Office of the Superintendent of Schools
MONTGOMERY COUNTY PUBLIC SCHOOLS
Rockville, Maryland

September 5, 2018

MEMORANDUM

To: Members of the Board of Education

From: Jack R. Smith, Superintendent of Schools

Subject: A Year in Review: Montgomery County Public Schools Strategic Plan: Fiscal Year 2018 Presentation (07-30-18-01)

During the Board presentation of agenda item 7.1, A Year in Review: Montgomery County Public Schools Strategic Plan: Fiscal Year 2018, which took place on Monday, July 30, 2018, discussions with participants and the members of the Board brought forward nine inquiries about multiple topics of interest and concern. Responses to these inquiries are attached.

JRS:sln

Attachment

Copy to:
Executive Staff
Mr. Ikheloa

Question A

What are the strategies to engage more girls and "non-traditional" students in STEM?

Response

Elementary School

At the elementary school level, a number of Science, Technology, Engineering, and Mathematics (STEM) programs and partnerships have been introduced, and/or expanded to engage all students. A variety of models have been adopted to include: teachers and schools piloting new curricular products and programs; professionals in the STEM fields integrating into the classroom with teachers; and in-house field trips provided by external partners.

When a grade level or a school participates in a program, all students within that grade, grade-band, or school participate. The programs are fully incorporated into the school day. Examples of these programs include (but are not limited to):

- Coding—In 2017–2018, 3 coding curricular programs were piloted by 35 teachers across 17 schools. Teachers volunteered if they wished to incorporate coding into the school day for their students. All students in these classrooms participated. For 2018–2019, the programming is expanding. Participating schools are asked to add teachers within the building and new schools are being invited. The ultimate goal is coding for every elementary school student every year in five years or less.

- Coding in the summer—There were 2,090 students in Grades 2–5 enrolled in Extended Learning Opportunities (ELO) in summer 2018. These students participated in a coding experience for one hour each day for six weeks as part of their daily curriculum. ELO enrollment comprises students attending Title I schools during the school year.

- LEGO—Five to 10 elementary schools will implement LEGO WeDo coding and robotics in Grades 2–4 this school year.

- American Association for the Advancement of Science—During 2017–2018, practicing and retired scientists and mathematicians volunteered to partner with teachers in 37 elementary schools across the county to add their expertise and provide enriching activities related to the curricular lessons. The kick-off for the 2018–2019 school year is September 25, 2018, with the goal to expand the partnership to include additional elementary schools.

- KIDMuseum—In partnership with Montgomery County Public Schools (MCPS), KIDMuseum will pilot a six-experience program in robotics and physical computing in Grade 4 in two elementary schools. This program includes three field trip experiences to KIDMuseum and three lessons at school, culminating in an expo/fair to share learning.

- The Maryland Agricultural Education Foundation's mobile science lab is on a five-year rotation to visit all elementary schools. Students in all grade levels participate in learning experiences in the mobile lab. Lessons are aligned for curricular connections to the course of study in each grade level.

- Bake for Good: King Arthur Flour—In 2018–2019, King Arthur Flour will sponsor *Baking for Good Gaithersburg* to involve all students in Grades 4–7 within the City of Gaithersburg in a project designed to use science to raise awareness of food insecurity within our own communities.

Secondary School

The Code.org curriculum incorporates multiple strategies to engage girls and non-traditional students in the computer science classroom. To attract these students, the Hour of Code activities, the incorporated LEGO Mindstorms robotics units, and a number of extracurricular programs are used to promote the courses.

In October 2017, MCPS participated in the Maryland STEM Festival for MCPS families and students. Staff and students showcased STEM-related projects completed as part of curriculum, clubs, and special programs. Families learned about MCPS STEM offerings. The festival will be expanded this year to include additional schools and STEM-related organizations.

The Project Lead The Way Engineering program continues to expand to more schools to increase access and content options. The Environmental Sustainability option is intended to engage a diverse group of students in engineering-related content and fields by offering interdisciplinary opportunities to investigate and design solutions to solve real-world challenges related to clean drinking water, food supply enhancement, and renewable energy.

Technology education and engineering teachers are provided opportunities for students to connect with female speakers and partner-provided events focused on engaging girls in engineering, such as the the Washington Suburban Sanitary Commission's *Introduce a Girl to Engineering Day*, where girls are invited to participate in hands-on engineering activities and learn from female engineers.

In summer 2017 and 2018, the Career and Technology Education (CTE) team offered summer camps at Gaithersburg and Paint Branch high schools to engage all students in CTE programs. STEM-related offerings included engineering, robotics, and programming.

Question B

How will the system measure the engagement of students in these programs, i.e., do the students find the programs as engaging as we think they will?

