2004 and 53% in 2005. (Figure 2)

Figure 2. Percent of Students Passing SOL Test 2004-2006



Source: Virginia Department of Education Division Report Cards

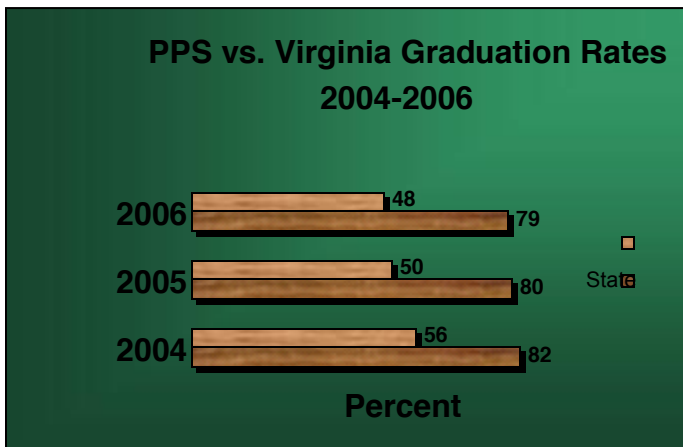
This was opposite the trends in English with pass rates of 53%, 56%, and 59% for the years 2004, 2005, and 2006, respectively. Science pass rates followed a similar trend, increasing from 47% to 57% over three years.

Graduation rates were low, lagging more than 30 points behind the overall graduation rate for the State



of Virginia as a whole. (Figure 3) More disturbingly, the percentage of students earning a regular diploma was declining each year, going from 56% in 2003-2004 to 48% in 2005-2006.

Figure 3. PCPS vs. Virginia Graduation Rates 2004-2006



Source: Virginia Department of Education Division Report Card

The lack of student success could be attributed in large part to the instability and unpreparedness of the teacher force. In its grant application to the Cameron Foundation, PCPS noted that nearly a fourth (23%) of its teachers (compared to 9% for the state as a whole) were not fully licensed; 16% of core classes were taught by teachers considered not highly qualified by *No Child Left Behind* standards. Teacher turnover rate was approaching 17%.

### Corrective Action

PCPS was in corrective action when the Algebra Project came. A memorandum of understanding with the Virginia Department of Public Instruction listed goals and corrective action steps in several areas, including K-12 Teaching and Learning, Higher

Education Partnerships for Higher Level Math, and Parent and Community Engagement.

Specific to mathematics, the goal was to strengthen the K-12 teaching and learning experience such that by the end of a five-year period:

- 75% of students were passing Algebra 1 by the end of their 9<sup>th</sup> grade year (and as early as the 6<sup>th</sup> grade year)
- 60% of students were completing the full sequence of mathematics courses offered by the division
- 70% of students were passing the state SOL test in mathematics
- 75% of students were entering college and succeeding in college level mathematics courses without remediation, or passing their career-related certification examinations and entering their chosen fields without the handicap of low mathematics skills and knowledge
- Graduation rate for students earning a regular diploma had increased by 75%

The Division knew that accomplishing these goals would require bold, aggressive action. Division personnel had developed and begun to implement a Corrective Action Plan to address key areas of their work. The work elements and corrective action strategies were stated as follow:

1. Develop and implement an aggressive, incentive-based plan to recruit and retain highly qualified teachers with a particular disposition for working with our student population.

### Corrective Action Plan Strategies

- Increase salaries and benefits to become competitive regionally. (Per the division's Efficiency Review completed the year before, the division reduced the number of elementary schools from six to four, and eliminated some positions, allowing for salary increases and the implementation of a more competitive salary scale. In addition, the State's Hard to Staff Incentive Plan and Middle School Teacher Corps would pay teachers who qualify bonuses up to \$10,000.)
- Train interviewers to ensure consistency in selecting teachers who will be successful.
- Analyze the current and anticipated teacher shortage areas to plan for recruitment.
- Provide intensive building level support and mentoring of teachers during their first year of teaching, including giving mentors release time and a stipend, giving new teachers release time to observe in a highly qualified teacher's classroom, and starting the teacher mentor program prior to school opening.
- Develop and implement an employee recognition program based on tenure in Petersburg Public Schools.
- Develop an online teacher satisfaction survey for teachers leaving the system, first year teachers, and veteran teachers.

2. Provide intensive and sustained professional development to strengthen teachers' content knowledge and pedagogical skills in teaching existing mathematics courses and prepare them to teach higher level mathematics courses (in anticipation of a greater demand for such courses over the next five years).

### Corrective Action Plan Strategies

- Continue to investigate, analyze, and select effective training models based on division- wide and individual school goals and plan a comprehensive staff development program. Provide a full menu of staff development options during the month of August, minimizing the loss of instructional time and allowing teachers to work with their colleagues and across disciplines.
  - Train all teachers on effective teaching practices.
3. Provide tailored assistance to help uncertified and provisionally licensed teachers pass the Praxis examination and otherwise meet licensure and certification requirements.

### Corrective Action Plan Strategies

- Partner with colleges and universities to offer courses in the school division.
- Offset tuition costs with district and grant funds.
- Implement a plan to assist teachers with National Board certification.

Note: A number of uncertified and provisionally licensed teachers were already taking advantage of

the courses and tuition offerings and several had become fully certified.

4. Expand opportunities for students, including college scholarships, Advanced Placement and dual enrollment courses, and university-based bridge programs, and
5. Change the culture of expectations for student achievement and the environment for teaching and learning both within the school and in the community

#### Corrective Action Plan Strategies

- Develop and support an understanding, on the part of teachers and principals, of the benefits of technology integration in the classroom through administrative participation in VITAL and effective use of Instructional Technology Resource Teachers.
- Analyze school structure including time and location to improve student success, e.g., block scheduling, virtual schools, alternative school 6-12, extended school year K-8.

Note: The Division implemented a block schedule in 2006-2007 and to a modified block the following fall. The goal was to give teachers time to implement more engaging teaching strategies.

6. Build strategic partnerships to address the out-of-school factors that impact teaching and learning.

#### Corrective Action Plan Strategies

- Study the current status of the business partnerships and make recommendations to increase

involvement by the business community in all schools.

- Report by June 2007, the number and type of business partnerships currently in place and ways of increasing mutually beneficial relationships with businesses.
- Join in partnership with the faith based community, Commonwealth Attorney's Office, Police Department and Social Services to share information and programs which assist children.

In its application to the Cameron Foundation, the school division stated:

We envision a school system that makes no excuses for the life circumstances of its students, but rather mitigates the pull of potentially debilitating circumstances on academic achievement while enlarging the effects of more favorable ones. In other words, we envision a system where *every* child succeeds—where teaching and learning are not confined to the school and the traditional school day, where the lack of content mastery is not an obstacle to any child's success in higher education or career.

The grant application further stated:

Substantive change must occur on three fronts at once – the school, the community, and higher education. We have partnered with The Algebra Project, Inc., because of its understanding of our needs, its compatibility with our goals, and the power of its strategies to effect change on all of these fronts simultaneously. It is therefore both a component of and the framework for our overall improvement effort.



