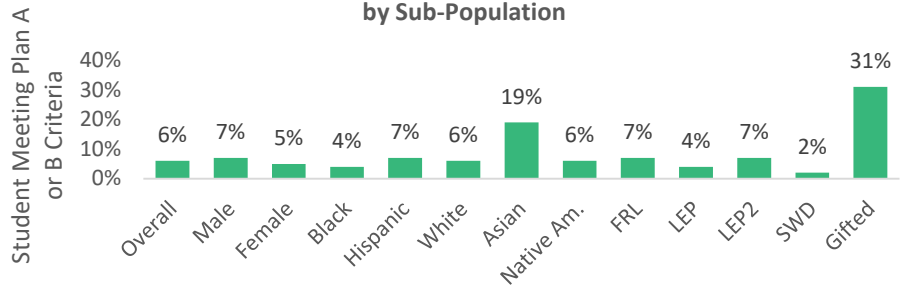


Of the students meeting criteria for gifted screening,

69% were FRL

29% were LEP

Students Meeting Plan A or Plan B Criteria on the CogAT® by Sub-Population



CogAT® as a Screening Tool for Gifted Students

- The CogAT® is administered to all 2nd grade students as a tool to screen for gifted students from under-represented populations. Plan B criteria is specifically geared towards students with limited English Proficiency (LEP) and receiving free or reduced-price lunch (FRL).
- A greater percentage of Plan A students were previously identified as gifted (38%) than Plan B students (10%), indicating the CogAT® is serving its intended purpose.
- 942 students met criteria for either Plan A or Plan B; 793 of which were not already identified as gifted.

Adding Context to Achievement Data

- The CogAT® measures general reasoning skills which underlie student achievement. CogAT® scores and FSA scores are highly correlated. Substantial deviations between the two scores can indicate an imbalance in cognitive development.
- Higher than expected FSA scores can indicate students are not learning to transfer information learned to different contexts. Lower than expected FSA scores can indicate a physical or learning disability, low motivation, or insufficient opportunities to learn.
- In 2015-16, between 5% and 6% of students had scores that were either substantially higher or lower than expected on the FSA in ELA and math. These students may benefit from an investigation into the cause of the discrepancies.

2015 CogAT® Score Range	2016 Third Grade FSA ELA					Total	
	Level 1	Level 2	Level 3	Level 4	Level 5		
50-84	1266 59.2%	571 26.7%	264 12.3%	35 1.6%	2 0.0%	2138	
85-90	567 28.5%	744 37.4%	547 27.5%	117 5.9%	12 0.6%	1987	
91-104	367 7.0%	1200 22.9%	2137 40.8%	1250 23.8%	288 5.5%	5242	
105-117	16 0.6%	140 5.5%	679 26.8%	1069 42.2%	629 24.8%	2533	
118-150	0 0.0%	2 0.3%	81 10.4%	298 38.2%	400 51.2%	781	
Total by FSA Level	2216	2657	3708	2769	1331	12681	
Total Under-performing						n = 606	4.8%
Total Over-performing						n = 718	5.7%

THE SCHOOL BOARD OF BROWARD COUNTY, FLORIDA

**DANIEL GOHL
CHIEF ACADEMIC OFFICER**

Signatures on File

DATE: January 30, 2017

TO: All Principals

FROM: Daniel Gohl
Chief Academic Officer

VIA: Valerie S. Wanza, Ph.D., Designee
Chief School Performance and Accountability Officer

SUBJECT: **COGNITIVE ABILITIES TEST (CogAT®) 2016**

The Cognitive Abilities Test (CogAT®) has been used as a universal screener to identify gifted students from under-represented populations since 2011. In Broward County Public Schools, this is defined as having limited English Proficiency or qualifying for free or reduced-price lunch.

The 2015-16 administration of the CogAT® identified 942 students who met criteria for further screening to determine gifted eligibility. Of those, 793 were not previously identified as gifted. Almost one-third (29%) of the students who met CogAT® criteria for gifted screening have limited English proficiency, and over two-thirds (69%) qualify for free or reduced-price lunch.

Last year, information was provided to schools to help them use CogAT® scores to customize instruction to meet the needs of all students based on their level of cognitive development. All principals from traditional elementary schools attended training on using CogAT® scores to differentiate instruction during the 2015-16 school year. One anticipated outcome of the training was increased participation of students completing all three batteries of the CogAT®. In school year 2015-16, 70.5% of all second grade students completed all three batteries of the CogAT® which is a 3 percentage point increase from the prior year.

This report examines the results of the 2015-16 administration of the CogAT® as a gifted screener. It also shows deviations between individual students' actual 3rd grade Florida Standards Assessment (FSA) scores and their FSA scores as predicted by their performance on the CogAT® in 2nd grade. Information about students with an imbalance in exam scores was provided to schools this year for the first time to alert schools of students that may be in need of additional support.

Please direct any questions or comments concerning this report to Richard Baum, Director, Student Assessment & Research, at 754-321-2500. This report can also be found on the Student Assessment & Research website at <http://www.broward.k12.fl.us/sar/Releases.htm>.

VSW/DG/RB/SLS:rs

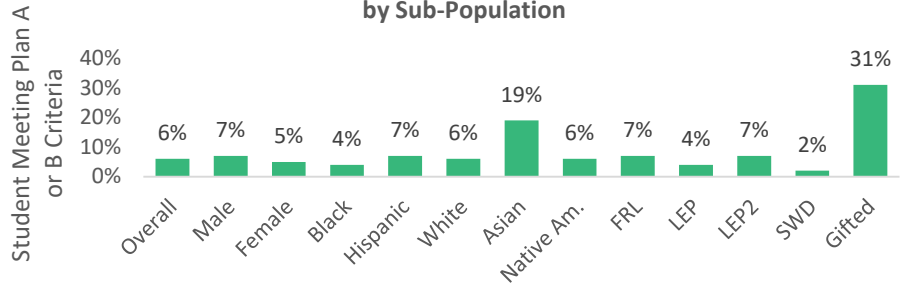
CC: School Board Members
Senior Leadership Team
Directors, School Performance and Accountability

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Chief Academic Officer

VIA: Valerie S. Wanza, Ph.D., Designee
Chief School Performance and Accountability Officer

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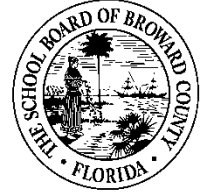
Last year, information was provided to schools to help them use CogAT® scores to customize instruction to meet the needs of all students based on their level of cognitive development. All principals from traditional elementary schools attended training on using CogAT® scores to differentiate instruction during the 2015-16 school year. One anticipated outcome of the training was increased participation of students completing all three batteries of the CogAT®. In school year 2015-16, 70.5% of all second grade students completed all three batteries of the CogAT® which is a 3 percentage point increase from the prior year.

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Senior Leadership Team
Directors, School Performance and Accountability



Research Report

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Report from the Office of the Superintendent

Number 179
January 2017

The Cognitive Abilities Test™ (CogAT®) 2016

Each year Broward County Public Schools (BCPS) administers the Cognitive Abilities Test™ (CogAT®) to all second grade students. The CogAT® is used as a universal screener to identify students who are in need of gifted services, to detect differences between ability and performance, and to provide valuable information about students' level of cognitive development in order to inform differentiated instruction.

The CogAT® measures students' abstract reasoning skills, or general reasoning ability¹, in three domains: verbal, quantitative, and nonverbal. This ability underpins academic success (Lohman & Hagen, 2003). Thus, students who are in a supportive learning environment and who are free from a disability typically have standardized test scores that are predicted by their CogAT® scores. Dramatic deviations between these two scores indicate the need for further investigation to determine if the student needs additional support.

The CogAT® has been used as a universal screener in BCPS to identify gifted students, particularly from under-represented populations, since 2011. In 2015, BCPS began using this assessment to help principals and guidance counselors make decisions about classroom placement and to help teachers differentiate instruction in order to better meet the specific needs of students based on their level of cognitive development. Profile scores for students who took all three batteries of the CogAT® were posted in the DWH reports folder in the District's data warehouse for both the 2015 and 2016 administrations of the CogAT®. Training on how to use CogAT® scores to differentiate instruction was also given in January and February of 2016 to the principal and one third grade teacher from each District-run elementary school.

¹ For a more detailed description of the CogAT, see the BCPS Research Report The Cognitive Abilities Test™ (CogAT®): Screening for Giftedness, Predicting Achievement, and Informing Differentiated Instruction, released on October 16, 2015 which is available at <http://www.broward.k12.fl.us/sar/releases/reports/BCPS-CogAT-Assessment-Report-2015.pdf>.

This report begins by reviewing the data from the 2016 administration of the CogAT® as a gifted screener, then looks at the correlation between the 2015 administration of the CogAT® and the 2016 Florida Standard Assessment (FSA) scores. Next, patterns in scores are illustrated with deviant CogAT®/FSA scores identified. Finally, a distribution of scores by group is provided.

I. GIFTEDNESS

Gifted students have a different way of processing information, and benefit from both more challenging coursework and a curriculum that is based on independent and discovery learning. Gifted children can easily become bored in a typical classroom, which can lead to both behavioral and academic problems (Baum, Renzulli, & Herbert, 1995). Under-challenging students also leads to a lack of persistence; gifted students come to expect that all work will be easy and when faced with a difficult problem they tend to get frustrated and give up (Lohman & Hagen, 2003). Identification of gifted students is therefore critical in order to optimize outcomes for these students.

The Florida Department of Education (FDOE) mandates that all districts have a plan in place to identify gifted students from under-represented student populations. BCPS has administered the CogAT® for this purpose since 2011. Students who take the CogAT® are eligible for further screening for giftedness through either Plan A or Plan B (see Method below for specific criteria). Plan A gifted screening criteria seek to identify students with an intelligence quotient (IQ) of 130 or higher. Plan B gifted screening criteria are designed to identify students from under-represented populations who have an IQ of 115 or higher.

In 2016, 17,710 (84.4%) of the 20,978² second grade students took the CogAT®, with 14,751 (70.3%) taking all three batteries. Results from this administration of the CogAT® as a gifted screener for Plan A and Plan B are presented below.

METHOD

The CogAT® form 6, Level A was administered District-wide to second grade students in April 2016. Level A is geared towards third graders. However, BCPS students take the exam at the end of second grade. Testing at a higher level provides a finer discrimination among the top scoring students which is ideal for the purposes of screening for gifted students. All Traditional schools and some charter schools participated in the exam. All schools who participated are included in this analysis. The 2016 CogAT® data were pulled from the District's data warehouse in July 2016.

Means. Standard Age Scores (SAS) were used to calculate means for each battery overall as well as by student sub-population. The SAS are normalized standard scale scores that compare

² This number includes all students who were enrolled in a BCPS District-run or charter school on Benchmark day.

students to other same-age students (matched to the closest month) from a national sample that took the CogAT® in 2005. Nationally, the SAS have a mean of 100 and standard deviation of 16.

Students Meeting Screening Criteria for Gifted. Age percentile rank scores are used to determine inclusion in the Plan A and Plan B screening groups. Age percentile rank scores are based on the 2005 national normative sample group provided by Riverside Publishing, the publisher of the CogAT®. Students scoring in the 50th percentile are considered average. Plan A includes students with a composite score for the three batteries (verbal, quantitative, and nonverbal) of the CogAT® in the 97th percentile or higher. Plan B, which is geared towards under-represented populations, includes students with a composite score from two of the three batteries (quantitative and nonverbal) in the 81st percentile or higher. In order to qualify for Plan B screening, students must also have limited English proficiency (LEP²) or qualify to receive free or reduced-price lunch (FRL).

RESULTS

Participation. In school year 2015-16, 14,751 students (70.5% of all second grade students; 78.5% of District-run school students and 38.9% of charter school students⁴) had complete scores for all three batteries of the CogAT®. This is up from 67.5% (74.9% District-run schools and 35.5% charter schools) in school year 2014-15. A total of 17,710 students (84.6% of all second grade students) took at least some portion of the test, but either did not take all three batteries, or attempted to but did not complete enough answers to receive a score.

Mean Scores. Means for the verbal and quantitative batteries (Figures 1 – 4) are somewhat lower for this cohort in Broward County than for the 2005 national sample to which it is compared (6.1 percentage points lower for verbal and 4.2 percentage points lower for quantitative). Scores for the nonverbal battery ($M=100.3$) are comparable to the national sample. Students' performance on the nonverbal battery is least impacted by growing up in poverty or in a home that does not speak English. Thus, these results are consistent with the fact that BCPS has a larger percentage of FRL⁵ and LEP⁶ students than are found nationally.

³ LEP2 includes students currently receiving special services as well as those in the two-year follow-up period. LEP includes only students currently receiving special services. BCPS typically reports data for LEP. However, since different criteria are used to determine eligibility for Plan B, LEP2 data are reported here.

⁴ These numbers are calculated using enrollment from the District's Enrollment Day count. In 2015, 2nd grade enrollment was 20,723 (16,839 District-run and 3,884 charter) and in 2016 it was 20,931 (16,705 Traditional and 4,226 charter).

⁵ The percent of FRL students nationally in 2010-11 was 48% compared to 67% of BCPS students taking the CogAT® in 2015-16 (National Center for Education Statistics, 2016a).

⁶ The percent of LEP students nationally was 9.2% compared to 22% of BCPS students taking the CogAT® in 2015-16 (National Center for Education Statistics, 2016b).

Verbal Reasoning 2016

Scores for the 17,710 students that took the verbal battery were distributed normally around the mean of 93.9 with a standard deviation of 14.1 (Figure 1). Mean scores by student sub-population are presented in Figure 2.

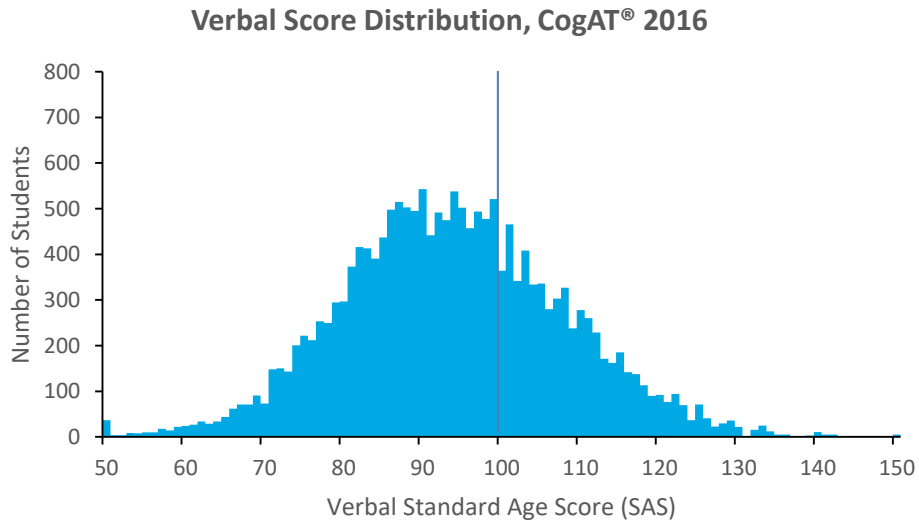


Figure 1. Distribution of verbal battery SAS scores for second grade students taking the CogAT® in Spring 2016. $N = 17,710$, $Mean = 93.9$, $SD = 14.1$. The blue line indicates the national mean score of 100.