Response

Elementary School

Teachers and students periodically are surveyed for satisfaction with experiences and success of implementation with most pilot programs. At the conclusion of the pilot(s), participating teachers were surveyed. Five teachers in three pilot schools reported:

- Ease in which teachers could implement, even with limited personal experience or knowledge of coding;
- Schools need help carving out time to add a subject or class to their schedule; and
- It would be helpful to have connections to the major content areas identified ahead of time.

This summer, 55 teachers across 17 ELO sites completed the summer 2018 questionnaire to provide feedback on the implementation of coding. Findings include:

- A total of 96.4 percent of teachers report that students found coding experiences engaging overall;
- Students overwhelmingly reported liking the gaming aspects of the curriculum, as well as the increasing complexity of the tasks and challenges; and
- Students want more opportunities to code, and some want more real-life applications of the experiences, not simply the animated gaming features.

Secondary School

In STEM-related CTE programs, student enrollment in program of study courses that follow the first course measures the success of attracting female and non-traditional students to computer science and engineering. Increasing the number of these students who take the higher-level concentration courses and/or complete the pathway is an indication of success in recruiting and retaining these students.

Question C

What are the demographics of those students enrolled in these programs?

Response

Elementary School

When a school, grade-level team or teacher participates in any one of the growing number of STEM opportunities, all students in that school, grade, or class participate; it is not an "opt in or opt out" model. As a result, there is a distribution across all student groups in terms of participation. Many of the new programs, including coding, partnership pilots, and professional

volunteer enrichment are expanded into Title I and focus schools first, to ensure access and experience for students who may not otherwise encounter these opportunities.

Secondary School

Non-traditional enrollment, program concentrators, and program completers are the measure of females in the computer science and engineering programs. The data are reported by the Maryland State Department of Education through the Perkins Plan and provided each year through the Perkins Program Quality Index data.

Question D

What are the demographics of the supporting services professionals enrolled in the teacher preparation classes? Is such enrollment helping MCPS diversify its teaching staff?

Response

During the past five years, an average of 67 supporting services staff members each year have become teachers in MCPS. The vast majority of these employees have come from the paraeducator ranks. While we have supported this career advancement, the trend data in the following table indicate a relative lack of diversity in the cohorts of supporting services staff becoming teachers given the diversity of our supporting services staff members as a whole.

Support Professionals Promoted to Teachers Fiscal Years 2014–2018

Fiscal Year	White	African-American	Asian	Pacific Islander	Multiple Races	Hispanic	Number of Support Professionals Who Became Teachers
2014	71.43%	11.69%	11.68%	-	1.30%	3.90%	77
2015	68.20%	12.10%	7.60%	-	-	12.10%	66
2016	70.21%	19.15%	4.26%	-	-	6.38%	50
2017	68.83%	14.29%	5.19%	1.30%	1.30%	9.09%	81
2018	66.11%	13.56%	5.08%	-	1.69%	13.56%	59

Based on this data, it is critical for MCPS to identify ways to expand the opportunities for support professionals interested in pursuing teacher certification in order to increase teacher workforce diversity. Particularly given that our supporting services staff is the most diverse workforce of any of our bargaining units, this work is an important part of our overall plan to increase teacher workforce diversity.

To address the need for a more diverse workforce and create varied opportunities for support professionals to pursue teacher certification, MCPS issued a Request for Proposal (RFP) in October 2017. Prior to this RFP, the support professional-to-teacher partnerships in place focused primarily on individuals who already had earned a bachelor's degree, which was not addressing the needs of the varied backgrounds of our support professionals. During Fiscal Year (FY) 2018, MCPS had approximately 111 support professionals enrolled in either an existing teacher pathway partnership or a self-selected teacher preparation program.

Of those 111, the demographic breakdown was 63.96 percent White, 11.71 percent African-American, 4.5 percent Asian, 1.8 percent multiple races, and 18.02 percent Hispanic. Additionally, 72 percent of those employees were female.

Consequently, the RFP for new partnerships addressed the barriers identified by support professionals, some of which include cost, course support and structure, enrollment support, and bachelor degree offerings. In discussions with the leadership and members of the Service Employees International Union Local 500, we believe that by removing these barriers, we greatly will expand the opportunities for career advancement for a wider range of employees. Additionally, the RFP focused on the critical need areas identified by the system, which include special education, math, science, technology, English for Speakers of Other Languages, art, Spanish, and French.

As a result of the RFP, four new partnerships have been identified: University of Maryland College Park, Notre Dame of Maryland University, University of Maryland University College in partnership with University of Maryland Baltimore County, and Montgomery College. These four proposals provided targeted support structures for our employees, tuition incentives, direct pay, flexible programming, as well as a number of barriers identified in the RFP. We currently are in the process of finalizing the agreements with these organizations, and support professionals already have begun enrolling. Our goal is to have at least 100 support professionals enrolled in these new partnerships for FY 2019. We will provide specific data regarding this new cohort of support professionals enrolled in these new programs in December 2018.

