

**To: Arlington School Board**  
**From: Gifted Services Advisory Committee**  
**Subject: 2013 - 2014 Report**

## **I. INTRODUCTION AND SUMMARY**

In 2013, the Gifted Service Advisory Committee (GSAC) recommended that APS: (i) implement the Naglieri Nonverbal Ability Test (NNAT-2) at the second grade level, in order to provide an additional screening tool for gifted students; (ii) place gifted-identified elementary school students in cluster groups of at least five students; (iii) provide intensified classes at both the middle and high school level, and (iv) provide annual reports on the progress of gifted education.

This year, GSAC is pleased to report that there has been substantial progress toward implementing two of these recommendations. First, the NNAT-2 has been adopted and this year was administered to all second grade students throughout APS. The results of the NNAT-2, which are described in more detail below, are encouraging. They show that, as intended, the NNAT-2 is “flagging” children who have not previously been identified as gifted, and suggest that the NNAT-2 will assist in closing the achievement gap by helping to identify more economically disadvantaged and Limited English Proficiency (LEP) gifted students who might otherwise be overlooked. We are encouraged by this success and are grateful that the APS administration chose to adopt this tool.

Second, GSAC is encouraged by the progress in clustering at the elementary school level. As GSAC has consistently highlighted, it has been difficult to quantify the degree to which clustering was actually occurring because data on clustering has not been made available. Nevertheless, anecdotal evidence suggested clustering was simply not occurring at the elementary level. While GSAC remains frustrated at the lack of data on this important issue, through the leadership of our new Gifted Services Supervisor, Cheryl McCullough, the Committee has seen a marked improvement in transparency, and the data that we have seen, although not easily accessible, suggests that clustering is improving substantially. GSAC supports making a report on clustering available through Synergy so this issue can be further monitored.

Unfortunately, only marginal progress has been made on GSAC’s other two recommendations. In particular, GSAC is gravely concerned about the lack of intensified classes at the middle school level. This year, GSAC reached out to middle school parents and staff and asked about their experience with intensified classes. The near-unanimous response was that intensified classes are simply not available in subjects other than math, and that parents view this as a *significant* concern—indeed, a concern that has in some cases driven parents to leave APS entirely. And, as noted above, difficulty in sourcing data about outcomes for gifted students continues to obscure the results of gifted service programs, and to hinder GSAC’s ability to provide the Advisory Committee on Instruction with additional input on how to improve gifted services in Arlington.

GSAC also notes that, as a result of changes made in the budgeting process after the submission of its 2013 Report, a number of elementary schools lost access to full time Resource Teachers for the Gifted (RTG). GSAC does not believe that gifted services can be properly provided to elementary students without at least one full-time RTG per school. GSAC thus strongly encourages the School Board to revise the funding guidelines to restore at least that level of service, and plans to address this issue more fully in its 2014-2015 Report.

In addition to reporting on the progress of our 2013 recommendations (Section II), this year GSAC provides information on three additional issues of critical importance to the education of gifted students in Arlington. In Section III, in light of last year's proposal to eliminate high school Resource Teachers for the Gifted (RTGs), we report on the delivery of gifted services at the high school level generally, and the role of RTGs in that process. In Section IV, we highlight the importance of Arlington's continued participation in the Thomas Jefferson High School for Science and Technology (TJHSST) program. Finally, in Section V, we provide some thoughts on additional steps that could be taken to improve high school access to STEM education.