### III. The Intervention

#### OVERVIEW

This section of the report recounts the AP, Inc./SIAP intervention in the Petersburg schools and community. It is an effort to give the reader a picture of the resources, strategies, and partnerships that the project brought to bear on identified needs. It begins with a brief discussion of when and how the project entered the community, and follows with discussions of the collaborative Design Team planning process and how each program component was implemented.

#### WHEN AND HOW WE ENTERED

It is important to note that the Algebra Project came to Petersburg on the invitations of local people – VSU faculty members, the school division, and community members. While all of these sectors invited the project, the groups were separate and, in some instances, openly hostile towards each other.

The initial invitation came in 2005 when Dr. Renee Hill and Dr. Dirk Philipsen, VSU faculty members and co-directors of the Institute for the Study of Race Relations, invited Bob Moses to speak at the Institute’s Closing the Gap conference. The Institute extended a second invitation to the Algebra Project to introduce the Algebra Project program and philosophy to educators from local school districts. Then in the Fall of 2005, Dr. Hill and Dr. Wesley Hogan arranged a meeting with local leaders and a community-based organization. The relationship between the local

community based organization and the school division was marked by contention and therefore not conducive to successful project implementation.

Pursuant to an invitation from Mr. Handy Lindsey, director of the Cameron Foundation, in October 2005, staff members and consultants of AP, Inc./SIAP (David Dennis, Doris Terry Williams, Ben Moynihan and Jessie Cooper-Gibbs), VSU (Oliver Hill and Gerald Burton), and PCPS (Gwen Price) met with members of the Cameron Foundation board and staff to explore again the feasibility of implementing the project with PCPS. As a result of that meeting, AP, Inc./SIAP worked closely with PCPS to develop and submit a one-year planning proposal to the Cameron Foundation. The Foundation awarded a planning grant of \$90,000.00 to PCPS and the planning period, which included the first teacher professional development summer institute, began in early 2007.

The planning period culminated with a \$1.8 million grant from the Cameron Foundation to PCPS to implement the Algebra Project over a five-year period. From 2007 to 2012, SIAP worked intensively across grade levels and disciplines, built partnerships with the higher education community, and drew upon the strengths of parents, local government, and community-based partners to ensure successful implementation of all aspects of the project and, ultimately, a higher quality education for all students.

PCPS Superintendent Lloyd Hamlin embraced the Algebra Project as a framework for division-wide

improvement. The division's mathematics specialist, Gwen Price, served as the local Algebra Project coordinator and principal investigator on the Cameron Foundation grant. During Year 3 of the project, her administrative role within the division changed to testing coordinator although she continued to serve as the Algebra Project coordinator. Ms. Price was key to reaching out to teachers, liaising between the schools and AP/SIAP staff, and handling the logistics for professional development and Design Team meetings.

## THE DESIGN TEAM PROCESS

SIAP has always implemented a place-based approach to its work. While it remains true to its underlying principles and basic components, the project honors the uniqueness of each place and allows for design flexibility to accommodate local needs. SIAP uses a Design Team process to accomplish this task and to ensure that the project remains accountable to the school and the community.

Throughout the planning period, the SIAP Community and Site Development Team (CSDT) visited Petersburg at least monthly. The team did an extensive mapping of local assets and an assessment of relationships among them. That included identifying and building relationships with local leaders – grassroots advocates, service agencies, faith-based groups, community-based organizations, and others. Most of the CSDT's work at this point was funded by AP, Inc., under a National Science Foundation grant.

Ultimately, The Petersburg Algebra Project Design Team was formed, comprised of representatives of local government; VSU faculty members from the mathematics, mathematics education, and psychology

departments and the Institute for the Study of Race Relations; the division's school-based mathematics facilitators, Title I parent outreach coordinator, and mathematics specialist; YPP; and others.

## Clarifying the Need

The Design Team cited multiple factors that it believed contributed to the lack of student success in Petersburg City Public Schools. The Team identified the following as the most critical of those factors:

- The division's inability to recruit and retain qualified teachers
- The lack of parental and community involvement
- A culture of low expectations of and among students
- The lack of collaboration across grade levels

The Design Team also identified poverty as a major contributing factor to low student achievement. In every case, compelling data supported these assertions.

Exploration of the issues revealed deeper challenges. The division, for instance, viewed the inability to recruit and retain quality teachers as a matter of inequity between the division's pay scale and the pay scales for teachers in surrounding divisions. While there was indeed a significant pay gap, the division also had not been able to leverage the State's Hard to Staff Incentive Plan and Middle School Teacher Corps. These two initiatives would pay teachers who qualify bonuses of up to \$10,000, to strengthen the teacher corps in high-needs areas. Despite pay incentives, the division's reputation as habitually low performing, the city's image as a place in spiraling decline, and the self deprecation of Petersburg

residents all contributed to the inability to amass a quality teacher force.

Further examination of the lack of community and parent engagement was also revealing. First, there was very little trust between the school division and the community – on all levels, including parents, community activists, community-based organizations, governmental agencies, VSU and others. In fact, law enforcement appeared to be the only local group that the division trusted to have its interests at heart.

The low expectations for student performance appeared to be rooted in several other conditions - the low educational attainment levels in the community as a whole and, perhaps more importantly, a pervasive lack of confidence in students' ability to achieve at high levels. AP, Inc./SIAP staff and consultants were reminded that "These children can't do this work" and "We don't want to set these children up to fail." Teachers were well-meaning, but the cycle of perpetual low performance had created a mindset that suggested that students could not perform any better in the future than they had performed in the past.

The lack of teacher collaboration across grade levels was an issue that ran much deeper than that. Teachers were islands. The majority of them did not live in Petersburg and the schools were not structured to support professional learning communities.

### **Structuring the Intervention**

The Design Team concluded that PCPS could benefit from implementing all four components of the AP, Inc./SIAP model – Professional Development, Community and Site Development, Youth Initiatives and SIAP's K-16 model.

## **PROFESSIONAL DEVELOPMENT**

### **K-12 Teacher Development**

Jessie Cooper Gibbs and Merle Harris conducted the first professional development institute in August, 2007. The goal was to prepare teachers to begin implementation in the fall semester. The division's mathematics coordinator was key to securing teacher participation in the two-week summer institute; however, a superintendent turnover, uncertainty over teacher contract renewal, and late hiring of new teachers made recruitment difficult.

A new superintendent, Dr. James Victory, met with AP/SIAP staff after reviewing project documents. He reaffirmed the division's commitment to using the Algebra Project as a division-wide improvement framework and required teachers to participate in the summer institute.

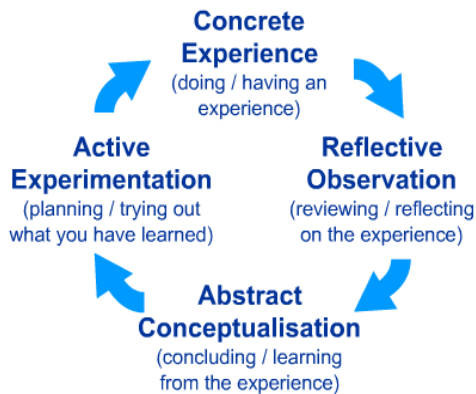
Twenty-nine teachers enrolled in the 2007 summer institute. On average, 44 teachers attended Saturday workshops during the academic-year follow up. Sixty-eight teachers participated in the 2008 summer institute and an average of 70 teachers during the subsequent summer institutes. Participants came from all grade levels and multiple disciplines.