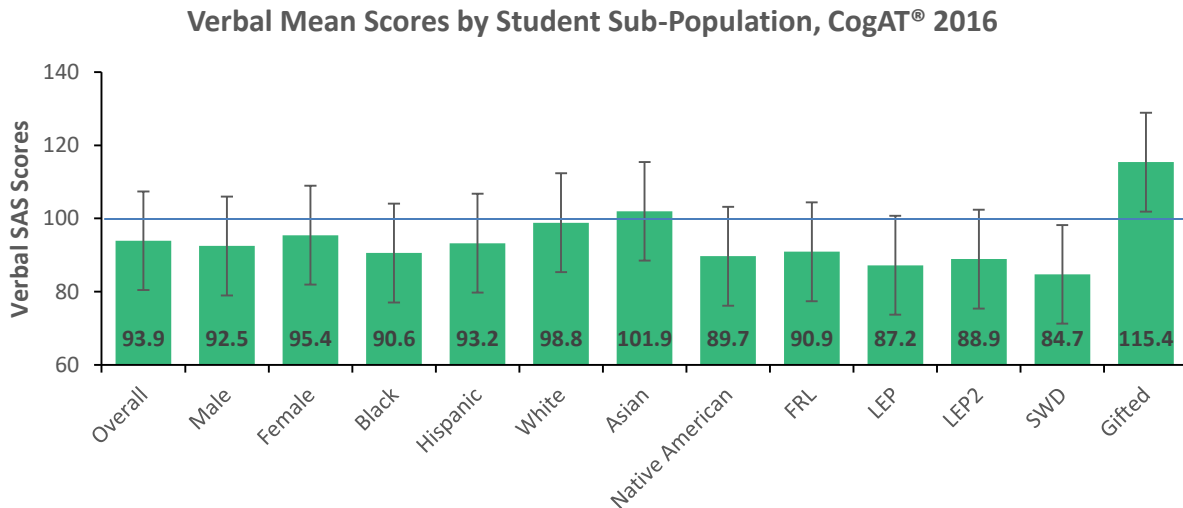


Figure 2. Mean Verbal Battery SAS scores by student sub-population for the 2016 administration of the CogAT® to second grade students. The blue line indicates the national mean score of 100. Student population sizes are as follows: Overall $N=17,710$, Male $n=9,082$, Female $n=8,628$, Black $n=6,542$, Hispanic $n=6,120$, White $n=3,851$, Asian $n=695$, Native American $n=43$, FRL $n=11,810$, LEP $n=3,810$, LEP2 $n=4,472$, SWD $n=2,052$, Gifted $n=503$.

Quantitative Reasoning 2016

Scores for the 15,860 students who took the quantitative battery were distributed normally around the mean of 95.8 with a standard deviation of 11.9 (Figure 3). Mean scores by student sub-population are presented in Figure 4.

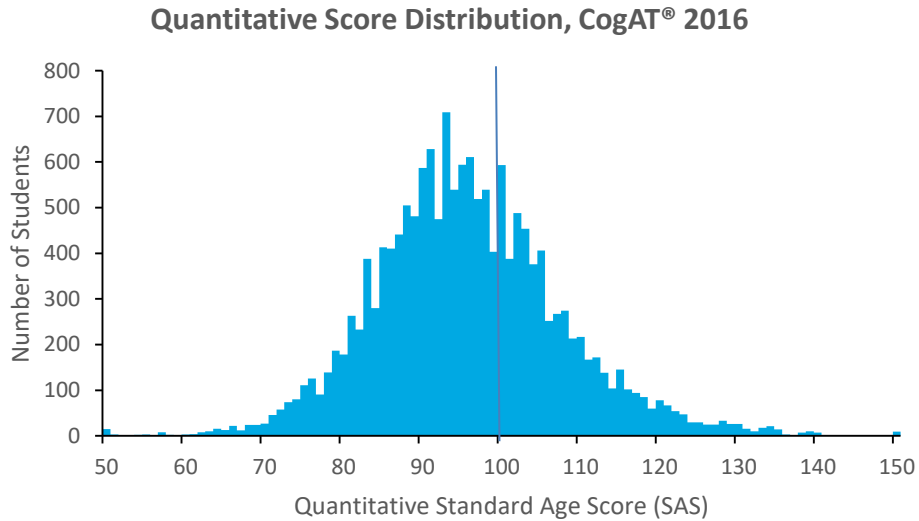


Figure 3. Distribution of quantitative battery SAS scores for second grade students taking the CogAT® in Spring 2016. $N = 15,860$, $Mean = 95.8$, $SD = 11.9$. The blue line indicates the national mean score of 100.

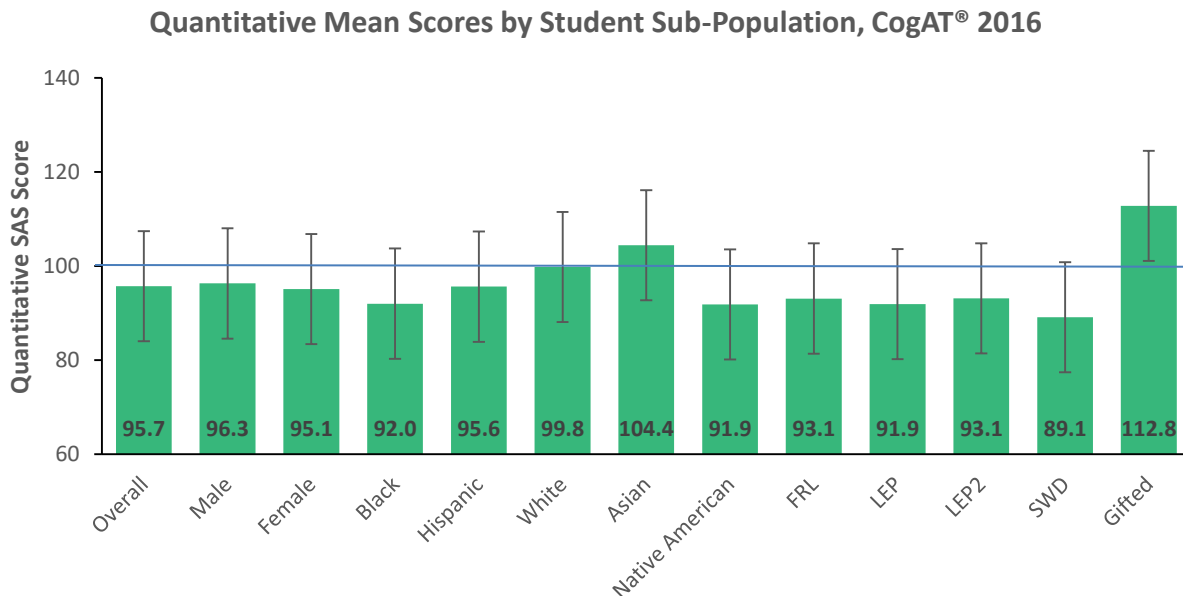


Figure 4. Mean Quantitative Battery SAS scores by student sub-population for the 2016 administration of the CogAT® to second grade students. The blue line indicates the national mean score of 100. Student population sizes are as follows: Overall $N=15,860$; Male $n=8,119$; Female $n=7,741$; Black $n=5,685$; Hispanic $n=5,516$; White $n=3,541$; Asian $n=666$; Native American $n=39$; FRL $n=10,375$; LEP $n=3,366$; LEP2 $n=3,980$; SWD $n=1,775$; Gifted $n=487$.

Nonverbal Reasoning 2016

Scores for the 15,809 students who took the nonverbal reasoning battery were distributed normally around the mean of 100.3 with a standard deviation of 14.3 (Figure 5). Mean scores by student sub-populations are presented in Figure 6.

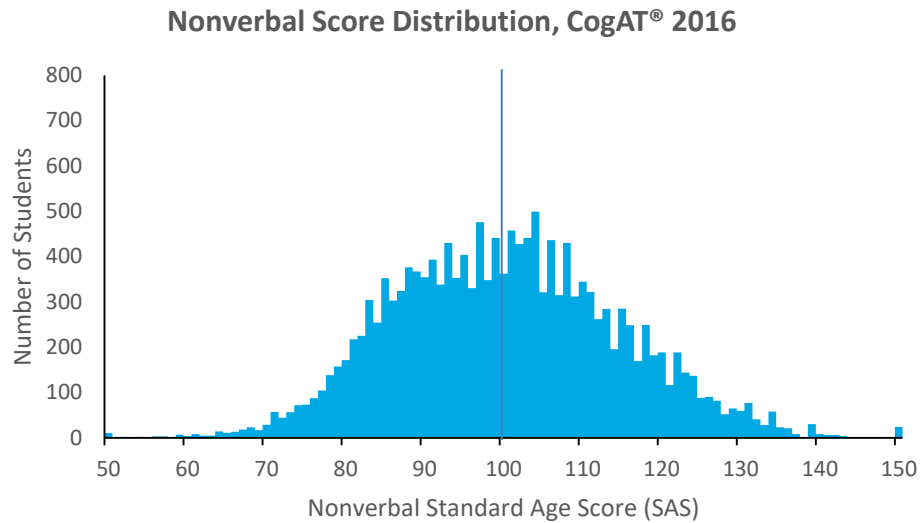


Figure 5. Distribution of nonverbal battery SAS scores for second grade students taking the CogAT® in Spring 2016. $N = 15,809$, $Mean = 100.3$, $SD = 14.3$. The blue line indicates the national mean score of 100.

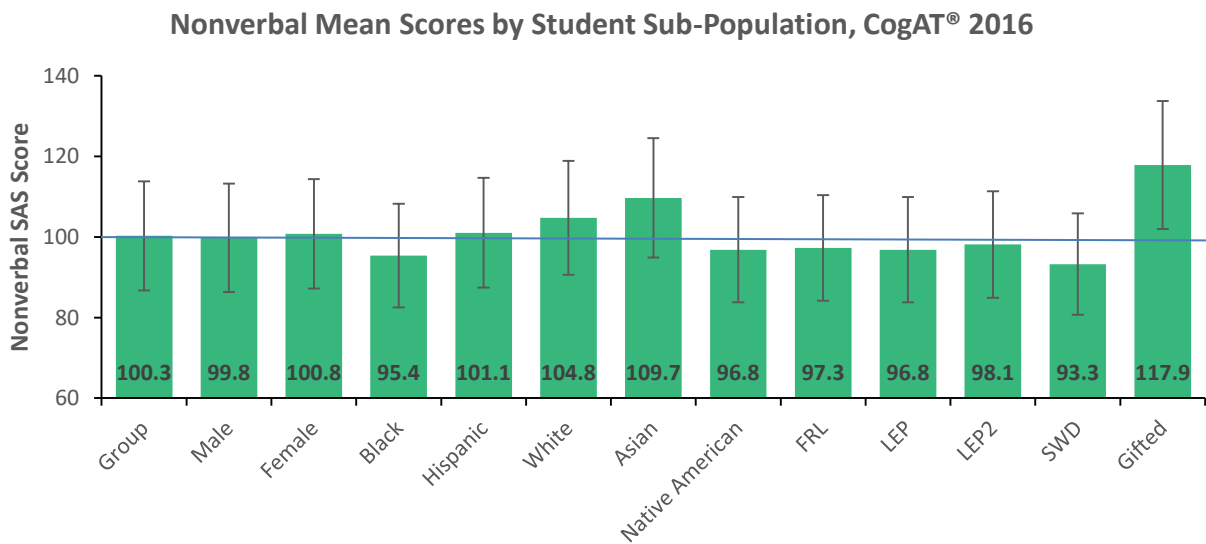
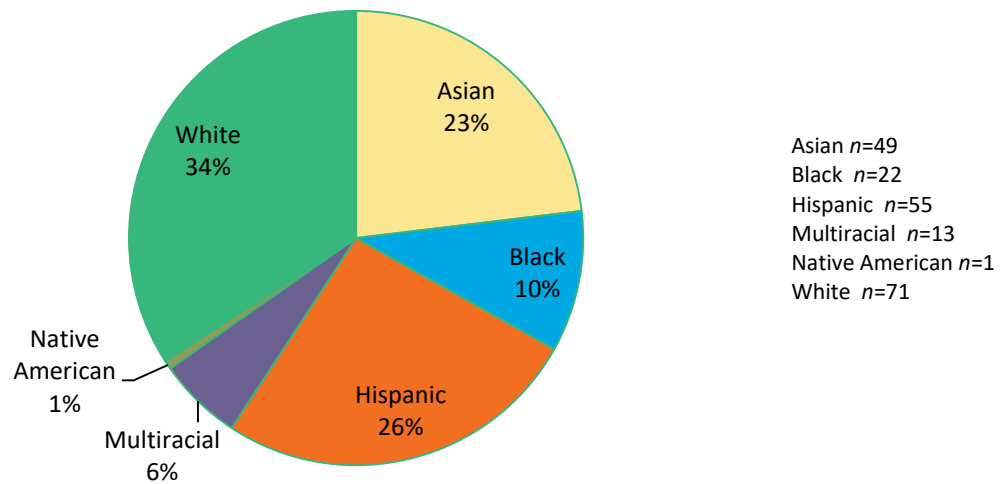


Figure 6. Mean Nonverbal Battery SAS scores by student sub-population for the 2016 administration of the CogAT® to second grade students. The blue line indicates the national mean score of 100. Student population sizes are as follows: Overall $N=15,809$, Male $n=7,938$, Female $n=7,871$, Black $n=5,641$, Hispanic $n=5,505$, White $n=3,553$, Asian $n=661$, Native American $n=36$, FRL $n=10,303$, LEP $n=3,306$, LEP2 $n=3,926$, SWD $n=1,697$, Gifted $n=497$.

