

A New Way to Measure School-Level Linguistic Diversity

Many staff in the Office of Evaluation, Research, and Accountability contributed to collecting, analyzing, and summarizing the information that appears in this brief. Major contributions were made by Helena Pylvainen, M.P.P., Mark Lewis, Ph.D., and Theodore Wills, Ph.D.

Why Linguistic Diversity Matters

The School District of Philadelphia (SDP) serves a diverse student population, and language is a key dimension of this diversity. Students enrolled in District-run schools in 2021-22 speak 155 different languages at home, and the number of English Learners (ELs) in the District is growing: in 2021-22 there were more than 17,000 ELs enrolled in the District, compared to 12,500 in 2014-15.¹

However, linguistic diversity is not distributed uniformly across schools, and some schools serve students with a much wider variety of linguistic backgrounds than others, requiring different resources and support strategies as a result. Instructional approaches for ELs, such as formation of same-language groups or making connections to first language vocabulary and grammar, may be more suitable in schools with lower linguistic diversity, or require adaptations in schools with greater linguistic diversity. Efforts to engage parents and guardians may be more complex in schools where families speak a greater variety of languages. Linguistic diversity may also affect the broader culture of the school and the District as a whole, with implications for equity and inclusion.

Definition of the Linguistic Diversity Indicator

Historically, the most commonly used metric of linguistic diversity has been the number of different languages spoken by ELs in a given school. However, this metric is insufficient for understanding a school's linguistic context. For example, a school with 100 ELs where 97% speak one language and the remaining three students each speak a different language would be indistinguishable from a school where 100 ELs are evenly divided among four languages. This approach also means a data entry error for a single student carries the same weight as 100 students correctly assigned to a particular language.

¹ These figures exclude students from Charters and contracted schools.

To better describe the predominant composition of the EL population at a given school, the Office of Research and Evaluation (ORE) has developed a new indicator, as follows:

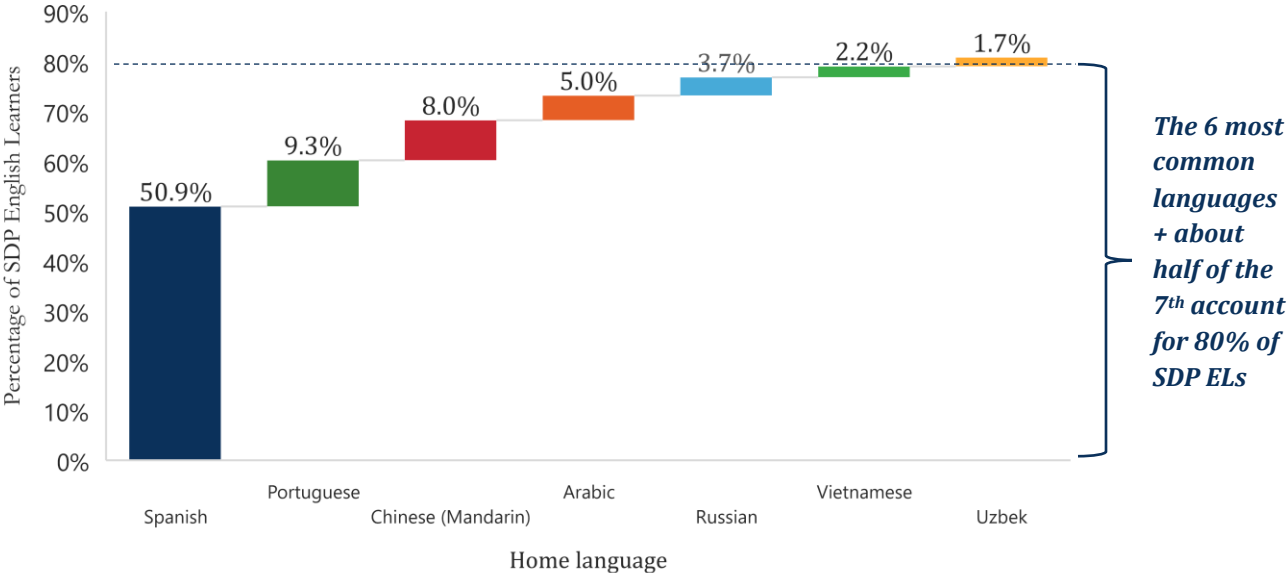
SDP Linguistic Diversity Indicator (LDI):
the number of home languages required to account for 80% of English Learners in a given school or population

Based on this formula, schools (or groups of schools) with greater linguistic diversity will have higher values, and those with less diversity in home languages will have lower values.

