THE SCHOOL DISTRICT OF
PHILADELPHIA

How Student Perceptions of College and Career Readiness Differ by Type of School District of Philadelphia High School, 2016-17 to 2018-19

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This brief explores the trends in student perceptions of college and career readiness at School District of Philadelphia (SDP) high schools, as well as the relationship between student perceptions and the type of public high school they attended. We use trends in student responses to questions about college and career readiness from the annual District-Wide Student survey for each year from 2016-17 to 2018-19 to examine these relationships.

Research Questions

Three research questions guided our analysis.
1. What are the overall trends in high school students' perceptions of their college and career readiness?
2. What are the trends in high school students' perceptions of college and career readiness by high school type (i.e., neighborhood, citywide admission, and special admission schools)?
3. What were the relationships between students' perceptions of college and career readiness and the type of high school students attended in 2016-17, 2017-18, and 2018-19?

Data Sources

Two sources of data were used to answer the exploratory research questions described above: student-level District-Wide Survey responses from students in grades 9-12 and student-level enrollment variables for high schools that serve students in grade 9-12.

District-Wide Survey

The Office of Research and Evaluation (ORE) administers the District-Wide Survey (DWS) to students in grades 3-12 in the spring of each school year.[1] Overall student response rates from 2016-17 to 2018-19 were consistently higher than 60% (Table 1).

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[1]For more information about the DWS, and to see all questions included in the survey each year, visit the DWS website: www.philasd.org/dws.

Table 1. District-Wide Survey student response rates over time

Year	Grade 3-12 students in All Schools	Grade 3-12 students in District Schools^	Grade 9-12 students in District Schools*
2016-17	55.9%	61.5%	42.1%
2017-18	54.4%	63.3%	48.1%
2018-19	60.7%	70.9%	57.4%

Source: Qlik District-Wide Survey Response Rate Detail Sheet, accessed May 28, 2020.

^Does not include Charter school students or Alternative school students.

*Because this study examines survey data from students in District schools in grades 9-12 only, it is important to consider the response rates for those students.

In 2018-19, ORE created two versions of the student DWS, one for students in grades 3-5 and another for students in grades 6-12. Prior to 2018-19, there was only one version of the survey for all students in grades 3-12. The difference between the two versions of the survey is that there are more questions on the grade 6-12 survey compared to the grade 3-5 survey. The grade 6-12 student DWS includes questions aligned to three key topics, or constructs, while the grade 3-5 survey only has questions aligned to two key topics. One construct on the grade 6-12 survey is *College and Career Readiness*. This analysis uses the eight DWS College and Career Readiness survey items included consistently from 2016-17 to 2018-19[2] to measure student perceptions of college and career readiness over time (See Table 2 for the 8 items in the College and Career Readiness construct, and see Box 1 for an explanation of how construct scores are calculated).

Table 2. Items that make up the College and Career Readiness Construct on the District-Wide Student Survey

Construct	Items
College and Career Readiness	How much do you agree with the following? (response options are: strongly disagree, disagree, agree, strongly agree) • In school, I learn about different careers • I know what I plan to do when I graduate from high school • I know what I have to do to get the career I want • I am learning skills in school that will help me when I am older • My school is helping to prepare me for college • I am learning skills in school that can help me make my community better • At my school, students have chances to join sports teams • At my school, students have chances to join clubs or groups outside of class

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[2] Each year, the items on the DWS are reviewed. Sometimes, during this review, questions that are no longer relevant are removed, and questions that have become relevant are added.

Box 1. How do we create District-Wide Survey construct scores?

Each construct or topic has a different number of items, so it's not possible to compare across the different topics without a common scale. Construct scores solve that problem by giving us a way to calculate a standardized score so that we can compare responses across different topics. To calculate scores, we first assign each possible response a numeric value, with the most positive response assigned the highest value and the least positive the lowest. Next, we add these values for all of the items in the construct. Finally, the sum is divided by the total count of survey items that comprising the construct (excluding those with missing values).