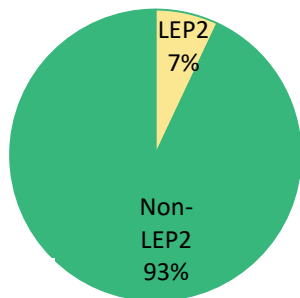
Gifted Screening - Plan A

Of the 14,751 students who took all three batteries of the CogAT®, 211 (1.4%) achieved a composite score of the verbal, quantitative, and nonverbal batteries (VQN) that had an age percentile ranking of 97 or higher. Eighty-one (38.4%) of these students had previously been identified as gifted students. Thus, a total of 130 Plan A students were identified for further screening for gifted eligibility through the 2016 administration of the CogAT®. Figure 7 shows the distribution of students meeting Plan A scoring criteria by racial/ethnic group, LEP2, and FRL. These figures include all 211 students regardless of whether they had been previously identified as gifted.

**Students Meeting Plan A Criteria for Gifted
by Racial/Ethnic Group, 2016**

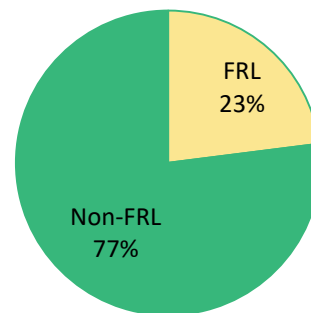


**Students Meeting Plan A Criteria
by English Proficiency**



LEP2 n = 15
Non-LEP2 n = 196

**Students Meeting Plan A Criteria
by Free/Reduced-Price Lunch Eligibility**



FRL n = 48
non-FRL n = 163

Figure 7. Students meeting criteria for Plan A by student sub-population in school year 2015-16.

Gifted Screening - Plan B

Plan B students need to achieve a composite quantitative and nonverbal (QN) score in the 81st percentile or higher, and either have limited English proficiency or qualify for free or reduced-price lunch. The score component of this criteria was achieved by 1,778 (12%) of the 14,751 students who took both the quantitative and non-verbal batteries. Of those, 788 also met the LEP or FRL requirements. Eighty-one (10%) of these students had previously been identified as gifted students. Thus, the 2016 administration of the CogAT[®] identified 707 Plan B students to be screened for gifted program eligibility. Figure 8 illustrates the students who met Plan B criteria by sub-population, including those already identified as gifted.

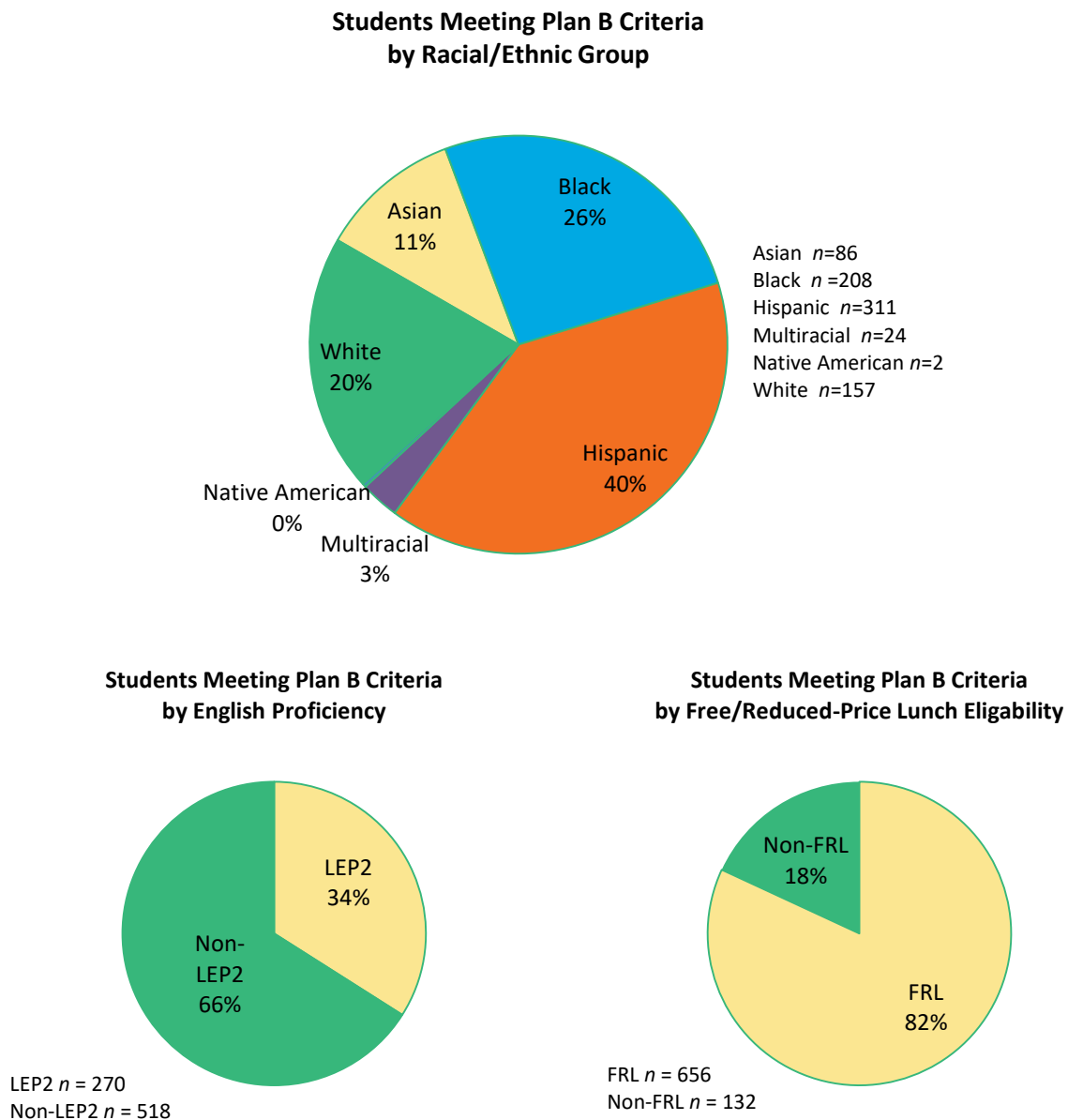


Figure 8. Students meeting criteria for Plan B by sub-population in school year 2015-16.

Gifted Screening – Combined

Combined, 942⁷ students met criteria for either Plan A or Plan B and were thus identified as eligible for further screening for gifted. Of those, 149 were already classified as gifted, leaving 793 students to be screened. Figure 9 illustrates the students who met Plan A and B criteria combined, by sub-population, including those already identified as gifted. Figure 10 shows the percentage of students meeting gifted screening criteria by student sub-population.

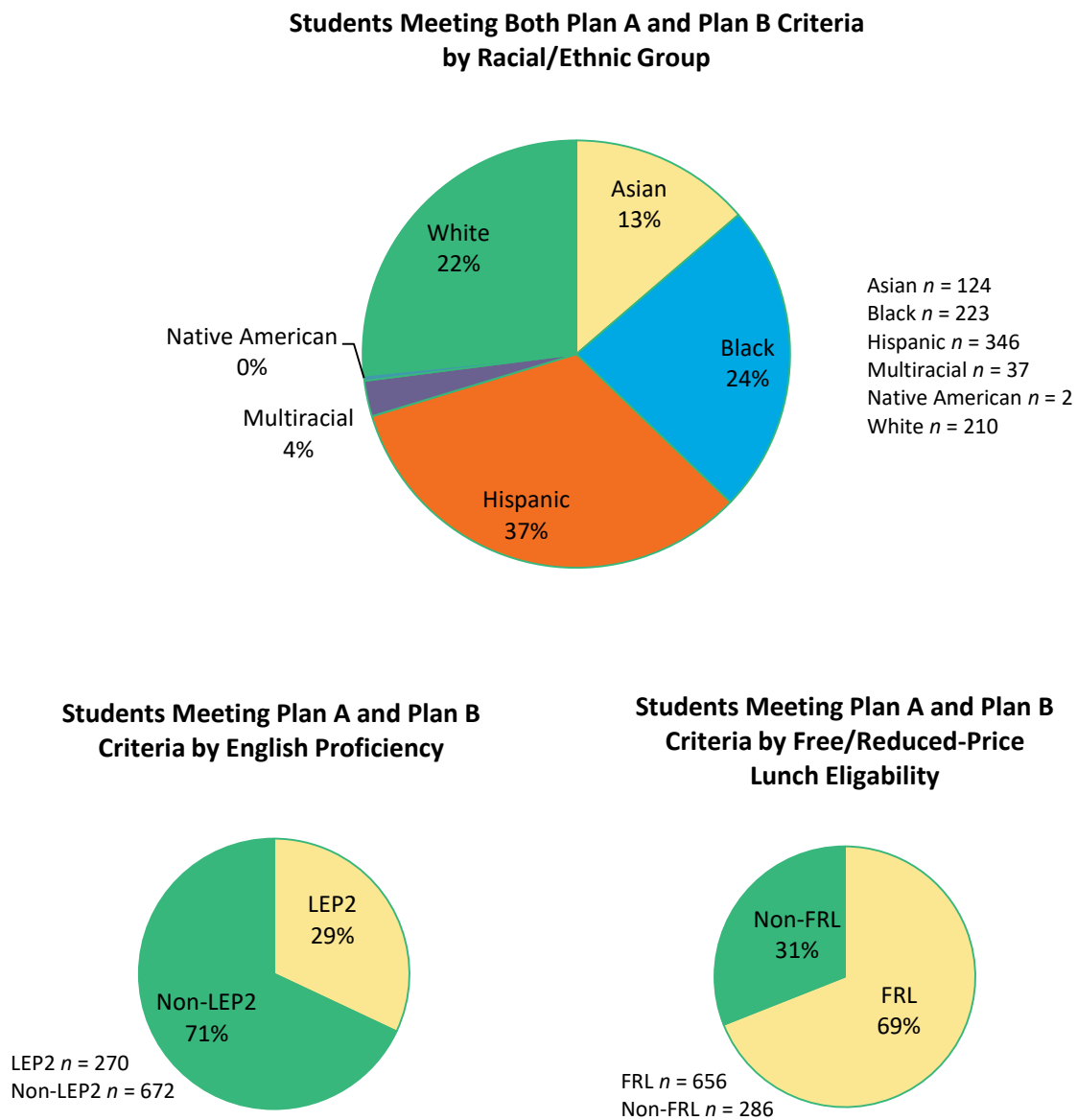


Figure 9. Students meeting criteria for Plan A and Plan B by student sub-population in school year 2015-16.

⁷ The total number of students identified is lower than adding Plan A and Plan B together because 57 students met criteria for both Plan A and Plan B.

Percent of Students Meeting Plan A or Plan B Criteria on the CogAT® by Sub-Population

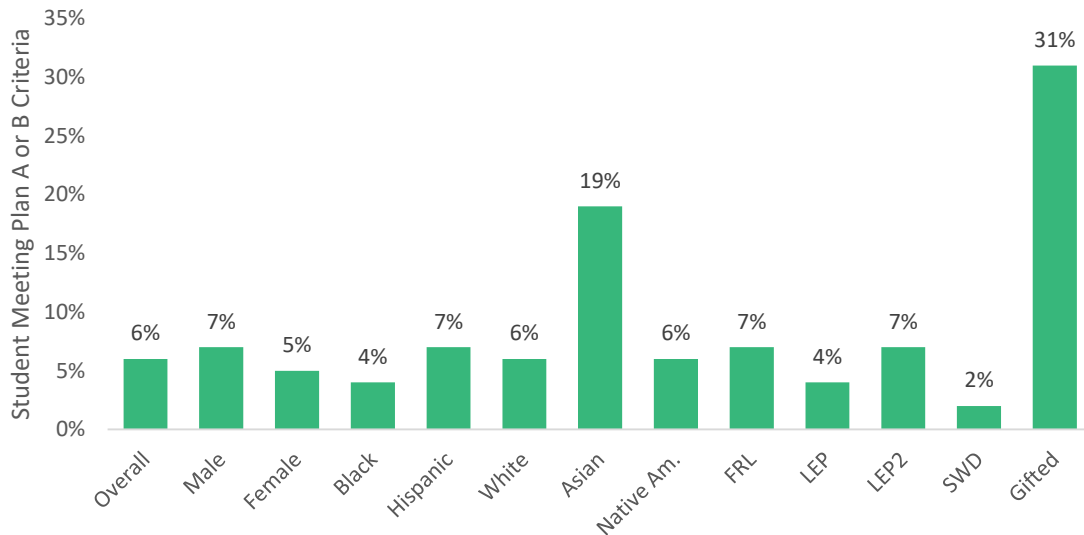


Figure 10. Percentage of students meeting Plan A or Plan B criteria on the 2016 CogAT® by student sub-population. This figure shows the percentage of a specific sub-population that met gifted screening criteria. For example, of all the students who took enough batteries of the CogAT® to have a composite score, 6% met criteria to be screened for the gifted program.

Performance by School

One-hundred-eighty-two schools administered the CogAT® in 2016 and had students with both SAS_Q and SAS_N scores (144 District-run and 38 charter). Of those, 158 had scores for ten or more students (140 District-run and 18 charter). Performance by school data is calculated using the 158 schools that had CogAT® scores for at least 10 students.

The percentage of students that met Plan A criteria ($M = .01$, $SD = .016$) ranged between 0% and 7% for each school. The percentage of students who met Plan B criteria ($M = .05$, $SD = .032$) ranged between 0% and 17% for each school. The percentage of students that met either Plan A or Plan B criteria ($M = .06$, $SD = .038$) ranged between 0% and 20%. Eleven schools (8 District-run and 3 charter) did not have any students successfully screen for Plan A or Plan B. See Appendix A for number and percent of students meeting Plan A and Plan B criteria as well as mean SAS VQN and SAS QN scores by school⁸.

⁸ Means are not presented for schools with less than 10 students participating in the exam to respect the privacy of individual students and avoid misinterpretation of results.

II. Predicting Achievement

The CogAT® and standardized tests such as the FSA measure two different aspects of cognitive development. The CogAT® measures the general abstract reasoning skills that serve as the foundation for the student’s ability to complete a variety of tasks such as learning and remembering information, detecting relationships, and using previous experience to solve novel problems. These abilities are also known as fluid reasoning abilities. Standardized achievement tests measure knowledge and skills explicitly taught at school, also known as crystallized abilities. Together, measures of fluid and crystallized abilities provide a more complete picture of cognitive development than either one alone (Cattell, 1971). This can be compared to measuring physical development; knowing someone’s height and weight provides a more complete picture than knowing just weight alone (Lohman & Hagen, 2003).