## **II. REPORT ON 2013 RECOMMENDATIONS**

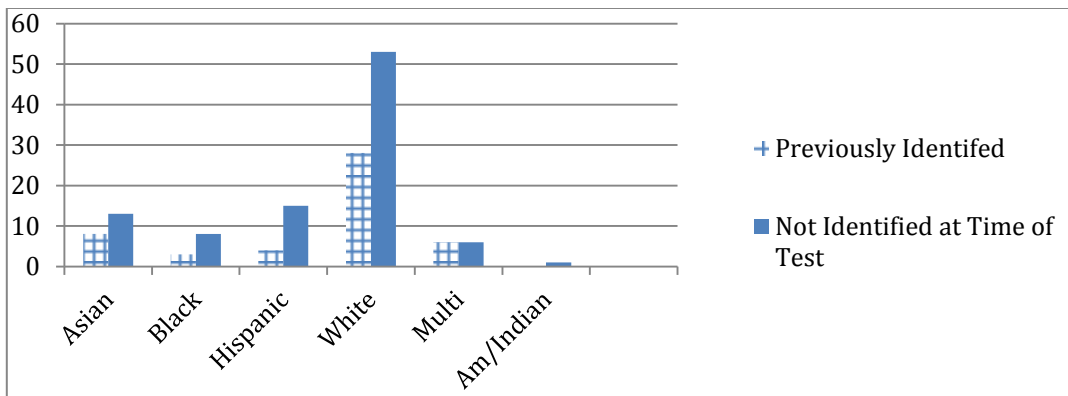
### **A. Recommendation One**

**In order to reduce bias and increase the effectiveness of gifted identification for all students (including those whose first language is not English), APS will administer a nonverbal ability test (such as the Naglieri Nonverbal Ability Test) to all second grade students.**

Last year, this committee recommended that all second grade students be given the Naglieri Non-Verbal Assessment Test, 2<sup>nd</sup> version (NNAT-2). The test measures general intellectual ability in a non-verbal format, using questions that involve recognizing and identifying patterns presented in graphic form. It was designed to help to uncover hidden abilities of children of limited English proficiency (LEP), youth from racially and culturally diverse backgrounds, and economically disadvantaged children. This test also works for children with hearing impairments, limited motor skills, and minimal color vision impairment. APS had administered the NNAT-2 late in the process of identifying students for gifted services. The broad application of this test as a screening device ahead of other identification components is intended to identify gifted children who might otherwise be overlooked, and who have historically been underrepresented in gifted services. The NNAT-2 will not replace other elements of the screening process, and students will not be identified solely on the basis of their NNAT-2 score. Similarly, the status of previously-identified children will not be changed by their NNAT-2 score. GSAC recognizes this test as one step toward a larger plan of improving the access to APS gifted services for racially, culturally and socioeconomically diverse youth.

APS implemented our recommendation beginning with the first NNAT-2 in October 2013, and APS plans to continue administering the test in the fall of each year. The 2013 NNAT-2 was administered to 1914 2nd grade children. The mean score was 101, as compared to a national average of 100. Out of this group, 149 students scored 120 or above, which is the benchmark score for schools to look for children who may have the potential to think and problem solve at a higher level.

The 145 students remaining in APS<sup>1</sup> that scored above 120 on the test can be broken down further into students that were already identified as gifted (49) and students who were not so identified at the time the test was administered (96).



As is clear from the data, the NNAT-2 flagged a large number of students who had not yet been identified as gifted, and the cohort of flagged students appears to be generally more diverse than the previously identified students. A single test cannot be the sole basis of gifted identification, but it can start conversations in the classroom about children whose performance may not accurately reflect their ability levels. Currently, children who took the test in the fall are being considered for identification in the spring screening. The RTGs at each school are working with the second grade classroom teachers regarding potential referrals for those children who scored 120 or above, while also seeking opportunities to nurture the potential in these children.

The NNAT-2 measures general intellectual ability, and is not subject-area dependent. This highlights a mismatch in our identification process: students are identified by specific academic subject area, even in these earliest years of elementary education, rather than by general ability. As the NNAT-2 helps to demonstrate, gifted students are rarely “gifted” in only one discrete academic area. GSAC is now researching the possibility of identifying students by general intellectual ability, especially for grades K-5, so that students who test at gifted levels can be challenged at an early age in all academic areas.

GSAC also supports the implementation of the Cognitive Abilities Test (CogAT) for fourth graders. The Cognitive Abilities test measures students’ learned reasoning abilities

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<sup>1</sup> Four students moved out of APS after the NNAT-2 was administered.

in the three areas most linked to academic success in school: Verbal, Quantitative and Nonverbal. While the CogAT is in part an achievement test, it should also provide another screening mechanism for potentially gifted children, in addition to helping to identify those children whose potential is not reflected in classroom performance.

In conclusion, we are very encouraged by the adoption of the NNAT-2. Its addition to the process will help identify gifted children in previously underrepresented subgroups, and the cost of administration ended up being a very reasonable \$19,322.90, right in line with the estimate of \$19,000 provided in GSAC's last report. We hope that this will be a meaningful step on the path to improving the provision of gifted services for all APS students.