Linguistic Diversity: 2021-22 District Snapshot

Calculating the linguistic diversity of the EL population across SDP as a whole provides a useful illustration of how the indicator works. More than half of ELs in the District (50.9%) speak Spanish at home. Adding the next five most common home languages (Portuguese, Chinese, Arabic, Russian and Vietnamese) accounts for an additional 28.1% of students, for a total of 79.0% of ELs (Figure 1). Since the next most common language, Uzbek, is spoken by 1.7% of ELs, only about half of this subgroup is needed to reach 80% of students. Since more than 6 but fewer than 7 full language groups are needed to account for 80% of ELs, **the SDP LDI in 2021-22 is 6.55.**

Figure 1. Home languages required to account for 80% of ELs enrolled in SDP schools, 2021-22



Source: Qlik Enrollment Oct 1 Snapshot App, accessed February 3, 2022

In 2021-22, the LDI in District schools ranged from 0.80 to 8.81, and **the average LDI across District schools was 2.60.**² Many schools received values below 1.0 because only one language is needed to account for the home languages of 80% of their ELs. In the case of these schools, the distance below 1.0 represents the extent to which this single language accounts for even higher proportions of the EL population. A total of 32 schools received the lowest possible LDI value (0.80) because 100% of EL students had the same home language. A table showing the LDI for each District school is available in Appendix A.

Use and Applications

To obtain a clear picture of the backgrounds and needs of EL students in a given school, the linguistic diversity indicator must be considered along with the size of the EL population and the specific home languages most frequently spoken. Table 1 provides this information for two schools with similarly high LDI values: Northeast High School and Science Leadership Academy (SLA) at Beeber. Although both schools rank among the top 10% of schools in terms of linguistic diversity, they have distinct EL student populations and needs. Northeast has more than 800 EL students, whereas SLA Beeber has just 20. The two schools also differ when it comes to the predominant languages spoken at home: the two most common home languages of ELs at Northeast are Spanish and Portuguese, while the two most common at SLA Beeber are Bengali and Arabic. All three data points—the size of the EL population, the diversity of home languages, and the specific home languages spoken—have implications for the resources and strategies needed to best serve EL students at each school.

SDP 2021-2022 Linguistic Diversity Indicator values

SDP LDI: 6.55

Average School LDI: 2.60

Why is the SDP LDI so much higher than the average school LDI? Students of different backgrounds are not evenly distributed across schools. Some communities are clustered in specific parts of the city, and thus students speaking a given home language are often concentrated in specific sets of schools. Many schools serve mainly EL students from 1-3 particular linguistic backgrounds, and therefore receive relatively low LDI values. However, the District LDI draws from the full range of home languages spoken by all students, regardless of whether they are clustered in specific schools, and thus the broader SDP LDI is much higher than that of the average school.

² Nine schools were not scored because they did not have any students designated as ELs in 2021-22. These are noted as “n/a” in Appendix A.

Table 1. Two SDP schools with high linguistic diversity and contrasting EL populations, 2021-22

School	Number of ELs	Number of Home Languages Spoken by ELs	Language Groups Required to Account for 80% of ELs	LDI
Northeast High School	858	41	Spanish (35.0%), Portuguese (17.6%), Arabic (9.3%), Chinese – Mandarin (8.9%), Bengali (4.7%), Vietnamese (2.2%), Urdu (2.2%), Albanian (1.9%)	7.09
Science Leadership Academy at Beeber	20	11	Bengali (34.5%), Arabic (17.2%), Spanish (10.3%), French (6.9%), Mandingo (6.9%), Amharic (6.9%)	5.60

Source: Qlik Enrollment Oct 1 Snapshot App, accessed February 3, 2022

The LDI provides additional information about the context of ELs at SDP schools, which could be used in a number of ways. For example, the indicator could inform selection of schools for implementation of particular EL support approaches suitable for more or less homogenous EL populations, as the case may be. Linguistic diversity, along with information about the size of the EL population, could be used to inform staffing and resource allocation. The LDI could also be useful for research purposes; for example, investigation of the role of linguistic diversity in school climate, efforts to improve equity and inclusion, or the effectiveness of various instructional practices.