For each of the eight items in the **College and Career Readiness** construct, there are four response options (Strongly Disagree, Disagree, Agree, and Strongly Agree). Each response corresponds with a number from 0-3, with 0 being the most negative and 3 being the most positive (i.e., Strongly Disagree = 0 and Strongly Agree = 3). To calculate the construct score, we add up all the response values (each ranging from 0-3) and then divide by eight (the total number of items). See below for an example calculation in this construct:

Question	#1	#2	#3	#4	#5	#6	# 7	#8
Survey Response	Strongly Disagree	Agree	Strongly Agree	Disagree	Disagree	Agree	Agree	Disagree
Value	**0**	**2**	**3**	**1**	**1**	**2**	**2**	**1**

Example College and Career Readiness construct score: $\dfrac{0+2+3+1+1+2+2+1}{8}$ = **1.5**.

Student Enrollment Data

The second data source used for this brief was student enrollment data. Variables from this dataset were used to determine the type of high school each student was enrolled in at the time they completed the District-Wide Survey. There are three types of SDP High Schools: neighborhood schools, citywide admission schools, and special admission schools.

- **Neighborhood Schools:** These schools do not have entry requirements outside of capacity limits. Each student has right-of-access to the Neighborhood school associated with their place of residence but may also apply to a different Neighborhood school (or to a program within a Neighborhood school). Applications to Neighborhood schools are included in overall school selection participation rates. Please refer to Appendix A for a list of Neighborhood high schools included in this analysis.

- **Citywide Admission Schools:** These schools might have requirements for acceptable grades, attendance, and/or behavior. During the time period covered in this report, these requirements sometimes varied across schools and/or across years. Admission to these

schools requires an application and is not based on residence in a designated area. Please refer to Appendix A for a list of Citywide Admission high schools included in this analysis.

- **Special Admission:** As a group, these schools and programs have the most stringent entry criteria. Specific schools have customized requirements, but they generally only admit students who meet minimum standards for grades, standardized tests scores, attendance, and behavior. Like Citywide admission schools, admission requires application and is not dependent on the student's place of residence. Please refer to Appendix A for a list of Special Admission high schools included in this analysis.

In order to attend a Citywide or Special Admission high school, students must participate in the school selection process, which occurs each fall for the following year's enrollment. While most eighth graders participate in the school selection process, any student can enroll at their neighborhood school, regardless of whether they participated in the school selection process.[3]

Table 3. Number and percentage of high school students enrolled in each high school type by year (District only)

	2016-17	**2017-18**	**2018-19**
Neighborhood High School Students	66% (*n*=18,488)	65% (*n*=22,386)	65% (*n*=26,018)
Citywide Admission School Students	8% (*n*=2,245)	10% (*n*=3,396)	9% (*n*=3,824)
Special Admission School Students	26% (*n*=7,451)	25% (*n*=8,895)	26% (*n*=10,395)

Note: *n* indicates the total number of students included in the study sample for each category.
Source: Open Data - School Master Data Set: School-level Information Sheet, accessed March 12, 2020

Study Sample

We used specific student-level and school-level criteria to determine which students and schools to include in the study sample to ensure that the findings are valid and representative of high schools across SDP. If an individual student did not meet the student-level criteria, they were excluded from the study sample altogether, and if a school did not meet the school-level criteria, they were excluded from the study sample for that year.

Student-level criteria: We limited the sample to students enrolled in grades 9-12 in each of the three school years we examined (2016-17 to 2018-19) *and* who answered at least half of the College and Career Readiness construct survey items in each of the three years (i.e., they answered four or more of the eight items).

School-level criteria: Only schools with a 25% or higher DWS student response rate in each of the three school years we examined (2016-17 to 2018-19) were included.

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[3] For more information, please see our brief on the school selection process: School Selection in Philadelphia, 2015-16 to 2018-19: Applications for 9th Grade, ORE Research Brief, September 2019.