General reasoning ability underpins academic achievement. Thus, CogAT® scores are well correlated with standardized test scores. Dramatic deviations between CogAT® scores and FSA scores can help to identify students in need of extra support. These students exhibit an imbalance in cognitive development which can be the result of a number of factors.

Students whose fluid ability is greater than their crystallized achievement, as indicated by scoring substantially lower on the FSA than is predicted by their CogAT® score, demonstrate that they are better at solving novel problems than at academic tasks. There are a number of possible explanations for this imbalance. These students may not have the motivation to apply themselves in school (“underachievers”), may not have had appropriate opportunities to learn in school, or may have a physical (i.e. vision or hearing) or learning disability (Lohman & Hagen, 2003).

Students whose crystallized achievement is greater than their fluid ability, as indicated by scoring substantially higher on the FSA than is predicted by their CogAT® score, demonstrate that they are learning in a contextually-bound manner and are having difficulty transferring what they learn in school to other situations. This could indicate that the students have worked exceptionally hard to learn their schoolwork (“overachievers”), or it could mean that something about the way they learn or the way they are taught at school is inhibiting their ability to transfer what they have learned (Lohman & Hagen, 2003).

This section begins by examining the correlation between the 2015 CogAT® scores and 2016 FSA scores in BCPS. Next, deviations between the two scores are examined and recommendations for how to use this information to help students with deviant scores are made.

METHOD

This section contains two analyses. First, correlations are shown between the CogAT® scores and standardized test scores. Next, deviations between CogAT® scores and predicted standardized test scores are shown. All CogAT® scores represent the Spring 2015 administration of the CogAT® form 6, Level A to second grade students. All students who took both the CogAT® in 2015 and the FSA in 2016 are included in the analyses.

Correlations. Correlations between the English Language Arts (ELA) and math subtests of the FSA and the various standard age scores (SAS) from the CogAT® were calculated. SAS_V is the verbal battery, SAS_Q is the quantitative battery, SAS_N is the nonverbal battery, SAS_{VQN} is the composite of all three batteries, and is used to determine Plan A eligibility. SAS_{QN} is a composite of the quantitative and nonverbal batteries, and is used to determine Plan B eligibility. SAS scores range between 50 and 150. Students who had a SAS composite score greater than or equal to 50 were included in the analysis.

Deviations. Measures of ELA and math were obtained using results from the District-wide administration of the FSA for reading and math to third grade students in Spring 2016. FSA scores were linked to CogAT® scores, and only students who had valid CogAT® and FSA scores were retained for the analysis. Deviations from predicted scores were calculated using correlations between each CogAT® SAS_{VQN} score and each FSA Achievement Level. Cut points for CogAT® scores were created at the score in which the majority of students at that score achieved a particular level on the FSA.

2016 RESULTS

Correlations between students' 2015 second grade CogAT® score and 2016 third grade FSA score for ELA and Math were all moderate to strong, ranging from .60 to .74. The SAS_{VQN} exhibited the strongest correlation.

Table 1. Correlations between 2015 second grade CogAT® scores and 2016 third grade FSA scores.

	SAS _V	SAS _Q	SAS _N	SAS _{VQN}	SAS _{QN}
FSA 2016 ELA	.72**	.61**	.60**	.72**	.65**
FSA 2016 Mathematics	.65**	.69**	.66**	.74**	.72**

Note: All correlations are significant at the 0.01 level.

Deviations from Predicted Scores 2016

This section presents typical and deviant scoring patterns between the 2015 second grade CogAT® SAS_{VQN} scores and the 2016 third grade FSA ELA and math achievement levels (Tables 2 and 3). The green boxes indicate the scoring pattern observed in the greatest percent of students. The top number represents the number of students who had this pattern of score and the bottom number indicates the percent of students within that CogAT® score range who scored at that achievement level. Students who scored at least two levels above or below the level at which the majority of the students scored were identified as having deviant scores. The white boxes indicate the students' FSA achievement is one level above or below predicted achievement. The blue and yellow boxes indicate substantial differences between expected and actual FSA levels based on CogAT® scores. Blue boxes indicate students are performing better on the FSA than expected, and yellow boxes indicate they are performing worse than expected. The deviant scores suggest a potential imbalance in cognitive development and indicate the need to explore the reason for such differences in scores for these students.

Table 2. 2015 second grade CogAT® SAS_{VQN} Scores compared to 2016 third grade FSA ELA scores.

2015 CogAT® Score Range	2016 Third Grade FSA ELA					Total
	Level 1	Level 2	Level 3	Level 4	Level 5	
50-84	1266 59.2%	571 26.7%	264 12.3%	35 1.6%	2 0.0%	2138
85-90	567 28.5%	744 37.4%	547 27.5%	117 5.9%	12 0.6%	1987
91-104	367 7.0%	1200 22.9%	2137 40.8%	1250 23.8%	288 5.5%	5242
105-117	16 0.6%	140 5.5%	679 26.8%	1069 42.2%	629 24.8%	2533
118-150	0 0.0%	2 0.3%	81 10.4%	298 38.2%	400 51.2%	781
Total by FSA Level	2216	2657	3708	2769	1331	12681
Total Under-performing					n = 606	4.8%
Total Over-performing					n = 718	5.7%

Note: Green = congruent scores, white = one level above or below expected scores, yellow = lower than expected performance, blue = higher than expected performance. The top number in each box is the number of students with that score combination.

Table 3. 2015 second grade CogAT® SAS_{VQN} Scores compared to 2016 third grade FSA math scores.

2015 CogAT® Score Range	2016 Third Grade FSA Math					Total	
	Level 1	Level 2	Level 3	Level 4	Level 5		
50 - 85	1308 54.0%	640 26.4%	387 16.0%	82 3.4%	6 0.2%	2423	
86 - 86	97 29.3%	113 34.1%	103 31.1%	15 4.5%	3 0.9%	331	
87 - 101	498 9.0%	1220 22.0%	2435 43.9%	1165 21.0%	235 4.2%	5553	
102 - 114	13 0.4%	137 4.2%	886 27.1%	1474 45.1%	760 23.2%	3270	
115 - 150	0 0.0%	1 0.1%	64 5.9%	375 34.4%	651 60.0%	1091	
Total by FCAT Level	1916	2111	3875	3111	1655	12668	
Total Under-performing						n = 713	5.6%
Total Over-performing						n = 728	5.7%

Note: Green = congruent scores, white = one level above or below expected scores, yellow = lower than expected performance, blue = higher than expected performance. The top number in each box is the number of students with that score combination.

In this cohort, we identified 606 students with lower FSA ELA scores and 713 students with lower math scores than would be expected given their CogAT® scores⁹. After combining lists, the total unduplicated number of students underperforming on either of the FSA exams is 1,319.

We also identified 718 students who scored higher than expected on the FSA in ELA, and 728 who scored higher than expected on the FSA in math. After combining and unduplicating the lists, there were a total of 1,446 students whose FSA performance exceeded the score predicted by their prior year CogAT® score.

⁹ When Riverside Publishing scores CogAT® and the Iowa Test of Basic Skills (IBTS) simultaneously, they flag students whose IBTS scores fall in the top and bottom 10% of the range for that particular CogAT® score. FSA levels were used here in order to simplify the calculation and better illustrate the deviant scores.

III. Differentiated Instruction

The 2015 report contains detailed information about the learning characteristics of students with specific CogAT® scores as well as instructional strategies to best meet the varying needs of these different students. Knowing these characteristics and strategies helps teachers to determine how they can be effective in supporting students to reach their highest potential. For example, students scoring in the bottom three stanines¹⁰ have lower levels of working memory which interferes with their ability to complete more challenging work. Often, when the teacher supports their working memory, students are able to work on these more challenging tasks. This is important because when lower-ability students are not exposed to higher-order thinking, the gap between them and other students continues to widen. Teachers can support students' working memory in a number of ways. Providing a graphic organizer, chunking work down into smaller tasks, modeling the task, and forgiving components that are not the main focus of the task (i.e. spelling in an essay) are some examples.

To help teachers differentiate instruction, profile scores for each student that completed all three batteries of the CogAT® are provided to schools. Profile scores can be typed into the CogAT®'s online Interactive Profile Interpretation System (www.cogat.com) to receive a detailed customized report on learning characteristics and instructional recommendations for that particular student.

Information below summarizes Districtwide performance on the CogAT® by stanine and by Profile Group. Stanine scores are used here instead of profile scores for ease of illustrating trends in the data. In addition to stanine, profile scores also indicate if there is an even pattern among the three batteries, a relative strength or weakness in one area, a relative strength and weakness in two areas, or an extreme strength or weakness in one area. Thus, the large number of specific profile scores makes it difficult to graph. A summary of the distribution of scores across the groups and stanines is presented below at the district level.

Method

All students who had an Age Stanine_{VQN} score were included in this analysis. Students with an Age Stanine_{VQN} of one, two, and three were assigned a Profile Group of one. Students with an Age Stanine_{VQN} score of four, five, or six were assigned a Profile Group of two. Students with an

¹⁰ Stanine is a method of scaling test scores on a 9-point standard scale that has a mean of 5 and standard deviation of 2.

Age Stanine_{VQN} score of seven or eight were assigned a Profile Group of three, and students with an Age Stanine_{VQN} score of nine were assigned a Profile Group of four.

Results

The distribution of stanine scores for 2015 and 2016 showed a similar pattern (Figure 11). In both years, the data are skewed to the left, indicating that BCPS students had scores somewhat lower than the national normative sample. Specifically, BCPS had more students with stanine scores of three and four, and less with stanines seven and eight. Scores for 2016 were slightly different than scores for 2015, and this difference trended towards the pattern of the normative sample.

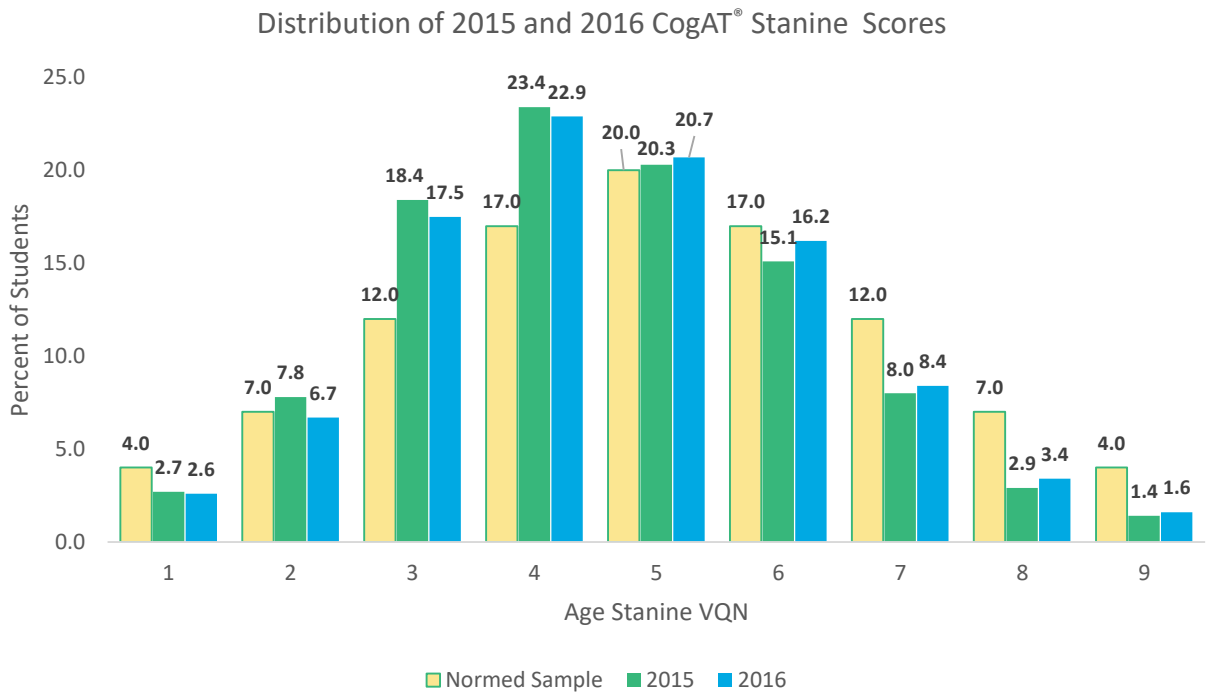
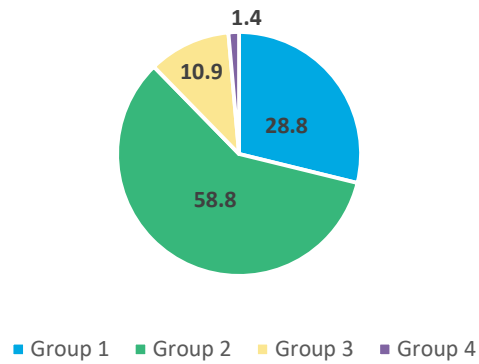


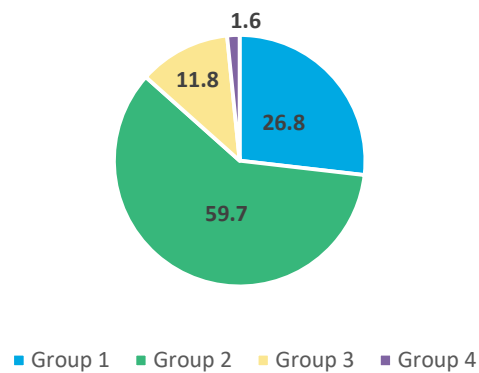
Figure 11. Distribution of CogAT age stanine_{VQN} scores for 2015 and 2016.

Similarly, the distribution of profile groups for BCPS showed more students in groups one and two, and less in groups three and four. This difference was smaller for 2016 than for 2015.

Distribution of **2015 CogAT®** Scores by Group



Distribution of **2016 CogAT®** Scores by Group



Distribution of National Normed Sample **CogAT®** Scores by Group

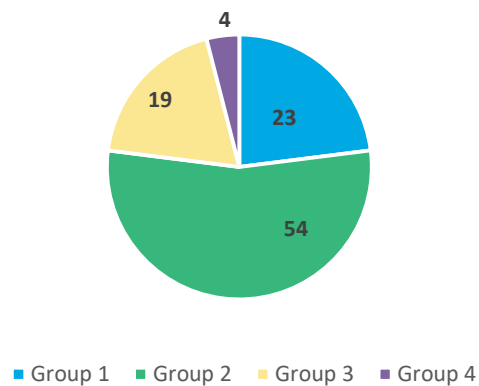


Figure 12. Distribution of scores by profile group for BCPS in 2015 (top) and 2016 (middle) and for the national normed sample to which BCPS data are compared (bottom).