**B. Recommendation Two:**

**APS will place elementary students identified for gifted services in cluster groups of at least five students (where this number of identified students exists in a subject area).**

For many years, GSAC has recommended and reinforced the importance of cluster grouping to provide effective differentiated instruction that challenges and engages every student, based on research about effective instructional methods. In our 2013 Report, we recommended that "APS will place elementary students identified for gifted services in cluster groups of at least five students (where this number of identified students exists in a subject area)." We added a related recommendation (4.2) that "APS will report annually to the School Board on the implementation of the Local Plan for the Education of the Gifted" including a "Gifted Student Cluster Report" detailing "the number and size of clusters of gifted students in each grade in each elementary school."

As we have described in our previous Reports, educational research demonstrates that cluster grouping is critical to ensuring that every student is challenged and engaged. Moreover, clustering is the model APS has selected to serve gifted students.<sup>2</sup>

Although APS is still in the early stages of gathering data on how well cluster grouping is being implemented, we know from parent and teacher reports that cluster grouping has not been uniformly and consistently occurring in each of the county's elementary schools. We believe, however, that APS is making real progress towards the goal of cluster grouping in elementary schools, due in large part to the outreach efforts and expertise of Cheryl McCullough, APS Supervisor of Gifted Services. As you can see in Table 1, a December 2013 Survey of RTGs for Specific Academic Aptitude indicates that

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<sup>2</sup> See Local Plan for the Education of the Gifted at 35, Arlington Public Schools, June 1, 2012, available at <http://www.apsva.us/cms/lib2/VA01000586/Centricity/Domain/62/New%20Final%2012-17%20GS%205%20year%20Plan%20v8b%20May%2016%20v2.pdf> ("Local Plan").

40 percent of the elementary schools are now clustering in groups for the specific academic aptitudes of English, math, science and social studies. (Visual and Performing Arts were not included in this survey.) Of the eight schools credited with clustering, five have adopted the Cluster Model as a new initiative for 2013-2014. This represents significant progress from 2012, when only 3 of the 21 schools were clustering (defined as grouping more than 5 children per class). Nonetheless, this data shows that over half of APS elementary schools have yet to fully implement cluster grouping.

<b>Elementary Schools Clustering in Groups of At Least 5 Students</b>		
	<b># of Schools</b>	<b>% of Schools **</b>
Clustering	8	40%
Clustering Partially Implemented <sup>3</sup>	4	20%
Not Clustering	8	40%
Clustering Not Applicable *	2	NA
* Montessori schools. It is contrary to Montessori philosophy to cluster group students.		
**There are 22 elementary schools in Arlington, but the percentage is based on the 20 non-Montessori schools		

*Table 1, December 2013 - Survey of RTGs for Specific Academic Aptitude*

Other qualitative information also supports that APS is making progress in placing elementary school gifted students in cluster groups. All elementary school principals signed the new School Agreement Form which summarizes the roles and responsibilities of the RTG for the current school year, in collaboration with school staff. It can be considered an action plan, articulating how the school will focus on major initiatives in gifted services: collaboration/coaching for cluster teachers; collaboration/coaching for all teachers in the areas of critical and creative thinking strategies and resources for daily differentiation within content lessons; finding/identifying and nurturing potential in historically underserved populations; and professional development for their staff. The School Agreement Form has a section on clustering that should describe how that school will cluster and how the RTGs will support the cluster teacher. This helps keep the Cluster

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<sup>3</sup> Some grade levels at these schools are clustering, but not all are doing so.

Model (groups with at least five students) in the minds of the principals when they meet with RTGs.

In addition, all but three elementary schools have agreed to use a Gifted Services Differentiated Instruction Progress Form in some manner, which supports the plan for clustering and communicating to parents. Communication with parents about the gifted services their children receive is mandated by the Commonwealth of Virginia. The new Differentiated Instruction Progress Form focuses on the services that were provided, not just the services that were planned, and thus highlights academic growth.