The distribution of schools across school types in our sample somewhat reflect the actual distribution of school types across the city; in each year, the fewest number of schools included in the sample were Citywide schools and in the greatest number of schools in the sample were Neighborhood schools (see Table 4). However, the distribution of students in the sample over-represents Special Admission high school students, compared to the actual distribution of students across different high school types, shown in Table 3. For example, in 2018-19, 26% of high school students were enrolled in a Special Admission high school, while 52% of the students in the 2018-19 sample were enrolled in a Special Admission high school. This discrepancy is due to the fact that more Special Admission school students completed the DWS, compared to students enrolled in Neighborhood and Citywide schools.

Table 4. Number of schools and students included in the sample, by school type and year

School Year	Total Number of High Schools Included in the Study Sample (n=number of students)	Neighborhood High Schools in the Study Sample (n=number of students)	Citywide High Schools in the Study Sample (n=number of students)	Special Admission High Schools in the Study Sample (n=number of students)
2016-17	32 (*n*=10,655)	14 (*n*=4,452)	7 (*n*=889)	11 (*n*=5,314)
2017-18	38 (*n*=12,178)	15 (*n*=4,252)	8 (*n*=1,345)	15 (*n*=6,581)
2018-19	43 (*n*=14,811)	19 (*n*=5,745)	7 (*n*=1,370)	17 (*n*=7,696)

Note: *n* indicates the total number of students included in the study sample for each category.
Source: Qlik District-Wide Survey Response Rate Detail Sheet, Qlik Total School Enrollment Yearly Sheet, and Open Data - School Master Data Set: School-level Information Sheet, accessed March 12, 2020

The proportion of students in the analytic sample in each grade level was consistent across the three years, with a slightly higher proportion of students in ninth compared to the grades 10 through 12 (Table 5). With one exception, student demographic characteristics were also consistent across the three years. The exception was the percentage of students in the sample with Free from Tape status (FFT), which decreased by eight percentage points from 2016-17 to 2017-18 and then increased by 16 percentage points from 2017-18 to 2018-19 (Table 6).[4]

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[4] Free from Tape (FFT) status refers to students who are eligible for free meals and not subject to verification, which includes, but is not limited to, students directly certified through participation in the Supplemental Nutrition Assistance Program (SNAP), Temporary Assistance for Needy Families (TANF), and Food Distribution Program for Indian Reservations (FDPIR). The changes from 2016-17 to 2017-18 in the percentage of students with FT may be due to differences in how the percentage is calculated in each year or related to data quality issues. As such, results regarding students with FT should be interpreted with caution.

Table 5. Number of students in each grade included in the sample, by year

School Year	Grade 9 Students Included in the Study Sample	Grade 10 Students Included in the Study Sample	Grade 11 Students Included in the Study Sample	Grade 12 Students Included in the Study Sample
2016-17 (*n*=10,655)	28% (*n*=2,934)	23% (*n*=2,457)	22% (*n*=2,365)	27% (*n*=2,899)
2017-18 (*n*=12,178)	28% (*n*=3,458)	26% (*n*=3,135)	20% (*n*=2,386)	26% (*n*=3,199)
2018-19 (*n*=14,811)	29% (*n*=4,300)	25% (*n*=3,701)	20% (*n*=2,940)	26% (*n*=3,870)

Note: *n* indicates the total number of students included in the study sample for each category.
Source: Qlik District-Wide Survey Response Rate Detail Sheet, Qlik Total School Enrollment Yearly Sheet, and Open Data - School Master Data Set: School-level Information Sheet, accessed March 12, 2020

Table 6. Demographic summary for students included in the sample, by year

School Year	Female	English Learner (EL)	Special Education	Economically Disadvantaged	Asian	Black / African American	Hispanic / Latino	White
2015-16 (*n*=10,655)	53%	9%	8%	53%	18%	45%	15%	17%
2016-17 (*n*=12,178)	56%	10%	9%	45%	15%	50%	16%	15%
2017-18 (*n*=14,811)	53%	10%	10%	61%	14%	50%	16%	15%

Note: *n* indicates the total number of students in the study sample for each category.
Source: Qlik Total School Enrollment Yearly Sheet, and Open Data - School Master Data Set: School-level Information Sheet

Findings

Question 1: What are the overall trends in high school student perceptions of their college and career readiness?