SUMMARY

Participation

The 2016 administration of the CogAT® yielded profile scores for 14,751 students (70.5% of second grade students). This is an increase of 3 percentage points from the previous year. In total, 17,710 (84.6%) students attempted at least one battery of the CogAT®. Not all students attempted all three batteries, and some attempted but were not able to complete enough items to receive a score.

Performance

Mean scores for BCPS students on the Verbal and Quantitative batteries were somewhat lower than the national sample to which it is compared (6.1 percentage points lower for verbal and 4.3 percentage points lower for quantitative). Scores for the nonverbal battery matched the national sample. These results are similar to last year (5.9 percentage points below for verbal and 5.1 percentage points below for math), and are consistent with the higher percentage of LEP and FRL students in BCPS.

Gifted Screener

Two-hundred and eleven students who took all three batteries of the CogAT® met screening criteria for Plan A (1.4%). For Plan B, 1,778 students met the score criteria of the CogAT® (12.1%), with 788 also meeting the requirement of being LEP or FRL. Eighty-one students meeting Plan A criteria and 81 students meeting Plan B criteria had already been identified as gifted. In total, after accounting for duplication (some students met both Plan A and Plan B criteria), 942 students met screening criteria, 793 of which were not previously identified as gifted. The distribution of all students meeting screening criteria is 24% Black, 37% Hispanic, 22% White, 29% LEP, and 69% FRL.

Correlations with FSA

The 2015 CogAT® scores were well-correlated with the 2016 FSA in both reading and math. The composite score of all batteries of the CogAT® (SAS_{VQN}) offered the best predictive value, having the highest correlations (.72 for 3rd grade reading and .74 for 3rd grade math).

Deviations from Predicted Scores

Since CogAT® scores are correlated with standardized test scores, they are a good predictor of FSA performance. Students whose CogAT® exam predicts a substantially higher score than they achieve may not have had appropriate opportunities to learn in school, may not be motivated to learn, or may have a disability that interferes with their learning. Of the students who took the CogAT® in 2015, 606 students scored lower than expected on the 3rd grade FSA ELA and 713 for

math. Students whose CogAT® score predicts standardized test scores that are lower than their actual performance may be working really hard to master the material. However, they may also be learning in a contextually bound manner and not learning to transfer information they learn in class to other situations. In ELA, 718 students had substantially higher 2016 3rd grade FSA scores than was predicted by the CogAT®. In math, 728 students fell into this category.

Differentiated Instruction

CogAT® scores provide valuable information to teachers in customizing instruction to meet the cognitive needs of students. Each elementary school is provided with their students CogAT® profile score and profile group. Each of the four groups have distinctive learning characteristics as well as instructional strategies that they benefit from. The majority of BCPS students taking the CogAT® in 2016 fell into Group Two (59.7%). Group One was the second largest group, with 26.8% of students belonging in this group. The two highest groups, Group Three (11.8%) and Group Four (1.6%) make up less than 15% of BCPS students. Nationally, 23% of students fall into the two highest categories.

DISCUSSION

Since the release of the initial CogAT® report in October 2015, BCPS's Student Assessment and Research department has supplied teachers and principals with tools to help differentiate instruction.

In January and February of 2016, all District-run elementary school principals attended a CogAT® workshop along with one of their third grade teachers. In this half-day workshop, they learned how to translate CogAT® scores into meaningful information about the learning characteristics of each student. They also learned teaching strategies to support students based on their learning characteristics and had the opportunity to practice differentiating lessons and strategies to teach the same standard to all students, but in a way that is well-suited to the students' individual learning needs. As part of the training, a Using CogAT® Scores to Inform Instruction guide was distributed and is included in Appendix B.

At the workshop, principals expressed interest in receiving CogAT® scores in May so they could be used to help plan classroom placement for the following year. This information was posted on the DWH Reports folder on May 9, 2016. There was also interest in a letter template that could be used to share CogAT® scores with parents. A copy of this letter is included in Appendix C.

Discrepancy scores at the student level were posted in the DWH reports folder in January 2017. Schools are encouraged to take a closer look at these students to determine if they need extra

support. In the case of “underachievers”, a good place to start is with gauging the student’s level of engagement and motivation. A relative strength on the nonverbal battery is consistent with the student having a low level of motivation. If that is not a concern, the next step is to determine if the student has had been afforded appropriate opportunities to learn at school. Finally, screening for a physical or learning disability may be appropriate. In the case of “overachievers”, a relative weakness on the nonverbal battery supports the idea that the student has worked exceptionally hard to achieve a high score on the FSA. A relative weakness on the verbal or quantitative battery may be an indication that the student’s instruction has not focused on transfer.

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The School Board of Broward County, Florida prohibits any policy or procedure that results in discrimination on the basis of age, color, disability, gender, national origin, marital status, race, religion, or sexual orientation.

Appendix A. Number and percent of students meeting Plan A and Plan B eligibility requirements and mean standard age scores by school. SAS_{VQN} is the

School Number	School Name	N	Plan A		Plan B		Plan A or B		Mean School Score	
			N	Percent	N	Percent	N	Percent	Plan A SAS _{VQN}	Plan B SAS _{VQN}
Traditional										
2511	ATLANTIC WEST ELEMENTARY	78	0	0.0%	5	6%	5	6%	92.4	94.3
2001	BANYAN ELEMENTARY	82	0	0.0%	4	5%	4	5%	94.7	95.7
0641	BAYVIEW ELEMENTARY	108	8	7.4%	9	8%	16	15%	107.4	108.9
2041	BEACHSIDE MONTESSORI VILLAGE	69	4	5.8%	5	7%	9	13%	107.5	108.3
0201	BENNETT ELEMENTARY	29	0	0.0%	1	3%	1	3%	89.4	91.3
0341	BETHUNE MARY M ELEMENTARY	57	0	0.0%	2	4%	2	4%	91.4	92.5
0971	BOULEVARD HEIGHTS ELEMENTARY	81	0	0.0%	7	9%	7	9%	95.5	97.4
0811	BROADVIEW ELEMENTARY	118	0	0.0%	6	5%	6	5%	95.0	96.2
0501	BROWARD ESTATES ELEMENTARY	60	0	0.0%	2	3%	2	3%	89.8	91.3
1461	CASTLE HILL ELEMENTARY	78	0	0.0%	5	6%	5	6%	90.1	91.9
2641	CENTRAL PARK ELEMENTARY	145	2	1.4%	11	8%	12	8%	102.6	103.3
3771	CHALLENGER ELEMENTARY	142	1	0.7%	12	8%	13	9%	98.0	99.3
2961	CHAPEL TRAIL ELEMENTARY	104	0	0.0%	3	3%	3	3%	100.8	100.7
1421	COCONUT CREEK ELEMENTARY	100	1	1.0%	13	13%	14	14%	99.2	100.2
3741	COCONUT PALM ELEMENTARY	124	1	0.8%	7	6%	8	6%	99.0	100.0
0231	COLBERT ELEMENTARY	84	1	1.2%	11	13%	11	13%	95.9	97.9
0331	COLLINS ELEMENTARY	38	1	2.6%	1	3%	2	5%	88.6	90.4
1211	COOPER CITY ELEMENTARY	96	2	2.1%	5	5%	6	6%	99.7	99.7
2011	CORAL COVE ELEMENTARY	144	1	0.7%	7	5%	8	6%	97.9	98.9
3041	CORAL PARK ELEMENTARY	75	0	0.0%	3	4%	3	4%	98.9	99.9
2551	CORAL SPRINGS ELEMENTARY	70	0	0.0%	3	4%	3	4%	91.6	93.6
3111	COUNTRY HILLS ELEMENTARY	103	2	1.9%	0	0%	2	2%	99.6	101.1
2981	COUNTRY ISLES ELEMENTARY	119	0	0.0%	4	3%	4	3%	99.3	100.0
0901	CRESTHAVEN ELEMENTARY	70	0	0.0%	5	7%	5	7%	90.6	92.8
0221	CROISSANT PARK ELEMENTARY	103	1	1.0%	2	2%	3	3%	91.7	93.4
1781	CYPRESS ELEMENTARY	75	0	0.0%	5	7%	5	7%	91.7	93.3
0101	DANIA ELEMENTARY	51	1	2.0%	0	0%	1	2%	90.2	92.9
2801	DAVIE ELEMENTARY	97	0	0.0%	3	3%	3	3%	94.2	95.9
0011	DEERFIELD BEACH ELEMENTARY	84	0	0.0%	2	2%	2	2%	91.9	93.3
0391	DEERFIELD PARK ELEMENTARY	80	1	1.3%	3	4%	4	5%	89.3	92.2
0271	DILLARD ELEMENTARY	75	0	0.0%	2	3%	2	3%	86.6	88.4
3962	DISCOVERY ELEMENTARY	144	2	1.4%	14	10%	14	10%	99.1	99.6
3751	DOLPHIN BAY ELEMENTARY	101	5	5.0%	9	9%	12	12%	100.7	102.5
3221	DREW CHARLES ELEMENTARY	80	0	0.0%	0	0%	0	0%	88.2	90.1
0721	DRIFTWOOD ELEMENTARY	81	1	1.2%	3	4%	3	4%	94.1	96.0
3461	EAGLE POINT ELEMENTARY	205	13	6.3%	18	9%	29	14%	104.1	105.5
3441	EAGLE RIDGE ELEMENTARY	105	3	2.9%	7	7%	8	8%	103.2	103.5
3191	EMBASSY CREEK ELEMENTARY	203	6	3.0%	11	5%	16	8%	105.2	106.0
3301	ENDEAVOUR PRIMARY LEARNING CEN	76	1	1.3%	1	1%	1	1%	87.8	88.8
2942	EVERGLADES ELEMENTARY	172	6	3.5%	13	8%	19	11%	104.4	105.0

Appendix A. Number and percent of students meeting Plan A and Plan B eligibility requirements and mean standard age scores by school. SAS_{VQN} is the

School Number	School Name	N	Plan A		Plan B		Plan A or B		Mean School Score	
			N	Percent	N	Percent	N	Percent	Plan A SAS _{VQN}	Plan B SAS _{VQN}
1641	FAIRWAY ELEMENTARY	87	0	0.0%	7	8%	7	8%	94.7	95.5
2541	FLAMINGO ELEMENTARY	82	1	1.2%	3	4%	4	5%	98.0	100.3
0851	FLORANADA ELEMENTARY	87	1	1.1%	4	5%	5	6%	103.0	102.6
2631	FOREST HILLS ELEMENTARY	75	1	1.3%	5	7%	5	7%	95.5	97.7
0921	FOSTER STEPHEN ELEMENTARY	76	0	0.0%	1	1%	1	1%	90.7	93.1
3531	FOX TRAIL ELEMENTARY	188	3	1.6%	10	5%	13	7%	102.1	102.7
3642	GATOR RUN ELEMENTARY	194	5	2.6%	14	7%	19	10%	101.8	103.4
2851	GRIFFIN ELEMENTARY	67	0	0.0%	3	4%	3	4%	98.6	99.3
0131	GULFSTREAM ACAD OF HALL BEACH	171	0	0.0%	7	4%	7	4%	92.8	94.7
0491	HARBORDALE ELEMENTARY	63	2	3.2%	5	8%	6	10%	103.7	103.4
3131	HAWKES BLUFF ELEMENTARY	126	5	4.0%	7	6%	10	8%	102.4	103.1
3961	HERON HEIGHTS ELEMENTARY	182	11	6.0%	6	3%	16	9%	104.6	106.3
0121	HOLLYWOOD CENTRAL ELEMENTARY	60	2	3.3%	2	3%	4	7%	94.0	96.2
0111	HOLLYWOOD HILLS ELEMENTARY	100	0	0.0%	3	3%	3	3%	99.5	100.5
1761	HOLLYWOOD PARK ELEMENTARY	56	0	0.0%	7	13%	7	13%	95.4	96.7
2531	HORIZON ELEMENTARY	61	0	0.0%	4	7%	4	7%	96.7	97.9
1971	HUNT JAMES S ELEMENTARY	93	1	1.1%	3	3%	4	4%	92.4	94.0
3181	INDIAN TRACE ELEMENTARY	106	3	2.8%	7	7%	9	8%	103.1	104.5
0831	LAKE FOREST ELEMENTARY	109	2	1.8%	7	6%	7	6%	93.5	95.1
3591	LAKESIDE ELEMENTARY	122	1	0.8%	7	6%	8	7%	99.5	101.2
0621	LARKDALE ELEMENTARY	37	0	0.0%	1	3%	1	3%	88.5	89.5
1381	LAUDERHILL P. T. ELEMENTARY	60	0	0.0%	1	2%	1	2%	86.9	88.3
3821	LIBERTY ELEMENTARY	137	1	0.7%	15	11%	16	12%	97.3	98.5
1091	LLOYD ESTATES ELEMENTARY	79	0	0.0%	3	4%	3	4%	90.2	92.4
3841	MANATEE BAY ELEMENTARY	182	9	4.9%	8	4%	17	9%	104.1	105.0
2741	MAPLEWOOD ELEMENTARY	78	1	1.3%	3	4%	4	5%	95.2	96.4
1161	MARGATE ELEMENTARY	139	0	0.0%	9	6%	9	6%	95.7	97.5
1671	MARKHAM ROBERT C. ELEMENTARY	41	0	0.0%	1	2%	1	2%	89.5	91.7
0841	MCNAB ELEMENTARY	90	1	1.1%	7	8%	7	8%	98.3	99.9
0761	MEADOWBROOK ELEMENTARY	95	0	0.0%	6	6%	6	6%	92.9	95.6
0531	MIRAMAR ELEMENTARY	117	0	0.0%	1	1%	1	1%	90.5	92.0
1841	MIRROR LAKE ELEMENTARY	62	0	0.0%	4	6%	4	6%	90.4	91.9
1611	MLK MONTESSORI ACADEMY	59	0	0.0%	2	3%	2	3%	86.8	88.8
2691	MORROW ELEMENTARY	49	0	0.0%	1	2%	1	2%	89.3	91.1
2671	NOB HILL ELEMENTARY	75	0	0.0%	4	5%	4	5%	97.4	98.7
0561	NORCREST ELEMENTARY	103	0	0.0%	7	7%	7	7%	96.7	99.1
0521	NORTH ANDREWS GARDENS ELEM	138	1	0.7%	5	4%	6	4%	95.2	96.6
1191	NORTH FORK ELEMENTARY	51	0	0.0%	1	2%	1	2%	89.1	90.8
2231	NORTH LAUDERDALE ELEMENTARY	60	0	0.0%	0	0%	0	0%	88.9	89.8
0041	NORTH SIDE ELEMENTARY	62	0	0.0%	1	2%	1	2%	87.9	89.7
1282	NOVA BLANCHE FORMAN ELEMENTARY	103	4	3.9%	8	8%	10	10%	101.5	101.9
1271	NOVA DWIGHT EISENHOWER ELEM	106	2	1.9%	8	8%	8	8%	98.8	99.4