**C. Recommendation Three:**

**APS will provide intensified class options in all core subjects at the middle and high school levels.**

The APS “Aspire2Excellence” Academic Planning poster,<sup>4</sup> states that APS offers differentiated options in math, language arts, and world languages. GSAC notes that options generally exist in the high schools, and in the middle schools for math. The course sequences listed on this same document, however, demonstrate that differentiation is not built into the curriculum for any subject but math. For example, the course sequence for Science is listed as: Grade 6 Science, Grade 7 Science, and Grade 8 Physical Science. The course sequence for Social Studies is listed as Grade 6 Virginia Studies, Grade 7 US History, and Grade 8 World Geography. World language sequences and Language Arts sequences similarly proceed by one level per year. No advanced/intensified options are listed for Science, Social Studies, Language Arts, or world languages. Similarly, the Local Plan for the Education of the Gifted suggests that intensified class options are only made available at the high school level.<sup>5</sup>

Our understanding is that intensified classes were previously offered in a range of subjects at APS middle schools. It is not clear to the members of the Committee when these classes were eliminated, but through interviews with parents and students, GSAC has noted undesirable trends within APS middle schools that we believe were not an issue prior to the dismantling of intensified classes. Children who have been identified as gifted report that they are not stimulated or challenged and many have lost motivation to work in school. Parents of children with high academic achievement who are not identified as gifted also report that their children easily master exams, regularly earning scores above 100 percent without much effort. These parents also wish their children could be more challenged, too.

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<http://www.apsva.us/cms/lib2/VA01000586/Centricity/Domain/102/AcademicPlanning-Poster.pdf>

<sup>5</sup> See Local Plan at 44.

Parents have reported social issues due to their child's giftedness such as their child being teased, isolated, or acting out due to boredom. Of the parents interviewed, only parents whose children attend middle school at the HB Woodlawn parents were generally satisfied with their gifted child's educational opportunities.<sup>6</sup> In fact, some Arlington parents report that they have taken their gifted children out of APS for the middle school years so that their children can be academically challenged and stimulated.

This Committee thus makes three related observations. First, intensified classes, including in Language Arts, that used to be offered at our middle schools have been removed over the past half-dozen years; only math classes still include intensified level offerings. Second, while not directly covered by our third recommendation from the 2013 Report, it is troubling that clustering appears to be implemented ineffectively, intermittently, and inconsistently at the middle school level. Intensified classes would naturally produce more performance-clustering of students through the course selections that students and parents make (in consultation with academic counselors). Third, communication about clustering and intensified classes seems to be lacking in effectiveness and consistency.

#### 1. Intensified Classes

In order to assist our reporting this year, GSAC conducted focused interviews of 12 APS parents, representing each of the APS middle schools, and 2 staff members, representing 2 of the middle schools. Both these interviews and the Middle School Program of Instruction confirm that each content area other than math offers only a general education course option.<sup>7</sup>

Our middle schools used to operate differently and offered our students more choices in the past. We are also aware that neighboring jurisdictions offer their students opportunities to take more advanced coursework in middle school. We believe that intensified classes should be an option open to all students, allowing motivated students, advanced academic learners, and identified gifted students the opportunity to move through course work at a faster pace and with more depth. These are students who have already mastered or quickly and easily master the material in the SOLs. Intensified class options would also help them succeed once they entered high school where AP and IB classes are encouraged.

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<sup>6</sup> Although H-B Woodlawn selects students based purely on a random lottery for applicants from each neighborhood elementary school area, the data suggest that gifted children self-select to apply to H-B Woodlawn at high rates. Over half of the students at H-B Woodlawn have been identified as gifted, which likely affects the pace and depth of even non-intensified classes in the program.

<sup>7</sup> <http://www.apsva.us/cms/lib2/VA01000586/Centricity/Domain/73/MSPOS2015.pdf>

In the past, one concern that has been expressed about intensified class offerings is that they would lead to “tracking,” where only particular students are deemed eligible for intensified classes to the exclusion of other students. When properly implemented, however, offering intensified classes does not create a system of tracking, since the intensified courses could be open to all students (or to all students who achieved at least a B grade in the prior year’s course). Scheduling concerns can be addressed by treating these courses as cross-team classes, as currently done with elective options. Students who opt for the regular course option would benefit from the attention of teachers focused on building and reinforcing their mastery of the SOL objectives. Students who opt for the intensified course option would benefit from the more challenging pace, without the frustration and boredom they are accustomed to experiencing when teachers repeatedly go over material that the more advanced students have already mastered.