Appendix A. Linguistic Diversity Indicator (LDI) value for school (District only), 2021-22 school year

School	Number of ELs as of October 1, 2021	Number of Home Languages (ELs) as of October 1, 2021	Linguistic Diversity Indicator (LDI)
Academy at Palumbo	75	13	4.20
Adaire, Alexander School	2	1	0.80
Allen, Dr. Ethel School	0	0	n/a - no ELs
Allen, Ethan School	300	18	2.63
AMY 5 at James Martin	11	5	2.80
AMY Northwest	1	1	0.80
Anderson, Add B. School	5	4	3.00
Arthur, Chester A. School	1	1	0.80
Arts Academy at Benjamin Rush	14	10	7.20
Bache-Martin School	26	4	0.95
Baldi Middle School	410	30	7.63
Barry, John Elementary School	6	4	2.80
Barton School	149	6	0.86
Bartram, John High School	84	18	6.40
Bethune, Mary McLeod School	44	2	0.82
Blaine, James G. School	2	2	1.60
Blankenburg, Rudolph School	5	2	1.00
Bodine, William W. High School	41	11	3.70
Bregy, F. Amedee School	11	4	1.95
Bridesburg School	21	8	3.80
Brown, Henry A. School	28	5	1.91
Brown, Joseph H. School	39	12	6.10
Bryant, William C. School	2	2	1.60
Building 21	15	5	2.00
Carnell, Laura H. School	157	13	1.98
Cassidy, Lewis C Academics Plus	12	5	2.60
Catharine, Joseph School	74	15	5.40
Cayuga School	97	1	0.80
Central High School	18	7	3.40
Childs, George W. School	114	9	2.11
Clemente, Roberto Middle Schl	61	3	0.84
Comegys, Benjamin B. School	4	2	1.20
Comly, Watson School	155	19	7.29
Constitution High School	21	9	4.80
Conwell, Russell Middle School	22	3	0.93

School	Number of ELs as of October 1, 2021	Number of Home Languages (ELs) as of October 1, 2021	Linguistic Diversity Indicator (LDI)
Cooke, Jay Elementary School	25	7	2.00
Cook-Wissahickon School	13	5	2.40
Coppin, Fanny Jackson	100	6	0.98
Cramp, William School	76	1	0.80
Creative and Performing Arts	18	9	5.40
Crossan, Kennedy C. School	39	11	5.60
Day, Anna B. School	2	1	0.80
De Burgos, J. Elementary	165	2	0.80
Decatur, Stephen School	105	19	7.60
Dick, William School	1	1	0.80
Disston, Hamilton School	113	10	1.89
Dobbins, Murrell High School	25	4	0.95
Dobson, James School	3	3	2.40
Duckrey, Tanner School	2	1	0.80
Dunbar, Paul L. School	10	2	0.89
Edison, Thomas A. High School	261	6	0.82
Edmonds, Franklin S. School	0	0	n/a - no ELs
Elkin, Lewis School	155	1	0.80
Ellwood School	1	1	0.80
Emlen, Eleanor C. School	1	1	0.80
Engineering & Science High	9	4	2.20
Farrell, Louis H. School	341	24	5.40
Fell, D. Newlin School	187	15	2.55
Fels, Samuel High School	305	19	3.67
Feltonville Arts & Sciences	148	6	0.86
Feltonville Intermediate	134	5	0.86
Finletter, Thomas K. School	38	7	2.60
Fitzpatrick, A. L. School	74	16	4.64
Forrest, Edwin School	167	15	2.82
Fox Chase School	47	12	5.20
Frank, Anne School	382	27	7.97
Frankford High School	216	18	0.98
Franklin Learning Center	159	25	7.05
Franklin, Benjamin High School	66	12	3.93
Franklin, Benjamin School	132	16	2.94
Furness, Horace High School	380	18	4.37
Gideon, Edward School	1	1	0.80