The Experiential Learning Cycle (Figure 4) and the Algebra Project Five-Step Curricular Process as adapted by SIAP framed the professional development activities. Activities modeled the pedagogy, relationship building, and feedback processes that teachers were expected to use with their students.

All trainings began with a commonly shared physical event and moved through a series of steps to express

that event in increasingly more abstract language and finally in mathematical terms.

Figure 4. David Kolb's Visualization of the Learning Cycle



In some years, that common event was a carefully structured trip through the Petersburg community. The trip gave teachers a new perspective of their students and community, connected them to resources or services for students and families, and provided a basis for dialogue, relationship building, and mathematics content instruction.

AP, Inc./SIAP provided more than 79 days of professional development institutes and workshops to teachers in grades K-12. Trainers also typically made four week-long visits each year. Over the course of the project, they spent more than 120 days observing, co-teaching and modeling in classrooms. Each visit culminated with a content and pedagogy workshop based on classroom observations and teachers' identification of challenges they were having in implementation and content. Each training event was supported by two and as many as five on-site trainers.

### IMD: High School Teacher Development

In 2007, the AP, Inc., selected PCPS to field test its new Algebra I instructional materials developed under

### Five-Step Curricular Process

- Physical event
- Pictorial Representation (Modeling)
- Intuitive Language ("People Talk")
- Structured Language ("Feature Talk")
- Symbolic Representation

a National Science Foundation Instructional Materials Development (IMD) grant. The IMD project brought more than \$540,000 in additional resources to PCPS, including three years of intensive professional development for four high school math teachers.

The IMD teachers were trained and mentored by world renowned research mathematicians and mathematics educators: Ed Dubinsky of Florida International University, Greg Budzban of Southern Illinois State University, David Henderson of Cornell University, Gary Beneson of City College of New York, and Algebra Project Founder Bob Moses. Other trainers included SIAP consultants Staffas Broussard of the University of New Orleans; Dr. Leo Edwards, past provost and retired professor of Fayetteville State University; William Crombie, master trainer for AP, Inc.; Maisha Moses; and other university faculty members and veteran Algebra Project teachers.

Two cohorts of teachers participated in the Algebra Project IMD pilot at no cost to PCPS or the Cameron grant. Teachers participated in two-week institutes each summer – at Cornell University in Ithaca, NY (2007); Jackson State University in Jackson, MS (2008);

Depaul University in Chicago, IL (2009); and Carbondale, IL/SIU (2010).

Many of the students in pilot classrooms were repeating Algebra I and were over age. Unlike the regular professional development sessions, IMD trainings and pilot materials were not specifically aligned with the local curriculum. This meant that instruction in pilot classrooms did not always follow the sequence for instruction laid out in the division's pacing guides. Instead, algebra instruction followed a research-based sequence aimed at deepening students' understanding of the concepts necessary for content mastery and high level performance.



Petersburg teachers in Oliver Hill Summer Institute with Jessie Cooper Gibbs and Merle Harris

In December 2008, Dr. Greg Budzban facilitated a day-long meeting of IMD teachers to review the content of state tests and assist in relating tested areas to the Algebra Project pilot modules. Teachers and trainers then devoted about two weeks in January 2009 to covering gaps they had noted between the content of the pilot materials and the content that would be covered on the state exam.

In 2009, the high school IMD teachers also participated, at no cost to the division, in a one-week institute in Boston and a Summer Institute in Chicago.

One teacher, Andrew Wynn, received more extensive professional development as he served on the team of researchers and teachers who developed teacher resource materials for the pilot curriculum.

The IMD teachers also received training in three additional competencies: accurate empathy, concern for growth, and awareness of one's potential influence on others. Following a protocol developed by the Hay Group, these competencies emerged from in-depth interviews of individuals widely known for their expertise in working with teachers of mathematics. (David C. McClelland and students of the Harvard Department of Social Relations, who were consulting internationally on the development of "achievement motivation," founded the Hay Group in the 1960s.)

### VSU Faculty Development

From the beginning of the Petersburg project, SIAP viewed VSU faculty members as key players in the project's sustainability beyond the grant period and in the further development of teachers' mathematics content knowledge. In 2007, Dr. Ed Dubinsky and SIAP Trainer Merle Harris conducted a week-long training of 12 VSU faculty members and the PCPS mathematics coordinator. The training focused on the AP pedagogy around select content areas. A core group of faculty members from the mathematics, mathematics education, and psychology departments participated in the training.

In recognition of the contributions of the late Oliver Hill to the struggle for quality education for African Americans, SIAP has named its professional development program The Oliver Hill Algebra Project Institute.



## COMMUNITY AND SITE DEVELOPMENT

The Community and Site Development Team (CSDT), led by David Dennis and consultants Dr. Doris Williams and Jereann Johnson, established and facilitated the Design Team process described above. For the first two years, the CSDT's work was supported largely by AP, Inc's IMD project. That work included monthly visits to Petersburg, usually for one week each month, to:

- engage parents and community members in supporting the academic success of students performing at the lowest quartile on state and national tests in mathematics;
- build school and district support, structures, and partnerships for project implementation; and
- facilitate the development of a K-16 model for mathematics education in partnership with area higher education institutions.

Saturday sessions were held to plan and to train local residents to facilitate community dialogues and expand resources for community engagement in activities contributing to the academic success of children. A diverse group of stakeholders participated in the Saturday sessions, including PCPS's Title I parent outreach coordinators; Mayor Annie Mickens (who was also a mathematics teacher in the division); PTA/PTO leaders; director of the regional Parent Involvement Resource Center (PIRC); community- and faith-based groups; local agency representatives; college students; and community advocates.

The CSDT developed community dialogue facilitation and participant guides, and trained 18 people to

facilitate community dialogues. Some 50 Petersburg residents participated in dialogue circles focused on what the community can do to support academic success for all children. Discussion groups met at local churches, public housing facilities, public libraries and other sites throughout the community.

In addition to the monthly trainings and strategy sessions, the CDST conducted annual Community Leadership Development summer institutes that enrolled a diverse group of community members, youth, school-aged children, agency representatives, college students, PCPS teachers and others. The first institute was conducted in the summer of 2007 in partnership with VSU's Psychology Department. This four-day institute enrolled more than 50 participants and was funded by VSU as part of this initiative.

In 2008, the project held its community institute at Jackson State University in conjunction with the Algebra Project's 25<sup>th</sup> anniversary national conference. Ten Petersburg community members attended the institute where they interacted with Jackson State President Dr. Ron Mason; Civil Rights Veterans Hollis Watkins and Jimmy Travis; Bob Moses and a host of other civil rights veterans, school reform leaders, and community organizers. They assumed leadership roles during the conference, including conducting workshops and facilitating breakout sessions.

The community group has been consistent in its operations but fluid in membership over the course of the project. This kind of fluidity is to be expected in community work that is sustained over a number of years. Participation, though, has been wide-spread and has included at least the following key entities:

- Local Government – Office of the Mayor, City Council members, law enforcement, Recreation Department
- Agencies – Petersburg Housing Authority, Health Department, SAVY
- Community- and Faith-Based Organizations – Legal Aid, Boys and Girls Club, United Way
- Funders – Cameron Foundation and Dominion Foundation
- Faith-Based Groups – Good Shepherd Church, First Baptist Church, Emanuel Apostolic Temple and Nehemiah-the Petersburg Project

Asked what the community could do to help generate better outcomes for young people, community groups responded with a variety of ideas. Ideas ranged from simply providing communications vehicles through the churches, social clubs, and community-based organizations and providing meeting space to raising funds to support the reform initiative, providing community-based extended learning opportunities for underserved youth, and helping to create “the village” that it takes to “raise a child.”