In short, offering intensified course options in the core subjects in middle school is vital to meeting the APS Strategic Plan goal of “Ensuring That Every Student is Challenged and Engaged.” In addition, intensified course options in middle school would help APS meet its legal obligation to provide gifted students “appropriately differentiated curriculum and instruction” that includes “advanced content and pacing of instruction” and that supports these students in “work[ing] at increasing levels of complexity that differ significantly from those of their age-level peers.” See 8 VAC 20-40-40.<sup>8</sup>

## 2. Clustering

As noted above, clustering is an integral part of the process by which APS has decided to address the needs of gifted students, as reported in our Local Plan. As reported in more detail in past GSAC reports, research shows that gifted clusters should have at least five to eight students in them to be effective. Research also shows that the gifted cluster should be grouped together within a class, not sprinkled across a classroom in a way that limits their interaction with each other (e.g. one or two gifted students per table grouping in each classroom). Middle school staff and parents interviewed for this report from all six APS middle schools indicate that gifted services vary vastly from year-to-year and school-to-school; often depending on the interest, initiative and training of staff, including the principal, the resource teacher for the gifted, and the general education staff.

The middle school parents interviewed (with the exception of HB Woodlawn parents) report that their children identified as gifted are not being effectively clustered, if they are clustered at all, and are not receiving intensified instruction in any subject other than math. A parent from Kenmore believed that her child’s teachers were striving to give her different work to meet her intellectual needs. This parent, however, believed that there was no intentional clustering of peers. Swanson parents also report that the opportunities for differentiated work are often offered by pulling their student out of a class he/she needs

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<sup>8</sup> See Appendix.



to attend, or before or after school. This method of implementation prohibits many students from being able to participate. These students are not challenged on a daily basis, nor have their schools met the goal of “all children deserve one year of academic growth.”

Parents of rising sixth graders report that on middle school tours this year, staff stated that they offer gifted services through clustering, differentiated instruction within the general education classrooms, and the math intensified program. We have looked into the clustering model at APS middle schools. While some of the APS middle schools report that they have gifted clusters, the clustering is not implemented effectively, consistently or in accordance with accepted research (specifically noted above) in the field. The inconsistency is apparent across the APS middle schools and within specific middle schools depending on teacher and principal preference and implementation methods. As a result, the model has not been effective in meeting the needs of the gifted students in APS middle schools.

Intensified classes and/or properly implemented clustering would give teachers the opportunity to develop lesson plans for two or three levels within a classroom, rather than four or five. This approach would benefit students and teachers in both the regular and the intensified classes and would support achievement of students at all levels.

### 3. Communication

Parents report that their schools do not communicate with them about what individual plan is in place for their child’s education for the year and whether their child met the expected goals. These are threshold issues identified under Virginia law. See 8 VAC 20-40-40; E, 1 and 2 in Appendix. Most parents are not receiving any communication about their student’s plan, and many do not even know their child is in the gifted program or for what subjects. Parents at Swanson Middle School report that they have just started receiving regular general updates regarding what gifted services have been offered by grade and subject area.

We recommend the use or continued use of the Differentiated Form being piloted this year. Monitored and assessed student outcomes must be reported to parents and legal guardians under Virginia law (see below). These forms are particularly helpful for use in conjunction with the clustering model, as they call for teachers to articulate specifically what they have done differently to meet the needs of their gifted students.

Greater transparency and a communication plan with the community are essential to keeping families informed about middle school gifted programs. We intend to address this issue more fully in our 2014-2015 recommendations.

**D. Recommendation Four:**

**In order to evaluate the implementation of the Gifted Services program across the school system, APS will report annually to the School Board on the implementation of the Local Plan for the Education of the Gifted.**

Our fourth Recommendation for annual reports to the School Board on implementation of the Local Plan had three parts, generally aligning with the previous three recommendations: Non-verbal Testing →Identification Report; Clustering →Clustering Report; and Intensified Classes→Annual Progress Report.