School	Number of ELs as of October 1, 2021	Number of Home Languages (ELs) as of October 1, 2021	Linguistic Diversity Indicator (LDI)
Girard Academic Music Program	8	7	5.40
Girard, Stephen School	29	9	3.73
Girls, Phila High School for	41	12	5.60
Gompers, Samuel School	5	2	1.00
Greenberg, Joseph School	75	15	6.33
Greenfield, Albert M. School	21	8	4.90
Hackett, Horatio B. School	4	4	3.20
Hamilton, Andrew School	5	2	1.50
Hancock Demonstration School	60	13	4.50
Harding, Warren G. Middle Sch	121	13	1.00
Harrington, Avery D. School	2	2	1.60
Hartranft, John F. School	22	1	0.80
Heston, Edward School	3	3	2.40
High School of the Future	20	8	5.00
Hill-Freedman World Academy	12	5	2.87
Holme, Thomas School	85	15	3.80
Hopkinson, Francis School	143	6	0.95
Houston, Henry H. School	1	1	0.80
Howe, Julia Ward School	5	4	3.00
Hunter, William H. School	59	2	0.81
Jenks Academy Arts & Sciences	3	2	1.40
Jenks, Abram School	61	6	2.65
Juniata Park Academy	239	5	0.98
Kearny, Gen. Philip School	10	1	0.80
Kelley, William D. School	0	0	n/a - no ELs
Kelly, John B. School	0	0	n/a - no ELs
Kenderton Elementary	6	1	0.80
Kensington CAPA	76	5	0.86
Kensington Health Sciences	117	5	0.84
Kensington High School	95	6	0.88
Key, Francis Scott School	287	16	2.64
King, Martin Luther High Sch.	14	5	2.20
Kirkbride, Eliza B. School	243	8	1.02
Lamberton, Robert E Elementary	19	7	3.20
Lankenau High School	6	5	3.80
Lawton, Henry W. School	65	10	2.29
Lea, Henry C.	62	15	6.53

School	Number of ELs as of October 1, 2021	Number of Home Languages (ELs) as of October 1, 2021	Linguistic Diversity Indicator (LDI)
Lincoln, Abraham High School	513	30	2.95
Lingelbach, Anna L. School	17	5	2.53
Locke, Alain School	22	6	2.87
Loesche, William H. School	439	26	4.27
Logan, James School	4	2	1.20
Longstreth, William C. School	8	3	1.70
Lowell, James R. School	82	13	4.37
Ludlow, James R. School	9	2	1.10
Marshall, John School	24	4	0.96
Marshall, Thurgood School	110	8	0.98
Mastbaum, Jules E. High School	94	7	0.86
Masterman, Julia R. High School	7	4	2.80
Mayfair School	797	20	2.71
McCall, Gen. George A. School	149	13	1.35
McCloskey, John F. School	3	3	2.40
McClure, Alexander K. School	119	1	0.80
McDaniel, Delaplaine School	12	5	2.80
McKinley, William School	30	3	0.92
McMichael, Morton School	1	1	0.80
Meade, Gen. George G. School	1	1	0.80
Meehan, Austin Middle School	60	13	3.67
Meredith, William M. School	5	4	3.00
Mifflin, Thomas School	2	2	1.60
Mitchell Elementary School	3	3	2.40
Moffet, John School	36	2	1.49
Moore, J. Hampton School	349	25	4.66
Morris, Robert School	0	0	n/a - no ELs
Morrison, Andrew J. School	97	6	0.85
Morton, Thomas G. School	49	12	5.10
Motivation High School	40	14	6.00
Munoz-Marin, Hon Luis School	120	2	0.81
MYA-Middle Years Alternative	13	5	3.20
Nebinger, George W. School	74	5	0.93
Northeast Community Propel Academy	384	23	2.71
Northeast High School	858	41	7.09
Olney Elementary School	201	10	1.26
Overbrook Educational Center	2	2	1.60