CSDT members initially planned and facilitated the Design Team meetings. As part of the capacity building strategy, CSDT mentored, co-planned, and co-facilitated with PCPS residents as they assumed greater responsibility for planning and facilitation over the years. During the last year of project implementation, the CSDT transitioned full leadership of the Design Team to local residents. The Design Team continues to meet and to facilitate the work of

connecting school and community for the success of Petersburg’s children and families.

## HIGHER EDUCATION AND THE K-16 MODEL

SIAP and PCPS recognized early on that project goals could not be accomplished without deep and sustained higher education support. At a minimum, the project would need:

1. a comprehensive strategy to recruit and retain highly qualified teachers including effective, university-based alternative routes to licensure and certification;
2. on-going, needs-defined professional development to deepen teacher content knowledge, strengthen school leadership, and otherwise support the change process;
3. support in expanding mathematics curricular offerings, including dual enrollment and Advanced Placement courses; and
4. college interns to provide additional manpower and foster closer ties that might lead to greater inclinations on the parts of new teachers to teach in the division

VSU was the obvious choice of higher education partners. It was in close proximity to Petersburg and its faculty members had been instrumental in bringing the project to town. As a Historically Black College and University (HBCU) and a land grant institution, VSU would find the various project components consistent with its mission as well. Much work had to be done to re-build the long torn bridge between the university and the school system, and indeed between the university and the city of Petersburg.

VSU, SIAP, and PCPS all saw a potential partnership as mutually beneficial. PCPS would gain the expertise, financial support, and programs to fill gaps in its curriculum, improve the division's performance, and provide extended learning opportunities for its students. VSU would gain a larger pool of undergraduate applicants who could enter directly into the credit-bearing mathematics courses required for STEM majors. It could strengthen its undergraduate mathematics program by integrating Algebra Project pedagogy into its lower division courses. Graduate programs would benefit from increased enrollment of Petersburg teachers. SIAP would have an expanded pool of experts to support project implementation and sustainability, as well as the opportunity to refine its K-16 and whole-school improvement models.

The VSU partnership has rested largely on a rarely seen alliance among a core group of faculty members from various departments – Dr. Oliver Hill, Psychology Department; Dr. Renee Hill, History Department; and Dr. Gerald Burton, Dr. Dawit Haile, and Dr. Cheryl Adeyemi, Mathematics and Computer Science Department. Dr. Wesley Hogan in the History Department and Dr. Ken Bernard, Chair of the Mathematics and Computer Science Department also played key support roles in expanding and sustaining the partnership.

As a result of the K-16 partnership, PCPS students and teachers have benefitted from:

- Summer camps provided by VSU at no cost to the division
- Dual enrollment courses that give students the opportunity to earn up to 14 hours of

credits in college algebra and higher levels of mathematics

- Graduate credits for project-related professional development of teachers, in some years at no cost to the teacher or the school division
- Additional professional development for teachers as they prepare to teach the school-based dual enrollment courses

The project recently connected with other departments within the university as a new president with a greater focus on community outreach and partnerships has come on board. Among them are Dr. Muriel Hawkins, Associate Provost for Partnerships and Engagement; Dr. Anne-Marie Turnage, Director of Service-Learning and Civic Engagement; Dr. Keith Williamson, Dean of Engineering, Science and Technology and Associate Vice President for Research and Innovation; and Conaway Haskins, Director of Sponsored Research.

These new connections will prove beneficial to sustaining the work in Petersburg, but also to replicating that work throughout the Central Virginia region.

## **YOUTH DEVELOPMENT**

When SIAP began working in Petersburg, The Young People's Project (YPP), in affiliation with VSU, also began working in the area. Lynell Mitchell, a YPP trainer and coordinator from Chicago, had relocated to Petersburg and built a core group of college students (called math literacy workers or MLWs) to



tutor elementary and middle school students in extended learning programs in various schools and community sites throughout the city.

Based in VSU's Institute for the Study of Race Relations, Mitchell integrated into the Design Team process and SIAP integrated YPP into its partnership building activities in Petersburg. MLWs conducted Math Night activities for parents and community members and made presentations to business and civic groups throughout the city.

In the early years of the project, VSU provided stipends for MLWs, supported in part by a grant from

Dominion Foundation. Upon Mitchell's departure, the Petersburg YPP floundered a bit but then re-grouped under the name M<sup>2</sup>. The reconstituted group operated under the leadership of two former MLWs, Chris Afram and Nicole Wilson, both graduate students at VSU.

M<sup>2</sup> leaders participate in the Design Team process. Dr. Renee Hill mentors the group, which has built effective partnerships with area churches to provide tutoring and mentoring for targeted youth.

## IV. Project Outcomes: What Was Accomplished

The Petersburg story gives much reason to celebrate; yet, much remains to be done. Broken bridges have been rebuilt, new bridges erected. Mindsets, attitudes, and expectations reflect the possibility of a brighter future. As early as 2008, Gwen Price, the division's project coordinator, reported to the Cameron Foundation:

We are committed to making the necessary changes in our schools and school system to improve teaching and learning across the disciplines and in mathematics in particular, and believe that our Design Team process has positioned us to build the partnerships necessary to actualize those parts of the vision that are not directly in our control.

Changes occurred on many fronts – Teacher Practice, Student Achievement, School Improvement, School and Community Connections and Mathematics Education. Notable changes are highlighted below.

### Teacher Practice

The goal of AP, Inc./SIAP's professional development work is to improve teacher practice. The project's success in this area is evidenced by classroom observation and by teachers' self reporting of changes in their teaching strategies, their expectations of and relationships with their students and with each other, and their own level of confidence and content knowledge.

A California-based evaluator of the work in Petersburg observed several classrooms and recorded the

following about how AP, Inc. /SIAP classes differed from traditional classes:

...[S]tudents moved freely and frequently between working in groups and whole class instruction; they talked to each other and asked each other questions about mathematics; the teacher circulated around the class listening to the groups, answering and asking questions; students regularly presented their work in front of the class; and students' explanations frequently moved between concrete representation on the trip line to abstraction, using the language of mathematics.

One teacher, in a typical response to the question regarding the project's influence on her practice said:

It has changed me from a direct teacher so that I get kids to think more and every time we have summer or weekend meetings it makes me see math in a different light.

Teachers commented frequently on the project's impact on their relationships with each other.

It's not only the workshop but the social aspect. We get to meet different teachers... [and] talk about problems.... It's been 5 years so we are like family. We would not have had that connection before. We wouldn't have had it even in our own schools.

One elementary teacher spoke of the opportunity to work with teachers across the K-12 grade span.

I can see connections from kindergarten to high school. To know what secondary needs when our

kids arrive, that's helpful. Most of the time you connect with your grade level; here we can see how problems are solved on through high school and how it evolves. When I taught kindergarten, zero was nothing; now it isn't.