Appendix A. Number and percent of students meeting Plan A and Plan B eligibility requirements and mean standard age scores by school. SAS_{VQN} is the

School Number	School Name	N	Plan A		Plan B		Plan A or B		Mean School Score	
			N	Percent	N	Percent	N	Percent	Plan A SAS _{VQN}	Plan B SAS _{VQN}
0031	OAKLAND PARK ELEMENTARY	51	0	0.0%	2	4%	2	4%	89.3	92.1
0461	OAKRIDGE ELEMENTARY	49	1	2.0%	5	10%	5	10%	93.4	95.4
0711	ORANGE BROOK ELEMENTARY	116	1	0.9%	7	6%	7	6%	91.8	93.2
1831	ORIOLE ELEMENTARY	72	0	0.0%	5	7%	5	7%	94.1	94.8
3311	PALM COVE ELEMENTARY	86	0	0.0%	3	3%	3	3%	95.3	96.4
1131	PALMVIEW ELEMENTARY	66	0	0.0%	3	5%	3	5%	91.4	93.1
3571	PANTHER RUN ELEMENTARY	83	2	2.4%	1	1%	3	4%	101.1	101.7
3761	PARK LAKES ELEMENTARY	131	0	0.0%	6	5%	6	5%	88.6	89.9
1951	PARK RIDGE ELEMENTARY	43	0	0.0%	1	2%	1	2%	88.3	90.3
3171	PARK SPRINGS ELEMENTARY	125	5	4.0%	7	6%	9	7%	98.8	100.3
3781	PARK TRAILS ELEMENTARY	164	0	0.0%	4	2%	4	2%	100.3	101.3
3631	PARKSIDE ELEMENTARY	96	0	0.0%	4	4%	4	4%	94.3	96.3
2071	PASADENA LAKES ELEMENTARY	51	0	0.0%	0	0%	0	0%	95.3	96.8
2661	PEMBROKE LAKES ELEMENTARY	99	1	1.0%	2	2%	3	3%	99.4	99.7
1221	PEMBROKE PINES ELEMENTARY	71	1	1.4%	2	3%	2	3%	95.0	96.4
1631	PERRY ANNABEL C. ELEMENTARY	90	1	1.1%	4	4%	4	4%	93.2	93.6
0931	PETERS ELEMENTARY	90	1	1.1%	8	9%	9	10%	97.0	98.0
2861	PINES LAKES ELEMENTARY	62	0	0.0%	1	2%	1	2%	94.9	95.6
2811	PINEWOOD ELEMENTARY	63	0	0.0%	1	2%	1	2%	94.3	95.0
0941	PLANTATION ELEMENTARY	73	0	0.0%	7	10%	7	10%	94.6	96.7
1251	PLANTATION PARK ELEMENTARY	76	0	0.0%	0	0%	0	0%	97.7	98.7
0751	POMPANO BEACH ELEMENTARY	51	0	0.0%	0	0%	0	0%	84.7	86.4
3121	QUIET WATERS ELEMENTARY	174	1	0.6%	6	3%	7	4%	96.0	97.1
2721	RAMBLEWOOD ELEMENTARY	100	0	0.0%	2	2%	2	2%	95.8	97.1
2891	RIVERGLADES ELEMENTARY	102	5	4.9%	9	9%	14	14%	106.8	107.9
0151	RIVERLAND ELEMENTARY	65	0	0.0%	3	5%	3	5%	92.6	94.7
3031	RIVERSIDE ELEMENTARY	95	1	1.1%	2	2%	3	3%	99.0	99.7
3701	ROCK ISLAND ELEMENTARY	55	0	0.0%	0	0%	0	0%	87.0	87.9
1851	ROYAL PALM ELEMENTARY	76	0	0.0%	4	5%	4	5%	88.8	89.8
0891	SANDERS PARK ELEMENTARY	42	0	0.0%	1	2%	1	2%	90.3	92.1
3061	SANDPIPER ELEMENTARY	64	2	3.1%	8	13%	9	14%	102.8	104.9
3401	SAWGRASS ELEMENTARY	132	9	6.8%	9	7%	16	12%	101.7	102.2
2871	SEA CASTLE ELEMENTARY	105	2	1.9%	8	8%	8	8%	94.0	95.3
1811	SHERIDAN HILLS ELEMENTARY	57	0	0.0%	6	11%	6	11%	94.1	95.0
1321	SHERIDAN PARK ELEMENTARY	85	1	1.2%	9	11%	9	11%	97.5	99.3
3371	SILVER LAKES ELEMENTARY	60	0	0.0%	5	8%	5	8%	95.6	97.0
3491	SILVER PALMS ELEMENTARY	93	2	2.2%	6	6%	7	8%	99.9	100.6
3081	SILVER RIDGE ELEMENTARY	154	2	1.3%	3	2%	4	3%	100.9	101.6
3581	SILVER SHORES ELEMENTARY	79	0	0.0%	6	8%	6	8%	99.3	100.6
0691	STIRLING ELEMENTARY	75	0	0.0%	3	4%	3	4%	94.8	96.3
0611	SUNLAND EARLY LEARNING CENTER	48	0	0.0%	0	0%	0	0%	88.5	89.6
3661	SUNSET LAKES	125	1	0.8%	10	8%	11	9%	99.4	100.6

Appendix A. Number and percent of students meeting Plan A and Plan B eligibility requirements and mean standard age scores by school. SAS_{VQN} is the

School Number	School Name	N	Plan A		Plan B		Plan A or B		Mean School Score	
			N	Percent	N	Percent	N	Percent	Plan A SAS _{VQN}	Plan B SAS _{QN}
1171	SUNSHINE ELEMENTARY	88	0	0.0%	1	1%	1	1%	92.8	94.4
2621	TAMARAC ELEMENTARY	101	0	0.0%	2	2%	2	2%	91.4	93.6
0571	TEDDER ELEMENTARY	53	0	0.0%	2	4%	2	4%	89.7	91.2
3291	THURGOOD MARSHALL ELEMENTARY	53	0	0.0%	1	2%	1	2%	89.4	91.4
3481	TRADEWINDS ELEMENTARY	195	1	0.5%	13	7%	13	7%	97.2	99.2
0731	TROPICAL ELEMENTARY	131	5	3.8%	7	5%	12	9%	99.6	100.2
1621	VILLAGE ELEMENTARY	85	0	0.0%	3	4%	3	4%	92.3	92.6
3321	VIRGINIA S. YOUNG ELEMENTARY	102	4	3.9%	6	6%	10	10%	104.2	104.7
0321	WALKER ELEMENTARY	56	0	0.0%	2	4%	2	4%	87.8	89.3
0511	WATKINS ELEMENTARY	79	0	0.0%	2	3%	2	3%	91.4	93.1
2881	WELLEBY ELEMENTARY	104	0	0.0%	4	4%	4	4%	97.9	99.1
0161	WEST HOLLYWOOD ELEMENTARY	48	0	0.0%	2	4%	2	4%	87.2	89.5
2681	WESTCHESTER ELEMENTARY	181	6	3.3%	13	7%	17	9%	101.2	102.6
0631	WESTWOOD HEIGHTS ELEMENTARY	48	0	0.0%	0	0%	0	0%	87.3	88.0
0191	WILTON MANORS ELEMENTARY	86	0	0.0%	2	2%	2	2%	93.1	94.6
3091	WINSTON PARK ELEMENTARY	153	4	2.6%	8	5%	11	7%	100.1	101.3
Charter Schools										
5421	ALPHA INTERNATIONAL ACADEMY	17	0	0.0%	0	0%	0	0%	88.6	90.0
5015	AVANT GARDE ACAD K-8 BROWARD	115	5	4.3%	15	13%	19	17%	103.8	106.1
5116	BRIDGEPREP ACAD OF HOLLYWOOD	50	1	2.0%	4	8%	4	8%	99.4	99.1
5041	CENTRAL CHARTER SCHOOL	10	0	0.0%	0	0%	0	0%	91.4	91.2
5422	CHAMPIONSHIP ACAD OF DIS - DAV	67	0	0.0%	3	4%	3	4%	95.0	96.2
5361	CHAMPIONSHIP ACAD OF DIS - HOL	56	0	0.0%	1	2%	1	2%	93.9	94.4
5051	CITY OF PEMBROKE PINES CHARTER ES	277	8	2.9%	10	4%	17	6%	103.5	103.7
5325	HOLLYWOOD ACADEMY OF ARTS & SCI	158	2	1.3%	7	4%	8	5%	98.6	99.3
5171	IMAGINE CHART N.LAUD. ELEM	65	1	1.5%	4	6%	4	6%	93.1	95.2
5024	IMAGINE MIDDLE SCH AT BROWARD	97	1	1.0%	5	5%	5	5%	97.0	98.2
5161	NO BROWARD ACADEMY OF EXCELLEN	83	1	1.2%	6	7%	7	8%	99.3	98.9
5372	PATHWAYS ACADEMY K-8 CENTER	19	0	0.0%	2	11%	2	11%	93.8	94.5
5020	RENAISSANCE CHRT OF CORAL SPRS	149	1	0.7%	10	7%	10	7%	101.0	101.5
5023	RENAISSANCE CHRT OF PLANTATION	83	0	0.0%	4	5%	4	5%	94.4	96.0
5049	RENAISSANCE CS AT COOPER CITY	132	6	4.5%	22	17%	27	20%	107.0	108.0
5048	RENAISSANCE CS AT UNIVERSITY	140	4	2.9%	16	11%	18	13%	100.3	101.4
5021	SOMERSET NEIGHBORHOOD ELEM	68	0	0.0%	4	6%	4	6%	96.9	96.8
5052	WEST BROWARD ACADEMY	10	0	0.0%	0	0%	0	0%	94.9	95.3

Note : SAS_{VQN} is the standard age score for the verbal, quantitative, and nonverbal batteries.
SAS_{QN} is the standard age score for the quantitative and nonverbal batteries.

Using CogAT® Scores to Inform Instruction

Different students benefit from different instructional strategies. Children enter your classroom with different levels and patterns of cognitive development. They have differences in many areas including their working memory capacity, tendency to develop and use strategies, and need for structure in their environment. **By knowing the level of cognitive development students are at, you can tailor your instruction to students to support them in ways that help them to thrive.**

Cognitive profile scores for your students are posted on the DWH reports folder. They are provided in two forms: Group Profile and Profile Score. Broadly, students are divided into four groups. Students within each group share similar learning needs. **All the information you need to get started in tailoring your instruction to your students by group is included in this packet¹.** Simply looking at the Profile Groups that your students fall in and the fourth page of this booklet gives you enough information to get started. When you are ready for more information, look at the other attachments and visit the website listed below for more detailed information.

Included in this packet are the following documents:

1. Sample Profile Score Data Report
2. Broad Overview of Characteristics by Group Profile Level (figure)
3. Broad Overview of Instructional Recommendations by Group Profile Level (figure)
4. Brief Characteristics and Instructional Recommendations by Group Profile Level (table)
5. Detailed Characteristics and Instructional Recommendations by Group Profile Level
6. Common Recommendations to Support Cognitive Development
7. Using Profile Scores
8. Example of Differentiated Instruction
9. Universal Ways to Support Growth in All Students

For detailed information about student characteristics and instructional recommendations by profile score, go to Riverside Publishing's CogAT® Interactive Ability Profile Interpretation System which is located at **www.cogat.com**. Simply type in the student's profile score to get a rich source of information about him or her.

¹ Information regarding characteristics and instructional recommendations is adapted from Riverside Publishing's Cognitive Abilities Test Interpretive guide for Teachers and Counselors and from the online Cognitive Abilities Test Interactive Ability Profile Interpretation System located at www.cogat.com. Riverside Publishing is the creator of the CogAT®.

Using CogAT® Scores to Inform Instruction

1. SAMPLE PROFILE SCORE DATA REPORT

Where should I start?

Start by looking up your students' **GroupProfile** scores on the **Profile Score Data Report**. Then, look on the next pages of this packet for information that will help you to match your instructional practices to the needs of your students. Even if you only have a few minutes, page 4 will give you some information to begin working with. As you have time, look through the rest of this packet.

SchoolNumber	School	SchoolYear	Grade	StudentNumber	LastName	FirstName	GroupProfile	ProfileScore
0XXX	SCHOOL	2016	03	0XXXXXXXXX	AXXXXXXXXX	EXXXXX		
0XXX	SCHOOL	2016	03	0XXXXXXXXX	AXXXXXXXXX	CXXXXX	1.00	3A
0XXX	SCHOOL	2016	03	0XXXXXXXXX	BXXXXXX	DXXXXX	1.00	3B (Q+)
0XXX	SCHOOL	2016	03	0XXXXXXXXX	CXXXXXXXXX	GXXXXXX		
0XXX	SCHOOL	2016	03	0XXXXXXXXX	EXXXXXXXXXXXXX	JXXXXX		
0XXX	SCHOOL	2016	03	0XXXXXXXXX	SXXXXXXXXXX	GXXXXXX	3.00	7A
0XXX	SCHOOL	2016	03	0XXXXXXXXX	CXXXXXXXXXX	JXXXXX		
0XXX	SCHOOL	2016	03	0XXXXXXXXX	MXXXX	WXXXX	3.00	7B (N+)
0XXX	SCHOOL	2016	03	0XXXXXXXXX	NXXXXXX	CXXXXXX	1.00	2A
0XXX	SCHOOL	2016	03	0XXXXXXXXX	YXXXXXXXXXX	LXXX	2.00	4E (N+)
0XXX	SCHOOL	2016	03	0XXXXXXXXX	TXXXXXX	CXXXX		
0XXX	SCHOOL	2016	03	0XXXXXXXXX	MXXXXXX	TXXXX	1.00	3B (N-)
0XXX	SCHOOL	2016	03	0XXXXXXXXX	CXXXXX	MXXXXXXXXX	2.00	5A
0XXX	SCHOOL	2016	03	0XXXXXXXXX	VXXX	AXXXX	2.00	6C (Q-N+)
0XXX	SCHOOL	2016	03	0XXXXXXXXX	NXXXXXXXX	JXXXXX	2.00	6C (Q-N+)
0XXX	SCHOOL	2016	03	0XXXXXXXXX	WXXXXX	JXXXXXXXXXX	1.00	2C (V-N+)
0XXX	SCHOOL	2016	03	0XXXXXXXXX	DXXXXXX	IXXXXX	1.00	2A
0XXX	SCHOOL	2016	03	0XXXXXXXXX	XXXXXXX	JXXXXXXXXXX	2.00	5A
0XXX	SCHOOL	2016	03	0XXXXXXXXX	DXXXXXX	AXXXX		
0XXX	SCHOOL	2016	03	0XXXXXXXXX	EXXXXXXXXXXXXX	MXXXXXXXXX	3.00	7B (Q-)
0XXX	SCHOOL	2016	03	0XXXXXXXXX	FXXXXXXXXXX	TXXXX	2.00	5E (N+)
0XXX	SCHOOL	2016	03	0XXXXXXXXX	FXXXXXXXXXX	DXXXXX	1.00	3A
0XXX	SCHOOL	2016	03	0XXXXXXXXX	FXXXXXXXXXX	LXXX		
0XXX	SCHOOL	2016	03	0XXXXXXXXX	GXXXXXX	TXXXX	2.00	4C (V-N+)

Ready for more information?