While none of these reports have yet been adopted in the form that we recommend, a constructive collaboration with the Gifted Services Supervisor Cheryl McCullough has yielded improved communication throughout the year regarding many of these issues, and GSAC as a committee is pleased with the additional communication and transparency in this regard. We have been working together with the Gifted Services Supervisor to develop recommendations for routinizing some of these information flows, and we hope that we will be able to collaborate on designing some improved reports that will serve to both encourage better implementation of our recommendations, and illuminate program strengths and weaknesses to management. Repeating a quotation from our 2013 Report: “What gets measured gets done; what gets measured and fed back gets done well; what gets rewarded gets repeated.” —John E. Jones

**III. EDUCATING GIFTED STUDENTS AT THE HIGH SCHOOL LEVEL**

After GSAC submitted its 2012-2013 Recommendations, the APS Superintendent announced a proposed budget for the 2013-2014 school year that eliminated the high school RTG positions. During the budget process, GSAC advocated strongly for retention of the positions--equal to 3.5 FTEs. Because the RTG positions ultimately received only a one-year reprieve, GSAC felt it was imperative to examine more closely how APS educates high school students identified as eligible to receive gifted services, and in particular, to examine the role of the high school RTG in the provision of such services. As described below, the high school RTGs play a valuable role in meeting the academic needs of gifted high school students. GSAC appreciates the Superintendent’s decision to restore funding for high school RTGs in the FY 2015 proposed budget.

**A. Background: the Local Plan**

The Arlington Local Plan for the Education of the Gifted indicates a variety of services that APS has committed to provide to students identified as eligible to receive gifted services at the high school level. In addition to providing opportunities for students to take AP, IB, and intensified classes, APS has committed to differentiated instruction within the classroom by teachers trained in educating gifted students, as well as independent study, enrichment, and acceleration opportunities. Through our examination of APS

offerings for gifted students and discussions with the APS Office of Gifted Services, high school RTGs, and high school students and their families, GSAC has found that high school RTGs have a critical role to play in the successful implementation of the Local Plan.

## **B. The Role of High School RTGs under the Local Plan**

In fact, the work required of RTGs appears to far exceed full-time responsibilities. According to the Local Plan, APS supports a variety of services for gifted high school students in addition to in AP/IB/intensified classes--through classroom cluster groups, interest groups, special learning opportunities of interest to gifted students, learning clusters for special interests or topics, mentorships, independent studies, and online learning opportunities.

### **1. Professional Development**

Differentiation is the provision of a curriculum that may be different for gifted learners within the same classroom as other learners. At the high school level, differentiation is complicated because of the reliance on student self-selection of AP, IB and intensified classes as methods of giving gifted learners options for high-level learning. Such broad categorization does not provide sufficient differentiation within an individual classroom, since even these classes contain heterogeneous populations of learners. The trend towards more diversity in learning levels within AP and IB courses likely will continue, given APS's recently announced goal of having all APS high school students take at least one AP or IB course before graduation. Moreover, gifted learners should not be expected to--and do not--enroll in only AP/IB/intensified classes.

Thus, teachers of other classes also need to be trained in providing differentiated instruction. Under the direction and guidance of the APS Office of Gifted Services, this school year the RTG at Washington-Lee High School has increased onsite professional training with the goal of equipping more teachers with specific differentiation skills through courses focusing on topics such as collaboration for effective differentiation, developing choice projects, and developing a growth mindset. Such training can be more effective than county-wide training—since the trainer is school-based, the trainer and trainees can work together both before and after the training to ensure the training meets the teachers' needs. The trainer also can provide support in the implementation of the training programs in a way that an outside trainer could not, through modeling, co-teaching, and providing feedback to the trainees. As a testament to the efforts of the RTG at Washington-Lee, teacher participation in her training courses this school year has increased significantly over participation in previous years.

### **2. Direct Services to Students**

High school RTGs' responsibilities also include directly advising gifted learners. In this arena, it is evident that the RTGs' responsibilities are two-fold: both making sure

students are aware of the opportunities that are available to them and directly providing some of these opportunities. High school RTGs help students learn about and qualify for summer and academic year activities.<sup>9</sup> They also are responsible for ensuring supplemental materials are provided to classroom teachers, demonstrating the Collaborative Model for those teachers, managing programs to increase enrollment and success of under-represented populations in advanced, intensified, and AP courses (such as the Boys Cohort/United Minority Girls Cohort at Wakefield and Success Opportunity And Results (“SOAR”) at Yorktown High School), serving as counselors to students to ensure that they carry appropriate schedules, and in the case of Washington-Lee, carrying out significant administrative duties for the IB program.