Teachers collaborating on a math lesson

Secondary teachers made similar comments:

You see the connections and the disconnections. The language needs to be the same across grade levels.

And:

I learned about how students were learning in previous grades from kindergarten. It changed me as a teacher because I understood how they struggle, found out how they learned and connected it to how they learned concepts in kindergarten. It's easier for me to deliver things for those kids.

Speaking of changed relationships with and perceptions of students, another teacher noted:

I believe all kids can learn.... It's because of this, this journey with the Algebra Project... that you allow them the aspirations before you get started. You get more bang for your buck when you allow them to explore before we even get into what we

need to. That's been helpful to me. I'm able to see more about what they are about. They get to say what they think and how they came up with it. It doesn't have to be wrong. I've changed.

The professional development experience also helped bridge cultural divides between teachers and students. As one teacher, whose cultural background and upbringing differed significantly from most of the students', said:

AP helped me a lot because before I didn't really understand my students, why they weren't getting the lessons even though I had given all the rules. Our learning process in [my country] is different. Once I joined AP, it was an eye opener for me because I tried to learn the culture, how students learn. I was really motivated. Strategies and techniques I learned from different teachers really helped me become a better, effective teacher.

Another teacher said, "There has been a change of climate among the teachers; more positive that we can change things."

Still another noted:

I have been teaching a long time. It took more than a year to get us to facilitate vs. teaching. Every time we met, we were constantly given reinforcement about how to let students do discovery. We thought we knew the right way to teach.... I learned to step back.

Still another spoke of the increase in her confidence to teach math.

I started [the professional development] because math wasn't my strong point and I felt I would

learn something. I learned I knew more than I thought I knew so it empowered me to go into class with confidence so I could help them [students] better and didn't need as many crutches.... Talking through with peers helped and that's the same thing that happens with kids in the classroom. That was awesome.

Teachers even began to collaborate outside the school and the work day. One teacher said:

Most beneficial was small groups. I got really comfortable with everyone and we could talk outside of work sometimes and talk about things and how to become a facilitator.

It is likely that the changes in teacher practice will continue for as long as division and school leaders continue to provide the opportunity for teachers to collaborate and support each other. Speaking of what they envisioned beyond the grant period, teachers said:

My role will be to continue; to go in and model in classrooms. Some teachers coming straight from college will probably be ready to try wonderful things. It's my job to show them the Algebra Project model.

Another said,

I had limited knowledge of teaching strategies. The Algebra Project experience has given me enough knowledge so I can impart to my students. I'm going to share with new teachers.

Another teacher addressed the concern that many administrators have, that teachers follow a pacing guide to make sure they cover all of the materials they are supposed to cover during a school year.

Part of my journey [with the project] was not to focus so much on time. We get so caught up in the SOLs and pacing. We don't have enough time to break it down and give children time to talk. I learned if you don't take the time to let them talk, you have really hurt yourself. One of the things I shared with teachers on my grade level is we can do it [let the children talk] on Monday when we introduce the concept. Take the one day to talk and expound on the next day. It made me relax with my teaching and make sure what I did say was productive.

One teacher commented, "I don't know if we are going to have the Algebra Project next year." Her colleague responded, "We are the Algebra Project."

### Increasing Student Achievement

In his master's thesis on the AP, Inc/SIAP impact at Petersburg High School, Andrew Wynn wrote:

Prior to this point, the Petersburg school system had implemented several interventions to combat the high failure rates in high school mathematics. The Cortez mathematics program was in use until the 2005-2006 school year but the results were inadequate for the gains that the district needed. Daytime remediation was implemented for mathematics classes in the high school; this too would prove to not be enough as the test results for that school year did not result in the school receiving accreditation. Other changes then occurred in the district and at the district's high school including the introduction of a state licensed "Turn-around specialist", the replacement of the high school's principal, the replacement of

the district's Superintendent of Instruction, restructuring of the high school with the removal of the 9<sup>th</sup> grade, and the introduction of 4x4 block scheduling.

Although the introduction of AP, Inc/SIAP was accompanied by other changes described by Wynn, there is powerful evidence of increased academic achievement attributable to the project itself. That evidence is both anecdotal and data based.

Teachers reported that the Algebra Project/SIAP pedagogy engendered pride, excitement, teamwork and deeper conceptual knowledge. One teacher reported:

Kids started getting excited about math; it wasn't humdrum. After we got past the no wrong answer and reporting out with teammates, students took ownership for their work. That was awesome.

One high school teacher, commenting on how students responded to the project, said:

They complained at first and then I have more students in class than I have on the roster because they are coming just to be in the class and learn whatever I'm teaching.

Other teachers commented on the project's impact in other content and skills areas. One said, "Students are reading in my class."

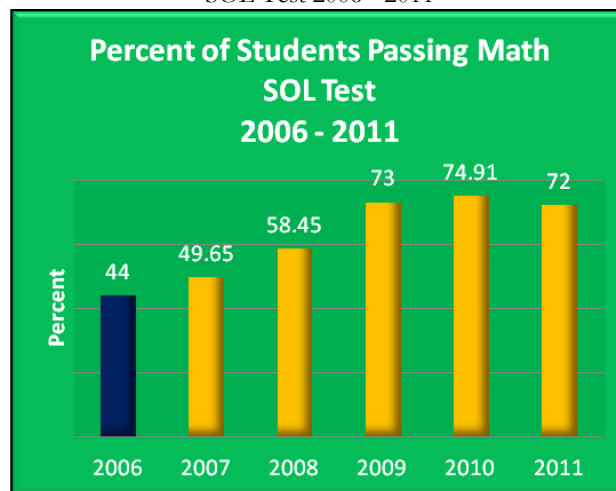
Another said, "Scores improved in biology and science as well because they [students] started reading."

Teachers' anecdotal accounts of student progress were confirmed by hard data. Evaluators of the high school IMD project pointed to a study of 25 Algebra Project students in Petersburg and two other sites. Data

indicated that, "after working with AP material on functions, students developed understandings and problem-solving abilities related to basic function concepts...on a level that compares favorably with understandings of incoming college students.... Their knowledge of functions is even on a par with that of pre-service secondary teachers...."

State exam scores provided further evidence of improved student achievement. Only 44% of students passed the State mathematics Standards of Learning (SOL) test in 2006, the year before SIAP entered. The 2006 pass rate marked a continuing decline in academic performance, down from 48% in 2004 and 53% in 2005. (Figure 5)

Figure 5. Percent of Students Passing Math SOL Test 2006 - 2011



Source: Virginia Department of Education Division Report Cards

By the end of the project's first year (2007), the percentage of students passing had increased by 5.65 points (12.8%). By 2010, the pass rate had reached 74.91%, an increase of 30.91 points (70.25%) over the 2006 pass rate. (Figure 5)

Prior to 2008, most Petersburg students took Algebra I Part I in the 9<sup>th</sup> grade and Algebra I Part II in the 10<sup>th</sup> grade, thus taking the Algebra I SOL test in their 10<sup>th</sup> grade year. Students entering the 9<sup>th</sup> grade in 2008 were required to take Algebra I and the SOL exam in the 9<sup>th</sup> grade. In 2008-2009 86.1% of students passed the Algebra I SOL; in 2009-2010, 87.8% passed.