We examined the three-year trends in construct scores overall[5] and by grade level (Table 7). In each of the three years of our analysis (2016-17 through 2018-19), students in grades 9 and 12 consistently held more positive perceptions of their college and career readiness compared to students in grades 10 and 11, with 12th-grade students having the highest scores. In other words, the scaled scores for the College and Career Readiness construct are highest for 9th and 12th graders, compared to 10th and 11th graders (displayed in both Table 7 and Figure 1). From 2016-17 to 2018-19 the overall scaled score for the College and Career Readiness construct each year has been around 2.0 (on a scale of 0 to 3)(Table 7, Column b).

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[5] Overall average indicates an average score for the whole year that is not broken down by any subgroups.

Table 7. Overall College and Career Readiness average for each year by respondent grade level

School Year	Overall (b)	Grade 9 (c)	Grade 10 (d)	Grade 11 (e)	Grade 12 (f)
2016-17	1.98 (*n*=10,655)	2.00 (*n*=2,934)	1.92 (*n*=2,457)	1.95 (*n*=2,365)	2.03 (*n*=2,899)
2017-18	2.06 (*n*=12,178)	2.07 (*n*=3,458)	2.01 (*n*=3,135)	2.01 (*n*=2,386)	2.11 (*n*=3,199)
2018-19	1.94 (*n*=14,811)	1.97 (*n*=4,300)	1.90 (*n*=3,701)	1.90 (*n*=2,940)	1.99 (*n*=3,870)

Note: *n* indicates the total number of students included in the study sample for each category.
Source: Qlik District-Wide Survey Response Rate Detail Sheet, Qlik Total School Enrollment Yearly Sheet, and Open Data - School Master Data Set: School-level Information Sheet
How to Read this Table: The first number in each cell in columns b-f is the average College and Career Readiness construct score. The construct score is based on a scale of 0-3. For example, during the 2017-18 school year, 12th grade students rated their college and career readiness higher than 9th-11th grade students, with a construct score of 2.11.

Figure 1. Overall College and Career Readiness average for each year by respondent grade level
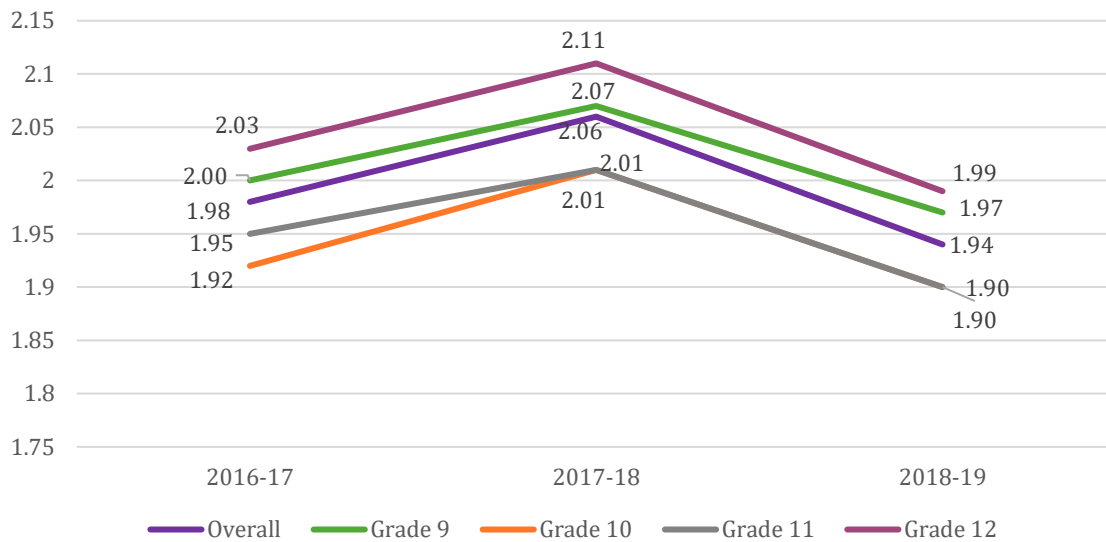
Note: Figure 1 is a visualization of the same data shown in Table 7.