**C. GSAC Interim Conclusion and Plans Leading Up to the 2014-2015 Report**

GSAC’s interim conclusion is that elimination of the RTG position at the high school level would be detrimental to gifted high school students. We appreciate the work that the Superintendent and School Board have done to continue funding RTGs at the high school level.<sup>10</sup> During the remainder of this reporting year and the early part of the 2014-2015 recommendation year, GSAC will further examine gifted education at the high school level. We plan to focus in particular on how to increase direct communication among RTGs, students, and their families and whether benchmarking and evaluation of gifted students’ achievements demonstrates year-to-year progress. We also will look for opportunities to better leverage the expertise and skills of the RTGs (e.g., by increasing administrative support for programs for which RTGs have significant substantive responsibilities, such as the IB program at Washington-Lee High School). We also hope to examine the offerings provided to high school students identified as gifted in visual and performing arts.

We look forward to working with APS Office of Gifted Services to collect and evaluate data required for our work in the next year, in particular with respect to the evaluation of yearly academic progress.

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<sup>9</sup> These activities include the Summer Residential Governor’s School Programs, the Foreign Language Academies, the Fine Arts Apprentice Program, and the Career Center Governor’s Career and Technical Academy.

<sup>10</sup> In response to a School Board directive expressing concern that RTGs day-to-day activities did not align with the Plan, the Superintendent provided a written report addressing this issue. See [https://www.boarddocs.com/vsba/arlington/Board.nsf/files/9HD27S6AAF95/\\$file/BQ%2015-05.pdf](https://www.boarddocs.com/vsba/arlington/Board.nsf/files/9HD27S6AAF95/$file/BQ%2015-05.pdf)

#### **IV. THOMAS JEFFERSON HIGH SCHOOL FOR SCIENCE AND TECHNOLOGY**

GSAC notes with appreciation the School Board's September 2013 decision to continue giving APS students the opportunity to attend Thomas Jefferson High School for Science and Technology (TJHSST), the regional Governor's School for Northern Virginia.

The School Board's support for TJHSST provides a critically important option for Arlington students and families. APS has a long-standing tradition of offering many diverse schools and programs, including: Drew Montessori; Arlington Traditional School; Science Focus; Key, Claremont, Gunston, and Wakefield Spanish Immersion programs; Thomas Jefferson Middle School Middle Years International Baccalaureate; Washington-Lee IB; H-B Woodlawn; Wakefield Cohort; and Yorktown High School AP Scholars.

TJHSST is part of the APS tradition of choice. APS is fortunate to benefit from the advanced learning and research opportunities TJHSST offers, the Governor's School financial subsidy, the pooling of STEM talent and high academic ability that is only made possible by a regional magnet school, and the national reputation of TJHSST. Students at TJHSST have access to challenging research opportunities with area companies, institutions, and government agencies. These opportunities would not otherwise be likely to be offered to high school students.

Continuing Arlington's participation in the TJHSST Governor's School is the best way to serve the academic needs of Arlington's top STEM students who qualify for admission. While GSAC strongly supports strengthening STEM offerings in APS elementary, middle, and high schools, strengthening STEM in APS is not a substitute for continued participation in TJHSST.

Because of Arlington's size, APS cannot replicate or offer a substantially equivalent experience to TJHSST. Arlington's student population only constitutes about 5 percent of the combined student population in the school divisions from which TJHSST draws its student body.

Arlington simply does not have the critical mass of highly gifted students who have a passion for science and mathematics that would be necessary to produce a similar environment, even on a smaller scale. Approximately 120-150 Arlington students take the TJHSST entrance examination each year. This year, 64 of the students who took the examination made it to the semi-finalist round. These figures suggest that Arlington has a relatively small number of students with a strong STEM interest and achievement level similar to those of students who attend TJHSST.

TJHSST students routinely say that being part of a community comprised of extremely bright and motivated students who challenge and learn from each other is one of the most important attributes of the TJHSST experience. Teachers at TJHSST teach at a pace and depth that would be impossible if their classes included students who perform at

a lower academic level. APS also has too few students to offer the diversity of extremely advanced and specialized courses that TJHSST offers, without having to rely on distance learning or sending students to take classes at a college. In addition, APS is unlikely to have the budget to duplicate the lab equipment at TJHSST. Much of this equipment is rarely found outside colleges, universities, and industry laboratories; it enables TJHSST students to engage in the meaningful, original STEM research projects required of all TJHSST seniors. For those Arlington students who qualify and choose to attend TJHSST, it truly offers them a unique opportunity to work towards their full academic potential.