### Improving School Performance

When the project began in Petersburg in 2006, only one of the division’s nine schools was fully accredited. Seven had warnings in at least one content area. Two schools were closed during the project period, and others were reconstituted with varying grade spans. Of the seven remaining schools, only two were accredited in the project’s second year in the division. By Spring 2010, six of the seven schools were accredited, having met or exceeded the 70% benchmark required for mathematics accreditation. (Table 1)

While Peabody did not meet the 70% benchmark required for accreditation in mathematics, Peabody’s mathematics pass rate increased 25 percentage points between Spring 2007 and Spring 2010.

School test scores correlate highly with the level of teacher participation in the project’s professional development activities. In the 2010-2011 academic year, teachers from Peabody and Stuart did not participate as fully as they had in the past because the division contracted with two other external turnaround partners. Math accreditation scores for those two schools declined during that period; however, Peabody’s scores increased during the 2011-2012 school year as many of its new teachers participated in the training.

Table 1. Accreditation Comparisons in Math 2007-2010

School	Pass Rates			
	Spring 2007	Spring 2008	Spring 2009	Spring 2010
A. P. Hill Elementary	60%	61%	80%	70%
J.E.B. Stuart Elementary	48%	73%	67%	81%
R. E. Lee Elementary	85%	77%	84%	86%
Walnut Hill Elementary	76%	73%	82%	83%
Peabody Middle	36%	47%	49%	61%
Vernon Johns Jr. High	48%	56%	91%	88%
Petersburg High School	50%	69%	86%	85%

Source: PCPS Testing Department

In Fall 2009, Petersburg High School met its AYP goal for the first time and was awarded accreditation. Accreditation opened many doors for Petersburg’s students, including the privilege of earning a diploma from a school that the state and higher education institutions would recognize as credible.

### Connecting School and Community

The California-based independent evaluator of the Petersburg project made the following observation about the work of the Community and Site Development Team.

The challenges of the CD [community development] work are many. Bringing fractured communities together where major players have not collaborated for years, or ever, is often where the organizing begins. Finding a consistent group of parents and other community members who are concerned with the welfare of the lowest

achieving students and who are willing to take personal leadership in combating the problem of student failure is almost antithetical to this population. The work differs from school-based parent involvement groups in that the community dialogue groups and action forums determine their own list of concerns, recruit their own members, and pursue their own agenda. They are responsible for motivating their ongoing work.

She continued:

Creating and sustaining a long-term effort to improve student success in the target population is an enormous and necessary undertaking, and without the CD component, experience suggests that it is impossible to sustain.

Of all of the school/community connections the CSDT facilitated, none was more important than the connection between the school division and VSU. As early as 2008, the PCPS project coordinator reported to the Cameron Foundation saying:

The Algebra Project Design Team process has helped us to begin repairing the bridge between Petersburg Public Schools and Virginia State University. University faculty members have participated in Algebra Project workshops and met across disciplines to determine how they can partner with the Division to improve teaching and learning and become intimate partners in a K-16 improvement process

Beyond the extended learning opportunities that VSU students have provided for PCPS students, VSU has...

- Conducted math and robotics camps for several years at no cost to the division;

- Awarded graduate credits to teachers who participated in summer and academic-year training, again at no cost to the division or the teachers.
- Offered scholarship opportunities for PCPS students who successfully complete the mathematics dual enrollment courses and matriculate at VSU.
- Assisted SIAP in training PCPS teachers to teach on-site dual enrollment courses that enable students to complete up to 14 hours of college credits in mathematics.
- Assisted the division, in collaboration with SIAP, in strengthening its mathematics offerings with the creation of new, higher level courses.

The connection between the university and the school division is no ordinary university-school connection. Faculty members and administrators throughout the university have crossed departmental lines and come together in support of the division. Involved entities include:

- Office of the Provost
- Psychology Department
- School of Education
- Mathematics Department
- Office of Outreach and Service Learning

Other important connections have been made through the Design Team and community dialogue processes. New leadership has emerged as groups that historically have not come together are now coming together on a regular basis to focus on the success of children.



In a focus group of community residents, one resident commented:

New leadership has emerged as a result of the Petersburg Algebra Project's community work. Examples include convening VSU staff, teachers and community members to increase learning and other possibilities for young people.

Another person noted that "There was no other group in Petersburg connecting teachers, administrators, and community people."

Perhaps most telling of the success of the community and site development work is that the Design Team process continues under the leadership of Petersburg locals. They continue to pursue an aggressive agenda of providing out-of-school supports for student learning and wrap-around services to address other needs of children and families.

Most promising is the connection the Design Team has made with the local faith-based community. Through this partnership, plans are underway to strengthen and expand summer camps and after-school programs and to develop a holistic African American male initiative.

The community group continues to be fluid, but there is a dedicated core composed of diverse stakeholder groups, including VSU, faith-based organizations, community activists and others.

### **Strengthening Mathematics Education**

The strengthening of the PCPS mathematics education program is evident in increases in student performance on State exams and in school accreditation. Those accomplishments are underpinned by

accomplishments in other important areas, including improvements in higher level content offerings and teaching quality.

### Higher Level Content.

When AP, Inc/SIAP entered Petersburg, PCPS was already partnering with area community colleges to provide dual enrollment courses for its high school students. Most of the courses were non-STEM courses and would carry college credits only at the institutions with which they were accrued. The SIAP/VSU/PCPS partnership brought new meaning to dual enrollment in the division. Courses were designed, not merely to get college credits on students' transcripts, but to prepare them to enter and succeed in STEM-related majors without the need for remediation. To that end, the dual enrollment program developed through the project had several features that set it apart from the existing dual enrollment arrangements.

First, dual enrollment courses developed through the project are all college-level mathematics courses that enable students to enter college on the fast-track towards STEM-related majors. Courses include college algebra, college trigonometry, and Calculus I and II.

Second, the dual enrollment courses are taught by high school teachers as part of their regular course load, thus reducing the cost of adding new courses to the curriculum.

Third, the courses are core courses that can be transferred to other state higher education institutions.

Fourth, for students who successfully complete the college courses and enroll at VSU, their college



transcripts will include the actual grades they earned in the courses and those grades will be computed in the students' grade point averages. High school students use the same books, syllabus, labs and exams as on-campus students enrolled in the same courses.

Fifth, students who complete the dual enrollment courses with at least a 3.0 grade point average can enter directly into the university and be eligible for the Dean's List and several scholarships.

Sixth, these course offerings fill gaps in the school's mathematics curriculum such that students do not have to have a one- to two-year gap in mathematics instruction before entering college or a career.

#### Teaching Quality

The dual enrollment program has also served to strengthen teaching quality at the high school. Four of the high school teachers received additional professional development and support from VSU to qualify as university instructors. Three of them are now full-time instructors at VSU and one is an adjunct, teaching college mathematics courses on the university campus. All of these teachers are AP, Inc/SIAP trained. Three of them participated in both the local institutes and workshops and the IMD program and trainings.

This sharing of university-based and clinical, or school-based, instructors has powerful implications for improved mathematics education at both the school and the university levels. The university mathematics program can be informed by and responsive to the needs of secondary schools and secondary schools can be more aware of what is required of students in college-level mathematics.

#### Student Demand

The increased strength of the mathematics program can be seen in increased student demand for and performance in higher level coursework.