We ran *t*-tests, a statistical analysis used to test the significance of difference of one group compared to another group, to examine the relationship between student perceptions of their college and career readiness and various demographic characteristics. Results suggest a relationship between student perceptions of their college and career readiness, race/ethnicity, and English Learner (EL) status. The most notable finding is that in each of the three years (2016-17 through 2018-19), EL students held more positive perceptions of their college and career readiness compared to non-EL students (Table 8, Column c). In 2017-18 and 2018-19, Black/African American students reported higher perceptions of college and career readiness (Table 8, Column g),

while White students held less positive perceptions (Table 8, Column i), relative to students of other race/ethnicities. In 2016-17 and 2017-18, Hispanic/Latino students held less positive perceptions of their college and career readiness compared to students of other races and ethnicities (Table 8, Column h).

Table 8. Student-level *t*-test (mean difference) analysis of the relationship between student perceptions of their college and career readiness and demographic background of the student population[6]

School Year	Female (b)	English Learner (c)	Special Education (d)	Economically Disadvantaged (e)	Asian (f)	Black / African American (g)	Hispanic/ Latino (h)	White (i)
2016-17	-0.01	0.03*	0.005	-0.01	0.01	0.02	-0.04**	-0.005
2017-18	0.04***	0.06***	0.02	-0.01	-0.02	0.07***	-0.03*	0.07***
2018-19	-0.02	0.05***	0.02	0.01	0.05***	0.06***	-0.008	-0.04**

*p-value<0.05; **p-value<0.01; ***p<0.001

How to Read this Table: The numbers in each cell represent the difference between the College and Career Readiness construct score of the students with each of the demographic characteristics listed in the first row and the overall construct score for all students. A positive value means that the score is greater than the overall average, and a negative value means it is less than the overall average.

Question 2: What are the general trends in high school students' perceptions of their college and career readiness by type of high school?

In each of the past two years (2017-18 and 2018-19), average student perceptions of college and career readiness were higher among students enrolled in Citywide or Special Admission schools compared to students enrolled in Neighborhood schools (Table 9). Average student perceptions of college and career readiness in all three types of high schools follow the general overall trends where the averages were between 2.00 - 2.10 (Figure 2).

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[6] In Table 8, we use p-values to indicate the significance of the results. A smaller p-value indicates a stronger evidence against the null hypothesis, or that the relationship is due to chance. Even when there are small differences, these differences can be statistically significant.

Table 9. Three years of College and Career Readiness construct scores broken out by the three types of high schools

School Year	Neighborhood High Schools	Citywide Schools	Special Admit Schools
2016-17	1.96 (*n=4,452*)	1.93 (*n=889*)	2.01 (*n=5,314*)
2017-18	2.05 (*n=4,252*)	2.09 (*n=1,345*)	2.05 (*n=6,581*)
2018-19	1.93 (*n=5,745*)	1.94 (*n=1,370*)	1.95 (*n=7,696*)

Note: *n* indicates the total number of students included in the study sample for each category.