You can input the **ProfileScore** into Riverside Publishing's interactive web tool which is located at www.cogat.com. See more information about profile scores on page 11 of this document.

Why are scores missing for some students?

Students do not have a **GroupProfile** or **ProfileScore** if:

- They were absent on any of the days the CogAT® was administered and did not take a makeup.
- Their parents signed a letter to have them opt out of the CogAT®.
- They made mistakes in filling out the answer form and their test could not be properly scored.
- They could not complete enough questions in the allotted time
- They are new to the District

Using CogAT® Scores to Inform Instruction

2. BROAD OVERVIEW OF CHARACTERISTICS BY GROUP PROFILE LEVEL

Group 1

- Process information slowly
- Trial and error instead of strategy
- Lower working memory capacity
- Difficulty transferring information

Group 2

- Adequate knowledge but difficulty with recall
- Do not analyze tasks to find relationships with previous
- Learn strategies but difficulty implementing

Group 3

- Good memory
- Effective learning strategies
- See connections between new concepts and previously learned

Group 4

- Organize and store knowledge differently
- Superior problem-solving
- Effective strategies
- Good at making meaning of new information
- Negative affect; lack of persistence

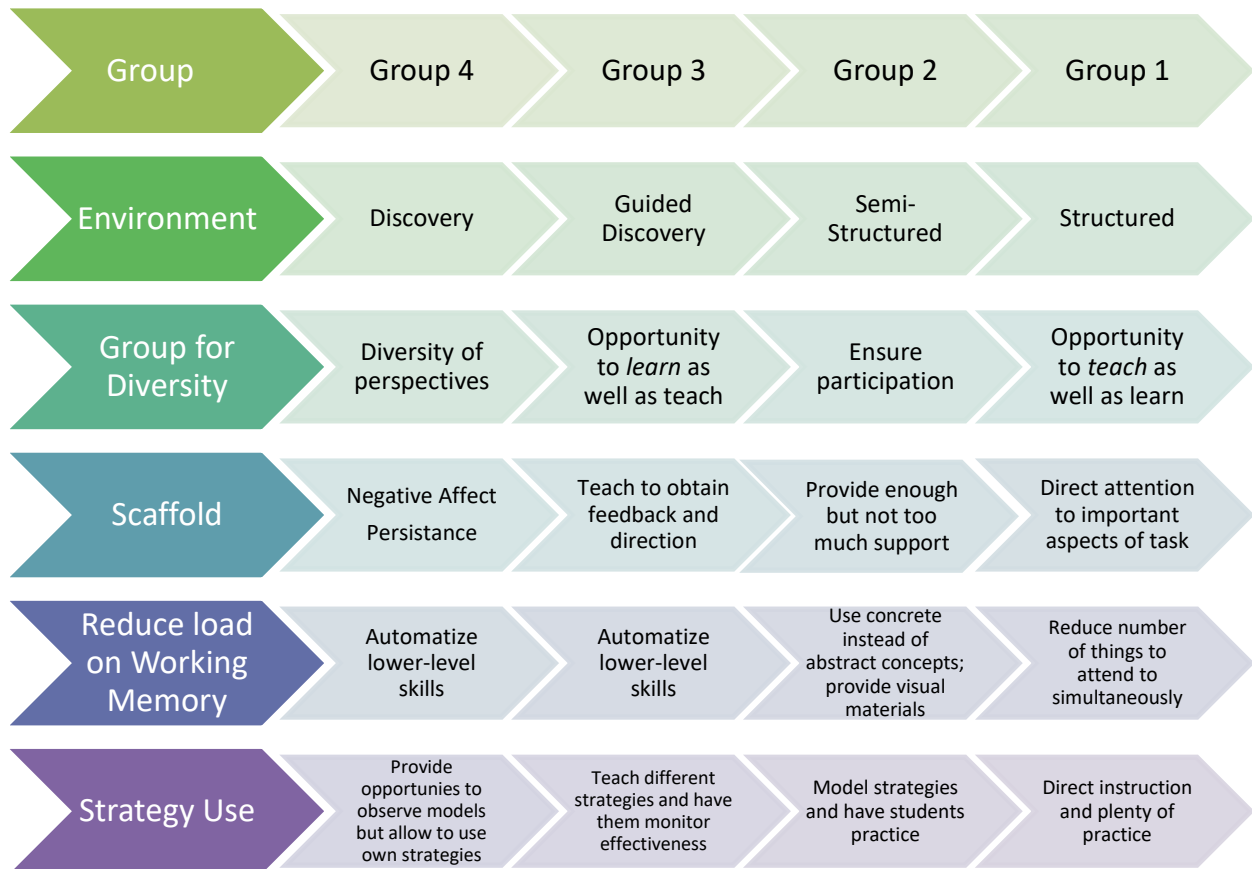
Distribution of 2016 Broward County Public Schools CogAT® Scores

Group 1	Group 2	Group 3	Group 4
26.8%	59.7%	11.8%	1.6%

Note: Information regarding characteristics and instructional recommendations is adapted from Riverside Publishing's Cognitive Abilities Test Interpretive guide for Teachers and Counselors and from the online Cognitive Abilities Test Interactive Ability Profile Interpretation System located at www.cogat.com. Riverside Publishing is the creator of the CogAT®.

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3. BROAD OVERVIEW OF INSTRUCTIONAL RECOMMENDATIONS BY GROUP PROFILE LEVEL



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Using CogAT® Scores to Inform Instruction

4. BRIEF CHARACTERISTICS AND INSTRUCTIONAL RECOMMENDATIONS BY GROUP PROFILE LEVEL

Group	Characteristics	Recommendations
1	<p>Process information slowly</p> <p>Have trouble making meaning out of information and determining what is relevant to learn and remember</p> <p>More likely to use trial and error than strategies</p> <p>Lower working memory capacity</p> <p>Forget abstract concepts quickly</p> <p>Difficulty transferring information learned in one context to another</p>	<p>Structured learning environment that provides direct guidance and support</p> <p>Instruction more interactive than verbal alone (i.e., peer modeling, hands-on activities, multi-media)</p> <p>Reduce load on working memory by off-loading lower-level tasks</p> <p>Teach to structure and organize material</p> <p>Give lots of opportunities to practice strategies</p> <p>Group with other ability levels, ensure they have opportunity to <i>teach</i> as well as learn</p>
2	<p>Adequate knowledge but difficulty recalling and using that knowledge</p> <p>Do not analyze new tasks to find relationships with previously learned tasks</p> <p>Learn strategies but have difficulty selecting and implementing them</p>	<p>Somewhat but not highly structured learning environment</p> <p>Reduce load on working memory by providing visual materials, overlearning low-level tasks</p> <p>Teach higher level reasoning skills such as inferring, deducing, elaborating and making connections</p> <p>Teach strategies and allow time for practice</p> <p>Group to be teacher and learner; ensure participation</p>
3	<p>Good memory</p> <p>Effective learning strategies</p> <p>See connections between new concepts and previously learned knowledge</p>	<p>Guided discovery environment</p> <p>Group with older students or adults; opportunities to <i>learn</i> as well as <i>teach</i></p> <p>Challenge to think critically</p> <p>Teach different problem-solving strategies and have them keep track of how they work for them</p>
4	<p>Organize and store knowledge differently than other students</p> <p>Superior skill in solving problems and thinking differently</p> <p>Possess effective strategies and use them efficiently</p> <p>Good at making meaning of new material</p> <p>Often experience negative affect and lack of persistence</p>	<p>Discovery learning best, highly structured worst</p> <p>Need to be appropriately challenged; which may mean instruction several years above peers</p> <p>Expose to strategies, but allow them to choose which ones work best for them</p> <p>Support in managing negative emotions and learning persistence</p> <p>Group for diversity of <i>perspectives</i> to challenge critical thinking</p>

Note: Information regarding characteristics and instructional recommendations is adapted from Riverside Publishing's Cognitive Abilities Test Interpretive guide for Teachers and Counselors and from the online Cognitive Abilities Test Interactive Ability Profile Interpretation System located at www.cogat.com. Riverside Publishing is the creator of the CogAT®.

Using CogAT® Scores to Inform Instruction

5. DETAILED CHARACTERISTICS AND INSTRUCTIONAL RECOMMENDATIONS BY GROUP PROFILE LEVEL

Group 1 (profile scores of 1, 2, and 3)

Characteristics: These students have weak listening and comprehension skills, process information slowly, and have trouble making meaning of information. They do not know how to break tasks into smaller parts and have difficulty determining what information is relevant to learn and remember. They have a lower working memory capacity and tend to forget abstract concepts quickly. They are able to learn concepts, strategies, facts, and skills that they are directly taught, but have difficulty applying them to new situations. They are more likely to approach tasks with trial-and-error than to plan and strategize. Of the second graders who took all three batteries of the CogAT® in BCPS in 2016, 27% received scores falling within the range of Group 1.

Recommendations: Students in Group 1 typically learn better in structured environments that provide more direct guidance, coaching, and support. They do better with instructional strategies that include peer modeling, demonstrations, hands-on activities, and the use of multi-media rather than with verbal instruction. They also need abstract concepts to be represented in concrete ways. These students are often asked to do more things simultaneously than they are capable and benefit from reducing the load on their working memory. The best way to do this is by scaffolding lower-order tasks so that they can focus on higher-order tasks. For example, if a student is having difficulty writing an essay, allowing them to type or dictate the essay and forget about spelling and grammar enables them to focus on the meaningful aspect of the assignment. Group 1 students need help in learning to structure and organize material. They benefit from learning strategies and from being given many opportunities to practice those strategies in new situations. Teaching should also focus on transferring information learned to real-world contexts.

Group 2 (Profile scores of 4, 5, and 6)

Characteristics: These students have an adequate level of knowledge, but it is not as well organized as higher scoring students. They frequently have trouble recalling and using their knowledge. They do not analyze new tasks to find relationships with tasks previously learned and have difficulty transferring skills learned to new situations. By middle school they have acquired a number of learning and problem-solving strategies, but often don't select the most effective strategy for the task, and make errors in implementation. Of the BCPS second graders who took all three batteries of the CogAT® in 2016, 60% received scores falling within the range of Group 2.

Using CogAT® Scores to Inform Instruction

Recommendations: Group 2 students learn best in somewhat but not highly structured environments. Highly structured environments will inhibit the development of high-level skills in these students. As with Group 1, these students benefit from limiting the burden on working memory. Providing visual representations of materials (e.g.; diagrams, pictures) and having students overlearn low level skills can help to reduce the load on working memory. Providing strategies, memory prompts, and task structure can free attentional resources for these students to focus on learning different forms of thinking; inferring, deducing, elaborating, and making connections. Group 2 students also benefit from direct teaching of strategies through modeling and practice (rather than simply providing a verbal explanation), being taught how to break complex tasks into simpler parts, and learning to become aware of their own strengths and weaknesses.

Group 3 (profile scores of 7 and 8)

Characteristics: These students learn relatively quickly, have good memories, and use effective learning strategies. They tend to see connections between new concepts and previously learned knowledge. They have strong enough reasoning abilities to do well in all tasks at school, but not so strong that they find school work unchallenging. Because of this, Group 3 students are more likely to develop strategies for perseverance and coping with difficulty than Group 4 students. Differences between Group 3 and Group 4 students are not usually observed except in tasks that require transfer of previous experience across different domains of knowledge, or instruction that emphasizes original problem-solving and critical thinking. Of the BCPS second graders who took all three batteries of the CogAT® in 2016, 12% received scores falling within the range of Group 3.

Recommendations: Group 3 students thrive in guided discovery learning environments. They also benefit from working with older students or adults. They need to be challenged with materials, projects and problems that are somewhat more difficult than those used for typical students. Since they already have a high level of general reasoning ability, they should be challenged to develop critical thinking skills. They should also be taught to use different learning and problem-solving strategies and to keep track of how they work for them.

Group 4 (profile score of 9)

Characteristics: These students have superior cognitive resources, enabling them to solve problems in novel ways, think critically, and fluently produce ideas. They differ from other students in the way that they organize and store knowledge in long-term memory. They are good at making meaning of new material and relating it to old material, possess efficient strategies, and use those strategies effectively. When faced with a new problem, they are able to adapt and combine strategies to solve the problem. However, some students in this group experience

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negative affect, such as anxiety or negative self-talk. These students also have trouble learning to persist in the face of difficulty. Often unchallenged, they do not have experience in dealing with difficulty and have trouble learning to be persistent. Of the BCPS second graders who took all three batteries of the CogAT® in 2016, 2% received scores falling within the range of Group 4.

Recommendations: Group 4 students benefit most from discovery learning and least from highly structured environments. The single greatest need for these students is to be appropriately challenged. This often means providing instruction at a level that is several years above their peers. These students readily learn the value of self-monitoring, and are generally receptive to discovering how to best deploy their own cognitive resources. To help them in this area, teachers can point out that there are different ways to acquire skills and different strategies to accomplish tasks, and can encourage them to try different methods and see which ones work best for them. This approach is better than teaching them to use a specific learning strategy. In fact, when they are required to use someone else's strategy after they have already developed their own, their performance generally decreases. Because of their tendency towards negative affect and lack of persistence, they need help in coping with negative emotions and learning to persist as tasks get more difficult.