The project's dual enrollment program began in September 2010 with 12 students taking college algebra and college geometry under Ms. Zorica Skoro. One student had to drop out of the class for personal reasons; the remaining 11 all passed. The 100% pass rate was higher than the pass rate for freshmen taking the same course on VSU's campus.

All of the students in the first cohort graduated STEM-ready. Seven of the 11 (63.6%) graduated with 14 credits in college algebra, trigonometry and Calculus I and II. Four others, who were seniors when the program began, graduated with seven credits.

Nine of the 12 students who entered the first dual enrollment cohort (75%) are African American males. Six of the 11 (54.5%) who graduated applied to and enrolled at VSU in the Fall 2011 semester.

Dr. Gerald Burton of VSU aptly described the graduation of the first cohort of STEM-ready students as "a Sputnik moment in the country and especially in the area [Petersburg]." He continued, "The question now is how we use this Sputnik moment to generate enthusiasm and motivation."

Indeed the dual enrollment program has generated enthusiasm and motivation. One teacher explained:

Thanks to SIAP for making connections between high school and higher level math classes. Two years ago, we started with dual enrollment. What we brought to students and kids in Petersburg is

very amazing. They claim kids can't learn and don't want to learn. We just need to make them excited by showing we are excited.

Students *are* excited. One dual enrollment teacher reported that students often come to her classroom inquiring about when they can take dual enrollment classes. Often, students who are not scheduled for her class come and sit in on the dual enrollment course.

One student attending VSU, to the marvel of his advisor, reportedly requested to enroll in the differential equations course. His dual enrollment teacher marveled as well:

Picture a PHS student taking his first course at a university as differential equations. All thanks to AP because if they didn't come and try to see and support and fight, we would not have that. We are still fighting.

A second cohort of 22 students entered college algebra and college trigonometry in the 2011-2012 academic year, taught by Sharmila Rayala. Half (50%) of those students are African American males. All of the students passed and are taking college Calculus I and II with Zorica Skoro in their senior year.

A third cohort of 21 students joined the dual enrollment program in the fall semester of 2012, enrolled in college algebra and trigonometry.

The dual enrollment students have shown the strength of the improved mathematics curriculum at Petersburg High School. They have shown the strength of their own resolve and ability to do what many around them believed they could or would not do.

## V. Lessons and Implications for School and Community Change

The Petersburg story holds many lessons for school reform in chronically low-performing urban areas with high concentrations of students of color and poverty. Several key lessons are categorized and highlighted below. Some of the lessons marked new learning for the AP, Inc./SIAP team; other lessons validated long-held notions based on prior experience.

### Teacher Professional Development

There is general consensus in the education and public arena that teachers are the most important factor in students' access to a quality education. There is also general consensus that teachers whose students do not achieve at high levels should be replaced by more "effective" teachers. The reality is that building a highly effective teacher force is not as simple as replacing ineffective teachers.

We believe that all teachers want to be effective with the students who come to them every day. SIAP's professional development efforts and the lessons we have learned from our work indicate the following:

- Teacher professional development must be focused and sustained over at least a five-year period in order to change the practice and culture of teaching and learning in a school.
- In the case of systemic low performance in areas such as mathematics education, professional development should engage all but no fewer than 75% of the teachers who teach mathematics.

- Professional development activities should be system-wide and provide ample opportunity for both vertical (K-12) and grade-specific group work.
- Instructional leaders should attend all professional development institutes, workshops, and other meetings.
- Professional development must include intensive summer trainings of no less than two weeks, followed by embedded follow-up throughout the academic year. The content of follow-up sessions should be designed to speak to the specific challenges and successes of classroom implementation and to the academic standards that teachers expect to address in the time between sessions.
- In a multi-year program, careful attention must be given to identifying emerging teacher leaders who can be trained and mentored to sustain the work at both the school and district levels beyond the funded project period. Training of these leaders should begin in Year 2 of the project and include opportunities for them to co-facilitate with SIAP trainers throughout the funded cycle.

### Administrative and Support Structures

Turnaround strategies often require new structures at the school and district levels. At a minimum, the following are essential:

- School should be structured to support the turnaround strategy it has adopted. In some cases, this is a matter of course scheduling. In other instances, it might be a matter of scheduling teachers' time so they can engage in grade-level and multi-grade level professional learning communities, lesson studies, and observations.
- To ensure that students are STEM ready, school systems should partner with higher education institutions to offer mathematics courses beyond those required for high school graduation.
- Schedules should be arranged so students have no more than a semester's lapse between mathematics courses or between a mathematics course and high school graduation. This is especially important where block scheduling allows students to complete the required mathematics sequence by the end of their sophomore year, or where students have to wait a full year between mathematics courses. (For instance, some students take Algebra I in the fall of one year and cannot enroll in geometry until the fall or spring of the following year.
- Building level administrators should attend and experience the professional development activities in which their teachers are engaged so they understand the experience and provide the support teachers need for implementation. This is also important to the teacher evaluation process.
- Building level and district administrators should meet with consultants on each

consultant visit so they are fully aware of what is going on in their building and can be an informed participant in decisions regarding the reform effort.

- If multiple service providers are being used, building and school administrators should convene them at least quarterly so they are working cohesively. Providers should be selected and managed so as to reduce the possibility of competition for teachers' time and commitment and to make sure they are not conflicting in their purposes.

### School and Community Connections

One of the greatest, but often not so obvious, lessons is that school turnaround is not solely a school or school system responsibility. Schools alone cannot ensure the success of every child; they must expand their walls and build strong community partnerships that go beyond tradition. Bold new partnerships must allow new leadership to emerge, new alliances to be formed, and long-standing power relationships to be examined and challenged. Ultimately, school and community connections must be developed to:

- Ensure that communities and schools alike understand and take responsibility for their roles in the success of *all* of their children.
- Provide wrap-around services to address the out-of-school issues that impact learning.
- Provide high quality community- and faith-based extended learning opportunities for all children, including the most vulnerable. Such opportunities should complement but not duplicate services provided by the schools.

Learning programs should have academic as well as social and cultural components.

- Leverage resources for maximum impact on student learning and child and family success.
- Maintain continuous, authentic communication and accountability for the success of all children.

### Parent Engagement

Engaging parents and caregivers of students who perform in the lowest quartile on standardized tests is difficult; yet, it is important to ensuring success. To that end, schools must make unrelenting efforts to:

- Ensure that families have an authentic and respected voice in decisions impacting their children's schools and their children's education.
- Target and engage parents of the highest need children in the decision making process.

Community- and faith-based groups should complement the efforts of schools to engage parents. At a minimum, they should:

- Assist in alleviating transportation and other obstacles to parent engagement.
- Provide alternative venues for parent engagement when school settings prove to be inaccessible, threatening, or otherwise not conducive to parent engagement.

### Design Teams

The SIAP Design Team process has proven to be effective in engaging diverse groups of individuals, governmental agencies, and community-based organizations in school reform. Communities seeking

genuine school and community reform and an enduring culture of high expectations for child success should establish a Design Team (or similar structure) to plan, implement, and assess the school and community reform effort. Design Teams should:

- Engage their members in intensive training so they are well versed in the reform initiative and have the requisite facilitation, fundraising, and collaboration skills to sustain school and community connections for the success of children and families.
- Assume increasing responsibility each year until by Year 3, they are able to facilitate the process with only the consultation and advice of the SIAP team.
- Develop and implement an aggressive outreach plan to inform parents and caregivers of the project and to engage them in the Design Team process. The Design Team should communicate with parents at least monthly.
- Develop and implement a fundraising plan to sustain its work and support the continuing reform effort.