Figure 2. College and Career Readiness construct score for each year by school type
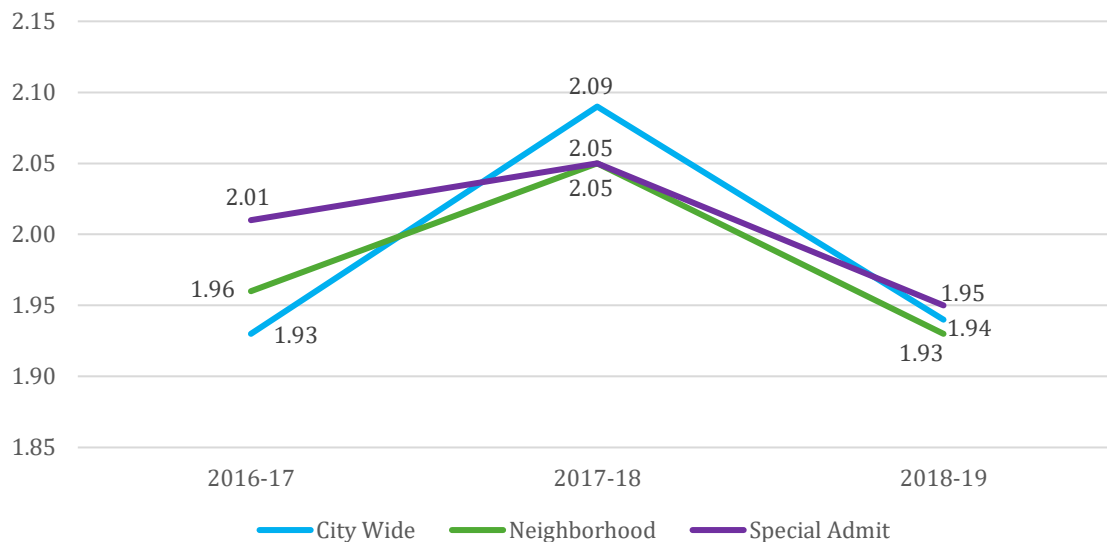
Note: Figure 2 is a visualization of the same data shown in Table 9.

Question 3: What was the relationship between student perceptions of college and career readiness and the type of high school respondents attended in 2016-17, 2017-18, and 2018-19?

We ran an ANOVA, a statistical analysis used to test the significance of differences across three or more groups, to examine the relationship between student perceptions of their college and career readiness and school type. In 2016-17 and 2018-19, high school students enrolled in Special Admission schools reported feeling slightly more prepared compared to students at Neighborhood schools (0.06*** and 0.02*, respectively; Table 10, Column d). Interestingly, in 2016-17, students in Special Admission schools reported feeling slightly more prepared for their future compared to students in the Citywide schools (Special Admission students' score is higher by 0.08***; Table 10, Column c, Row 2), but in 2017-18, the Special Admission students reported feeling slightly less

prepared compared to students in the Citywide schools (Special Admission students' score is lower by -0.05*; Table 10, Column c, Row 3).

Table 10. Student-level one-way ANOVA analysis of the relationship between student perceptions of their College and Career Readiness and the three types of high schools[7]

School Year	Citywide vs. Neighborhood (b)	Special Admit vs. Citywide (c)	Special Admit vs. Neighborhood (d)
2016-17	ns	0.08***	0.06***
2017-18	0.04*	-0.05*	ns
2018-19	ns	ns	0.02*

*p-value<0.05; **p-value<0.01; ***$p<0.001$

Note: *ns* represents results where there is not a statistically significant mean difference between the two groups.

How to read this table: The numbers in the cells show the difference in the College and Career Readiness construct scores between students enrolled the two types of schools listed in the top of the column. For example, in Column 3, titled Special Admit vs. Citywide, in 2016-17, students attending Special Admit schools reported higher average perceptions of college and career readiness than students attending Citywide schools, by 0.08. The *p*-value of *** tells you that this difference of 0.08 is statistically significant between the two groups.