School	Number of ELs as of October 1, 2021	Number of Home Languages (ELs) as of October 1, 2021	Linguistic Diversity Indicator (LDI)
Overbrook Elementary School	0	0	n/a - no ELs
Overbrook High School	8	3	1.70
Parkway Center City Middle College High School	12	6	3.60
Parkway West High School	9	6	4.20
Parkway-Northwest High School	5	3	2.00
Patterson, John M. School	38	12	5.47
Peirce, Thomas M. School	4	1	0.80
Penn Alexander School	63	13	4.57
Penn Treaty High School	29	4	1.07
Pennell, Joseph Elementary	3	3	2.40
Pennypack House School	2	2	1.60
Pennypacker, Samuel School	2	2	1.60
Penrose School	45	16	7.00
Phila Juv Justice Svcs Ctr	3	1	0.80
Phila Learning Academy South	2	1	0.80
Philadelphia Military Academy	40	6	1.33
Philadelphia Virtual Academy	105	16	3.83
Pollock, Robert B. School	99	18	6.07
Potter-Thomas School	102	1	0.80
Powel, Samuel School	3	2	1.40
Prince Hall School	0	0	n/a - no ELs
Randolph Technical High School	12	3	0.96
Rhawnhurst School	224	23	5.03
Rhodes Elementary School	2	1	0.80
Richmond School	38	6	1.95
Robeson, Paul High School	15	6	3.50
Roosevelt Elementary School	8	3	1.70
Rowen, William School	1	1	0.80
Roxborough High School	14	4	1.73
Saul, Walter B. High School	16	6	2.90
Sayre, William L. High School	7	5	3.60
Science Leadership Academy	18	8	4.40
Science Leadership Academy at Beeber	29	11	5.60
Science Leadership Academy MS	4	3	2.20
Sharswood, George School	57	10	3.40
Shawmont School	15	7	4.00
Sheppard, Isaac A. School	34	1	0.80

School	Number of ELs as of October 1, 2021	Number of Home Languages (ELs) as of October 1, 2021	Linguistic Diversity Indicator (LDI)
Sheridan, Philip H. School	78	3	0.83
Solis-Cohen, Solomon School	571	18	2.66
South Philadelphia H.S.	169	20	3.70
Southwark School	345	14	2.13
Spring Garden School	74	1	0.80
Spruance, Gilbert School	375	29	3.20
Stanton, Edwin M. School	4	1	0.80
Stearne, Allen M. School	45	2	0.82
Steel, Edward School	5	1	0.80
Strawberry Mansion High School	0	0	n/a - no ELs
Sullivan, James J. School	51	7	0.97
Swenson Arts/Tech High School	56	15	4.70
Taggart, John H. School	192	16	5.42
Taylor, Bayard School	125	2	0.81
The LINC	41	4	0.86
The U School	9	3	1.20
The Workshop School	9	5	3.20
Tilden Middle School	56	13	4.40
Vare-Washington Elementary	125	13	n/a - no ELs
Vaux High School	1	1	0.80
Wagner, Gen. Louis Middle Sch.	16	7	3.80
Waring, Laura W. School	4	3	2.20
Washington, George High School	440	38	8.81
Washington, Grover Jr. Middle	82	9	3.58
Washington, Martha School	3	3	2.40
Webster, John H. School	40	2	0.82
Welsh, John School	34	2	0.82
West Philadelphia High School	15	9	6.00
Widener Memorial School	8	2	0.91
Willard, Frances E. School	53	3	0.85
Wilson, Woodrow Middle School	446	28	4.67
Wright, Richard R. School	3	1	0.80
Ziegler, William H. School	84	14	1.92

Source: Qlik Enrollment Oct 1 Snapshot App: home languages of enrolled EL students for District-run schools in 2021-22, accessed February 3, 2022