Question E

Provide information regarding how MCPS will utilize the redesigned website to promote the courses offered by the Parent Academy.

Response

Parent Academy course offerings and registration information is provided on the Parent Academy website. The Parent Academy website is linked to, featured, and promoted on the MCPS central site at various times throughout the year and more significantly when program staff publishes new course offerings and encourages registration. These promotions occur as homepage stories, featured in the Spotlight section of the homepage and via a "Promoted" or "Recommended" link in the search engine. MCPS social media (Facebook, Twitter) and MCPS TV's program "MCPS This Week" regularly feature upcoming course information throughout the Parent Academy schedule and these promotional tools are available through the MCPS central site. Parent Academy course offerings also may be featured on the MCPS website homepage "Dates to Remember" section in the future.

Question F

Provide information regarding how many languages are used on the redesigned website.

Response

The MCPS central website has pages (world language minisites) in six languages: Amharic, Chinese, French, Korean, Spanish and Vietnamese. Access to these sites is available via a link at the top of the MCPS central website.

The content for the Spanish pages, the most comprehensive of the language minisites, is managed by the Spanish language communications specialist in the Public Information Office. The content for all other language minisites is managed by staff in the Language Assistance Services Unit; these pages feature primarily current and most pertinent information. Automatic translation tools such as Google Translate are not used on the MCPS site due to significant errors that occur as part of the automatic translation process. Attempts at using these tools previously have resulted in multiple complaints by site visitors.

Other pages that are of significant systemwide importance also are translated in the six languages, as needed. Examples of these types of sites follow.

Career Readiness: English | español | 中文 | français | tiếng Việt | 한국어 | □□□□

Emergency Information: English | español | 中文 | français | Việt Nam | 한국어

International Student Admissions
http://www.montgomeryschoolsmd.org/international-admissions/

Question G

Provide information regarding the costs associated with MCPS paying the costs of the writing section of the SAT test for students.

Response

Beginning in 2017–2018, MCPS provided the opportunity for every Grade 11 student to take the SAT or ACT (without Essay) at no charge, funded by an accelerator in the operating budget at a cost of $450,000. Not only does this allow greater access to national test administrations of the SAT and ACT, it also allows MCPS to offer these college entrance examinations during the school day, through SAT School Day. These efforts support our commitment to remove barriers associated with college entrance examinations and ensure equitable access to these important steps to college and career readiness.

In 2018–2019, all high schools will offer SAT School Day (without Essay) at no charge to students. Regarding the optional Essay, as many students take the SAT/ACT more than once, students wishing to take the SAT with Essay are encouraged to do so during another national administration or during SAT School Day at additional cost incurred by the student. Not only does including the Essay add a cost of $16 per student, it also is important to note that there is a significant trend

among colleges and universities that do not require the Essay for admission (*The Washington Post*, "Pencils down: Major colleges stop requiring essay test for admission".

Question H

Provide information regarding the costs of implementation of the innovative school calendar initiative for Arcola and Roscoe R. Nix elementary schools.

Response

In consultation with the Office of the Chief Financial Officer, projected costs for implementing the innovative school calendar initiative were calculated. The following table includes costs for implementation at Arcola and Roscoe R. Nix elementary schools for the 2019–2020 school year. The projected fiscal year cost includes salaries, benefits, transportation, instructional materials, and health services needed during the additional 30 days of instruction, which are outlined in the innovative school calendar framework.

Pilot Schools	
Innovative Year Calendar	
Pilot School	Estimated Cost per School FY20
Roscoe R. Nix ES	$889,351
Arcola ES	$1,174,529
Total	*$2,063,880*

Question I

Provide information regarding the costs to implement this extended school year initiative to all 25 Title I schools.

Response

For the 2017–2018 school year, there were 25 Title I schools. For the 2018–2019 school year, there are 23 Title I schools. Projected costs in the following table are based on implementation of the innovative school calendar at all 23 Title I schools. Implementing the innovative school calendar framework at a primary school costs slightly less than implementation at a Grades pre-K–5 or a Grades 3–5 elementary school. Three Title I schools are primary schools: Bel Pre, New Hampshire Estates, and Roscoe R. Nix elementary schools. The remaining 20 Title I elementary schools serve students in Grades pre-K–5 or Grades 3–5.

	Projected Total Cost		Title I Schools		Total Projected Cost for 23 Title I Schools
Roscoe R. Nix	$ 889,351	x	3	=	$ 2,668,053
Arcola	$1,174,529	x	20	=	$23,490,580
Total	$2,063,880				$26,158,633