Conclusion

ORE examined the College and Career Readiness construct scores from the annual student District-Wide survey to see if there were differences in students' perceptions of preparedness for college and career based on the type of high school they attend, their grade level, and their demographic characteristics. The insights from these analyses suggest that students in grades 9 and 12 hold more positive perceptions of their college and career readiness compared to students in grades 10 and 11. We also found that English Leaners (EL) and Black/ African American students hold more positive perceptions of their college and career readiness compared to non-EL students and students of other races and ethnicities. Further, students attending Citywide or Special Admission high schools hold a more positive perception of their college and career readiness compared to students attending Neighborhood schools.

For more information about the District-Wide Survey, please visit www.philasd.org/dws.

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[7] In Table 10, we use *p*-values to indicate the significance of the results. A smaller *p*-value indicates a stronger evidence against the null hypothesis, or that the relationship is due to chance. Even when there are small differences, these differences can be statistically significant.

Appendix A. Schools of each type included in the analysis for 2016-17, 2017-18, and 2018-19

School Year	School Type	School Name
2016-17	**Citywide Schools**	Building 21 Constitution High School Philadelphia Military Academy Robeson, Paul High School The LINC The U School The Workshop School
	Special Admission Schools	Academy at Palumbo Arts Academy at Benjamin Rush Bodine, William W. High School Central High School Engineering & Science High Franklin Learning Center Lankenau High School Masterman, Julia R. High School Parkway-Northwest High School Science LDSHP Academy @ Beeber Science Leadership Academy
	Neighborhood Schools	Bartram, John High School Fels, Samuel High School Furness, Horace High School Kensington CAPA Kensington Health Sciences Kensington High School King, Martin Luther High School Lincoln, Abraham High School Northeast High School Sayre, William L. High School South Philadelphia H.S. Strawberry Mansion High School Washington, George High School West Philadelphia High School
2017-18	**Citywide Schools**	Building 21 Constitution High School High School of the Future Philadelphia Military Academy Robeson, Paul High School The LINC The U School The Workshop School
	Special Admission Schools	Academy at Palumbo Arts Academy at Benjamin Rush Bodine, William W. High School

School Year	School Type	School Name
		Central High School Creative and Performing Arts Franklin Learning Center Girard Academic Music Program High School of Engineering and Science Hill-Freedman World Academy Lankenau High School Masterman, Julia R. High School Parkway Northwest High School Parkway West High School Philadelphia High School for Girls Science Leadership Academy (SLA)
	Neighborhood Schools	Bartram, John High School Fels, Samuel High School Frankford High School Franklin, Benjamin High School Furness, Horace High School Kensington Health Sciences Academy Kensington High School Kensington CAPA King, Martin Luther High School Penn Treaty High School Roxborough High School South Philadelphia High School Strawberry Mansion High School Vaux High School – Big Picture Washington, George High School
2018-19	**Citywide Schools**	Building 21 Constitution High School High School of the Future Robeson, Paul High School Philadelphia Military Academy The LINC The U School
	Special Admission Schools	Academy at Palumbo Arts Academy at Benjamin Rush Central High School Creative Performing Arts Engineering & Science High Franklin Learning Center Girard Academic Music Program Hill-Freedman World Academy Julia R. Masterman High School Lankenau High School Motivation High School Parkway C.C. Middle College

School Year	School Type	School Name
		Parkway-Northwest High School
		Parkway West High School
		Science Leadership Academy
		Science LDSHP Academy @ Beeber
		William W. Bodine High School
	Neighborhood Schools	Abraham Lincoln High
		Benjamin Franklin High School
		Frankford High School
		Furness, Horace High School
		George Washington High
		Jon Bartram High School
		Kensington CAPA
		Kensington Health Sciences
		Kensington High School
		Martin L. King High School
		Overbrook High School
		Penn Treaty High School
		Roxborough High School
		Samuel S. Fels High School
		Sayre High School
		South Philadelphia High School
		Strawberry Mansion High School
		Vaux High School – Big Picture
		West Philadelphia High School