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6. COMMON RECOMMENDATIONS TO SUPPORT COGNITIVE DEVELOPMENT

Common Recommendations

Regardless of the group, there are some things common to all students. They all benefit from participating in peer groups, from lessening the load on working memory when working on higher level tasks, from being taught for transfer, and from learning meta-cognitive strategies and regulation. The key to effective implementation of these things to the different groups is sensitivity to the level of exposure and support they need.

Peer Group Work. Grouping different ability students together allows students to both teach and learn from their peers. In the case of Group 1 students, teaching peers can take the form of guided reading wherein each student takes a turn being the teacher (e.g., Fountas & Pinnell, 1996). In the case of Group 4 students, giving them the opportunity to learn from others is important but not likely to happen with their peers in typical classrooms. Diversity for this group may consist of older students, or students of a similar competence level but with a diversity of perspectives. Being exposed to different points of view gives students the opportunity to exercise their critical reasoning skills as they evaluate the merits of new ideas (Lohman & Hagen, 2003).

Although students in higher groups progressively benefit more from discovery learning, this does not mean they need to learn alone. All students benefit from working with other students who can model new ways to understand a problem. Successful grouping ensures that all students have the opportunity to learn, the opportunity to teach, and the opportunity to participate. This means supporting students who don't readily participate by giving them the skills to do so, or structuring groups such that all members have a clearly defined role (Lohman & Hagen, 2003).

Working Memory. Across all groups working memory is likely to create a bottleneck in the amount of information a student can learn. Regardless of the group a student is in, they benefit from assistance with lower-order tasks and from being afforded the opportunity to work on learning the higher order tasks. Students in the lowest ability level need to be exposed to complex tasks even if they haven't mastered the lower order tasks yet. The consequence of focusing on lower order tasks until they are mastered before being challenged with higher level tasks is to increase the gap that already exists between these and higher scoring students (Lohman & Hagen, 2003). There are a number of methods that can reduce the load on working memory. Students can be excused from components of a task (such as spelling and grammar), can be given tools to assist (such as calculators or diagrams), or they can overlearn lower level tasks that are necessary to complete more complex tasks. Overlearning is when students continue to practice

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a skill that has already been mastered. Research has shown that skills continue to develop after a student has already demonstrated competence (Schneider, 1985).

Transfer. Transfer is the ability to take information that is learned about solving one problem and applying it to another problem. Students who take the information they learn in the classroom and apply it to real-world situations are demonstrating transfer (Bohlin, Durwin, Reese-Weber, 2012). Students do not typically demonstrate transfer unless teaching is specifically geared towards it (Marini & Genereux, 1995). Research indicates that students do not readily transfer what they have learned in school because they have not learned the information in a meaningful way (Bereiter, 1995). Examples of this type of learning are rote memorization and convergent thinking wherein there is only one correct answer to a problem (Adams et al., 1988; Bransford et al., 2000). Students are more likely to transfer when they are taught conceptual principals rather than simply procedures (Perry, 1991). Teaching for transfer also involves being shown how one concept or procedure can apply in different contexts, and making the concept of transfer explicit to students. Cueing can also help students to transfer by having them ask themselves, “What have I already learned that can apply to this problem?” (Salomon and Perkins, 1989). Another method is teaching one strategy in different domains, for example teaching reading comprehension strategies in different subjects or using the scientific method in a variety of contexts (Bohlin et al, 2012). Instruction that teaches for transfer is important for all groups; the difference is the degree to which time needs to be dedicated to illustrating the variety of settings in which a particular type of knowledge can apply.

Meta-cognition. Meta-cognition is thinking about one’s own thinking processes such as study skills, memory capabilities, and the ability to monitor one’s own learning (Hertzog & Robinson, 2005; Metcalfe, 2000). Students can be taught strategies to help them with tasks (meta-cognitive knowledge) and can also be taught to try different strategies to determine which is the most effective for them (meta-cognitive regulation). For example, students can be taught a variety of strategies for memorizing information, including rehearsal strategies such as maintenance rehearsal, elaborative rehearsal, and chunking as well as mnemonic devices such as acronyms, chain mnemonic, the keyword method, and the method of loci, and can be asked to use them all and see which ones work best for them.

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7. USING PROFILE SCORES

CogAT® profile scores are reported in stanines (normed scores ranging between 1 and 9), and indicate if the student has a relative strength or weakness in any of the three batteries. Scores can end in an A, indicating even performance across the three batteries, B, indicating a relative strength or weakness on one battery, C indicating a relative strength on one battery and a relative weakness on another, or E indicating an extreme relative difference between at least two batteries.

Riverside Publishing has specific recommendations for each profile score that teachers can view on their website which is located at: www.cogat.com. The site is interactive, allowing a teacher to type in the exact profile in order to receive specific recommendations.

Cognitive Abilities Test™ (CogAT®) Form 6 and Form 7

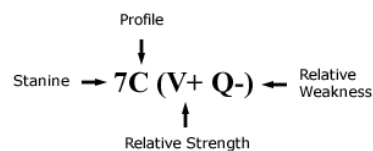
Interactive Ability Profile Interpretation System

This site was built to enable teachers, counselors, and parents to interpret the Cognitive Abilities Test™ (CogAT) Ability Score Profiles for their students.

▶ Note to Parents

Directions

Enter a student's ability profile in the appropriate drop down boxes (see sample for clarification). Once complete, click search, and an interpretation of the score will be provided.



Stanine : Profile : Relative Strength : Relative Weakness :

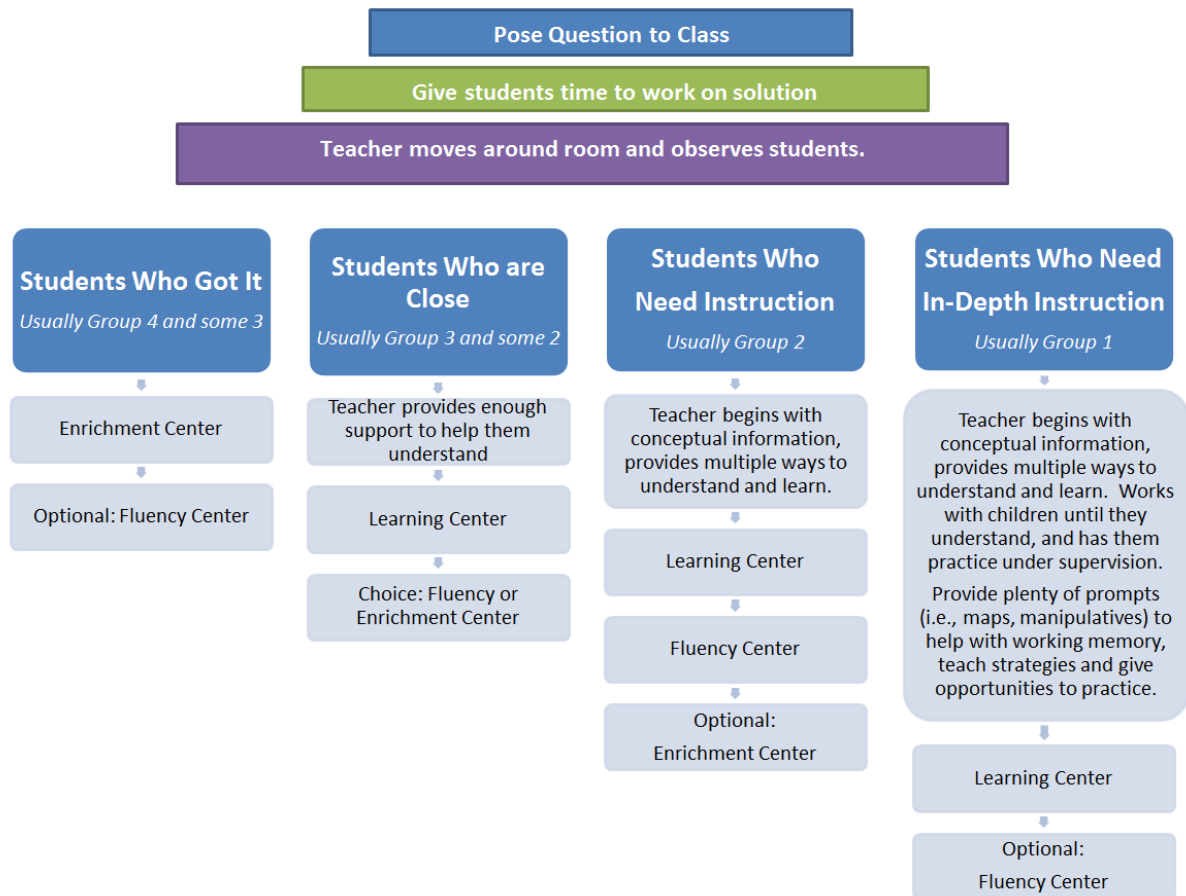
VIEW PROFILE

RESET

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8. EXAMPLE OF INSTRUCTION DIFFERENTIATION

One strategy for differentiating instruction is having centers available that are targeted towards each of the groups. This helps to ensure there are meaningful learning opportunities for all students, and helps free the teacher to work with the students that are in need of in-depth instruction. Teachers at the BCPS CogAT® workshop who utilize centers report a higher level of student engagement and lower level of behavioral problems. They also say that this type of instruction does require an initial investment but that the pay-off is well worth the investment. Plus, once planned and tested with students (some centers end up being unpopular and teachers change them), the lesson can be used again in subsequent years.



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9. UNIVERSAL WAYS TO SUPPORT GROWTH IN ALL STUDENTS

All students can be helped. CogAT® profile scores provide instructional recommendations geared towards the specific needs of the individual student. General reasoning ability at a certain point in time is the culmination of the interaction between nature and nurture, or genes and the home and prior school environment, up until that point in time. **Students can improve their skills and abilities by being challenged and supported in appropriate ways.**

It is critical that teachers hold high expectations for all of their students. Studies have shown that teacher expectation impacts student outcome. A study was conducted in 1965 wherein teachers were told that certain students were expected to show ‘surprising gains in intellectual development’ in the coming year. These students, who were randomly selected, did in fact experience more gains over that year compared to other students (Rosenthal & Jacobson, 1968). Since then, over 400 studies on various forms of expectancy impacting performance have been conducted with positive results, confirming this phenomenon (Rosenthal, 1994).

Cooper (1979) proposed a causal theory of why teacher expectation impacted student performance. Observations show that teachers create a warmer environment for brighter students, nodding their head and smiling more (Chaikin, Sigler, and Derlega, 1974). Teachers also focused more on “effort” when interacting with high-achieving students and control with low-achieving students. Praising effort rather than intelligence helps to increase student academic achievement.

Carol Dweck found that when students believe that they can do better academically through effort they take on challenges and persist at them. She found that students who have what she calls a “fixed mind-set”, meaning believe they are either smart or not smart, and that their intelligence does not change with effort, will reject opportunities to learn if they feel they might make a mistake. These students don’t accept challenge in an effort to hide the fact that they are not smart (Hong, Chiu, Dweck, Lin, & Wan, 1999; Mueller & Dweck, 1998). Students with a “growth mind-set” are not afraid to accept a challenge because they view it as an opportunity to learn and further develop their intelligence (Dweck, 2013).

Dweck also found that teachers can do something very simple to encourage a growth mind-set, and that is to praise effort rather than intelligence. In a study illustrating this phenomenon, students were given puzzles and after completing them either told, “You must be smart at these problems” or “You must have worked hard at these problems.” They were then offered a choice

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of a challenging or easy task, given a challenging task (regardless of what they chose), given an easy task, and then told to report on how they did. Students praised for being smart were more likely to ask for the easy task, struggle and lose their enjoyment working on the problem, then struggle with the easy problem, and then lie about how they did. Students praised for effort were more likely to ask for the challenging problem, persist at it and remain positive. They improved their performance on the easy task and reported how they did more honestly (10% lied vs. 40% in the other group). This experiment shows what a powerful negative impact a well-intentioned statement can have on a child. It also illustrates the power of a teacher's beliefs. Students who put effort into their work can improve (Dweck, 2007).

Teachers who have the tools to effectively support the cognitive development of their students along with the expectation that they will succeed can create a tremendous positive impact in their students' lives. After administering an intervention given to students transitioning to 7th grade that taught growth-mindset and some basic information about how working hard to learn increases connections in the brain, Dweck observed, "Students were riveted with this information. The idea that their intellectual growth was largely in their hands fascinated them. In fact, even the most disruptive students suddenly sat still and took notice, with the most unruly boy of the lot looking up at us and saying, "You mean I don't have to be dumb?" (Dweck, 2007, page 191).

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Appendix C. CogAT® Parent Letter Template

Dear Parent of _____,

Your child recently took the Cognitive Abilities Test (CogAT®). The CogAT® provides a rich source of information about the best way to support your child's learning. We are sharing your child's CogAT® scores with you as well as his or her 3rd grade teacher to help you both support your child's learning in the most effective way.

There are many ways that you and your child's teacher can use CogAT® scores to support your child's growth. For example, some children thrive in a highly structured learning environment, while others thrive when they can be self-directed learners who are given a great deal of flexibility. Some children do not readily think of strategies for solving problems, but are much more successful when taught strategies and given plenty of time to practice them. Other children, however, use their own strategies and actually do worse when they are required to use a different strategy.

Your child's CogAT® profile score is: _____

For detailed information about your child's learning characteristics and instructional suggestions that s/he will benefit from, go to www.cogat.com and type in the above profile score. A report will be generated with customized instructional suggestions for your child. We think you will find this information to be extremely helpful in understanding how your child learns, and how you can best support his or her learning. Using these recommendations, noticing how your child responds, and making adjustments based on responses will help you to help your child make learning more enjoyable and productive.

What does the CogAT® measure?

The CogAT® measures learned reasoning and problem-solving skills in three different areas: verbal, quantitative, and nonverbal. Reasoning skills develop gradually throughout a person's lifetime, and at different rates for different individuals. CogAT® does not measure such factors as effort, attention, motivation, and work habits, which contribute to school achievement as well.

The **verbal** battery measures a child's ability to remember and transform sequences of English words, to understand them, and to make inferences and judgements about them.

The **quantitative** battery tests the child's understanding of basic quantitative concepts and relationships that are essential for learning mathematics. Tasks measure both the understanding of relational concepts and the student's ability to discover relationships and figure out a rule or principle that explains them.

The **nonverbal** battery measures reasoning using pictures and geometric shapes. This reduces the impact of language on the student's score. The nonverbal battery also appraises the student's ability to use her/his cognitive resources in new situations.