**V. IMPROVING ACCESS TO CHALLENGING STEM EDUCATION, K-12**

Ensuring that Arlington offers a strong STEM program at the middle school and high school levels (and offering advanced math instruction as early as kindergarten) would be a useful complement to TJHSST. By providing robust STEM preparation in middle school, Arlington could take full advantage of its opportunity for TJHSST participation, rather than, as has historically been the case, having fewer Arlington students qualify for admission than its population-based cap would permit. A strong STEM high school program in Arlington would also address the academic needs of highly motivated students with a strong STEM interest who are not admitted to TJHSST or who choose not to apply or to attend TJHSST for other reasons.

GSAC welcomes consideration of increased attention to STEM subjects in elementary school and student access to intensified STEM courses in middle school. Providing access to STEM enrichment programs in elementary and middle school could help “level the playing field” for underrepresented students. Performance data indicate that many Arlington elementary students have already mastered grade level content for math by December of each school year, demonstrating a need for advanced math opportunities at the elementary level to continue to engage these students and to prepare them for strong STEM experiences in middle and high school. Increasing the opportunities for students to engage in advanced work in STEM subjects as early as elementary school will help a wide range of students, including those whose families are unable to afford extracurricular activities and summer programs in these subjects.

At Jefferson Middle School, requiring students to complete Science Fair projects has already produced significant results since the program began in 2009-2010. In the first year, the number of students participating in the Northern Virginia Regional Science Fair more than doubled. The number of submissions to the Virginia Junior Academy of Sciences (VJAS) annual meeting increased by roughly 50 percent by 2011, while the

number of acceptances to VJAS doubled.<sup>11</sup> We commend Jefferson Middle School for their efforts to ensure that all students have an opportunity to engage in advanced work.

**VI. COMMITTEE MEMBERS**

Bob Ramsey, JD, MBA, MS, Co-Chair; Josh Turner, JD, Co-Chair; Natalie Goldring, Ph.D.; Billy Bob Brown, Jr, BS, MBA; Katherine Ann Carey, JD; Samara Goodman, MA Ed; Julia Judish, JD; Selene Ko, JD; Beth Dowd; Alfiee M. Breland-Noble, Ph.D., MHSc.; Heather Cocozza, PMP, CPO; Anna Henning; Shannon Sullivan; Tara Antonipillai; Florencio Riguera; Jesse Boeding.

We are grateful to Cheryl McCullough, Gifted Services Supervisor and the Committee's staff liaison, for her assistance with our efforts in support of APS Gifted Services.

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<sup>11</sup> Science Advisory Committee, "Non-Recommendation Year Report", Advisory Council on Instruction, Arlington Public Schools, March 22, 2013, available at: <http://www.apsva.us/cms/lib2/VA01000586/Centricity/Domain/29/SAC%20Report%202013%20Final%20March%202018.pdf>

## Appendix

### **8 VAC 20-40-20. Definitions.**

"Appropriately differentiated curriculum and instruction" means curriculum and instruction adapted or modified to accommodate the accelerated learning aptitudes of identified students in their areas of strength. Such curriculum and instructional strategies provide accelerated and enrichment opportunities that recognize gifted students' needs for (i) advanced content and pacing of instruction; (ii) original research or production; (iii) problem finding and solving; (iv) higher level thinking that leads to the generation of products; and (v) a focus on issues, themes, and ideas within and across areas of study. Such curriculum and instruction are offered continuously and sequentially to support the achievement of student outcomes, and provide support necessary for these students to work at increasing levels of complexity that differ significantly from those of their age-level peers.

### **8 VAC 20-40-40. Screening, referral, identification, and service.**

...Identified gifted students shall be offered placement in an instructional setting that provides:

1. Appropriately differentiated curriculum and instruction provided by professional instructional personnel trained to work with gifted students; and
2. Monitored and assessed student outcomes that are reported to the parents and legal guardians. Statutory Authority § 22.1-16 of the Code of Virginia.