### Youth Leadership and Engagement

Peer pressure is powerful. SIAP has learned to leverage that fact to increase students' expectations and demands of themselves, their communities, and their schools. Successful projects must:

- Engage school-aged children and young adults in the Design Team process.
- Provide opportunities for youth leadership to emerge and support youth in crucial leadership roles.

- Train and support youth mentors and tutors. Ensure that they can remain engaged for at least a semester so children are not subjected to frequent turnovers of caring adults in their lives.

### Higher Education Partnerships

Engaging the School of Education and other divisions of a higher education partner from the beginning of the program is a key to an expeditious and productive implementation. It is also a key to sustainability, financial resource development, and every other project component. Given that, the project should:

- Meet regularly with higher education faculty members and administrators to maintain their engagement around identified needs.
- Engage higher education faculty members in the Design Team process.
- Leverage resources to provide campus-based experiences, summer camps, and higher level coursework (dual enrollment) for students.
- Utilize higher education connections to strengthen the existing teacher workforce.
- Engage higher education faculty members in the professional development and community and site development aspects of the project.



## Southern Initiative Algebra Project

*Helping Communities Ensure a Quality Education for Every Child*

### Who We Are: Key Staff and Consultants

**David J. Dennis, Sr.**, is founder and director of the Southern Initiative Algebra Project. As former president and CEO of Positive Innovations, Inc., he facilitated Algebra Project implementation in 21 school districts in seven southern states, designed and implemented community development and outreach programs at local sites, and developed a Community Development Leadership Training Program. He was field secretary of the Southern Education Defense Fund for Racial Equality, responsible for organizing and conducting voter registration workshops throughout the South; Southern regional program director of the Congress of Racial Equality (CORE); co-director of the Council of Federated Organizations (COFO); and a key architect of the Mississippi Freedom Summer from 1962 to 1965. He is cited in numerous books and has made multiple appearances in radio and television documentaries on civil rights. Dennis holds a BS and a BA degree from Dillard University and a Juris Doctorate from the University of Michigan Law School.

**Staffas Broussard** is a lead trainer in the SIAP Professional Development Program, focusing primarily on secondary and higher level mathematics. He is a certified Algebra Project trainer and has played a key role in the project's curriculum development. Broussard has spent his career teaching graduate and undergraduate courses in mathematics and providing professional development for teachers of mathematics. He holds BS and MS degrees in mathematics from the University of New Orleans.

**William Crombie** is director of professional development for The Algebra Project, Inc., where he is responsible for developing and implementing the Algebra Project's Professional Development for Professional Developers Program. Formerly director of the Chicago Algebra Project, he is a lead trainer in SIAP's Professional Development Program. Highly sought after for his expertise in helping teachers improve their mathematics knowledge and pedagogy, he has conducted teacher development throughout the United States, South America, the Caribbean and Korea. Crombie holds degrees in mathematics and physics from Rutgers and Brown universities. He has taught college algebra, calculus, statistics, physics-geoscience and classical and quantum mechanics at the University of Massachusetts, Worcester Polytechnic, and Montclair State College.

**Freddie David** is a certified Algebra Project trainer and member of the SIAP professional development team. He has spent many years as a high school mathematics and science teacher and is a master teacher in the Marlboro County (SC) school district. He holds a Bachelor of Science degree in chemistry from Francis Marion University and has completed further studies at Francis Marion, the University of South Carolina, and the Hay/McBer Institute.

**Nancy Ledford Dennis** is director of SIAP's documentation and evaluation services. She holds a BS degree in biology and health education and an MS degree in research biology. She is certified in elementary education, intermediate science, middle school, high school biology, health education, and supervision and administration. She is also a certified Algebra Project associate trainer. Her teaching experience includes high school biology and earth science; middle school science, mathematics and reading; gifted and talented grades 2 through 10; and college biology lab classes.

**Jessie Cooper Gibbs** is a certified Algebra Project master trainer and lead trainer and director of SIAP's Professional Development Program. She is nationally recognized for her excellent facilitation



skills and for her track record in improving teaching quality. Her career has included 27 years of middle school mathematics teaching, four years of coordinating an NSF Middle School Mathematics grant for Xavier University of Louisiana, and 12 years as an independent consultant, directing SIAP's professional development work in Yuma, AZ; Lodi, CA; Savanna, St. Helena, and Charleston, SC; Weldon and Halifax County, NC; Marvel and Pine Bluff, AR, New Orleans, LA, and Petersburg, VA. Jessie received her degree in Mathematics Education from Southern University.

**Leo Edwards** is a member of the SIAP professional development team, focusing primarily on high school and college level mathematics. He was formerly professor of mathematics, acting vice chancellor for academic affairs, director of the Mathematics and Science Education Center and acting dean of the College of Arts and Sciences at Fayetteville State University. He is a recognized national expert in mathematics education and has taught computer science at the University of the Virgin Islands. He was a contributing author for the 4<sup>th</sup> Grade Silver Burdett & Ginn mathematics text (1989) and contributing graphing calculator author for Advanced Mathematical Concepts: Pre-calculus with Applications, Glencoe/Merrill/MacMillan/McGraw-Hill: New York, NY. 1994, 1997.

**Merle Harris** has been a lead trainer on the SIAP professional development team for more than 15 years. A certified Algebra Project trainer, she has assisted in Algebra Project curriculum development and provided services to teachers through her work with SIAP. She was formerly a high school and alternative school principal in New Orleans, LA; principal of Xavier University's College Preparatory School; and a faculty member at Xavier University where she taught mathematics and science method courses and supervised student teachers. She earned her undergraduate degree in mathematics education and a master's degree in curriculum and instruction from the University of New Orleans.

**Jereann King Johnson** is a lead consultant in SIAP's community and site development work. She has many years of experience in adult literacy work, youth and community development, and radio management and production. She has been a principal consultant on community building and connecting school and community for a variety of local, state, and national organizations. Jere's community work and commitment have been honored by her receipt of the Charles Bannerman Sabbatical for Long Term Community Activists and the Defender of Justice Award from the North Carolina Justice and Community Development Center. She earned her bachelor's degree in history and education from Antioch College and her master's in intercultural relations from the McGregor School at Antioch University.

**Doris Terry Williams** is a lead consultant with SIAP with a primary focus on community and site development. She has more than 35 years of experience in Pk-20 education. She holds an AB degree in English education from Duke University and a MEd and an EdD in Adult and Community College Education from North Carolina State University. Williams' experience includes public relations with NC Blue Cross and Blue Shield and the Soul City New Town Development, program administration at the community college level, teacher education and assistant deanship at the university level and non-profit organizational development and management. She is currently executive director of The Rural School and Community Trust. Williams has authored multiple articles and commissioned papers on school reform, rural education, and community development. She served 12 years on a local school board and has taught education leadership courses at NC State and Ohio universities. She serves on the US Department of Education Commission on Educational Equity and Excellence.