Idaho Standards Achievement Test (ISAT) Effect Sizes
English Language Arts and Mathematics
Grades 3-8, 2015 through 2025

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This "data display" focused on effect size statistics to explore the progress of Idaho students (i.e., annual gains or losses) from the first administration of the SBAC version of the Idaho Standards Achievement Tests from 2015 to 2025. ISAT was not administered in 2020 because Idaho's schools were closed by Idaho's COVID-pandemic policy.

The Idaho State Department of Education (SDE) via a public information request provided ISAT statewide data for grades 3-8. The SDE provided statewide data for (1) the number of students who had valid ISAT scale scores - redacting[1] data for students attending small schools, (2) the average or mean scale score, and (3) the standard deviation.

This study applied the Cohen *d* formula to compare the average (mean), standard deviation, and number of students in a grade this year (e.g., third grade in 2025) with the previous year (e.g., third grade in 2024) to estimate whether a subject-grade group experienced a gain ($d > 0$), maintained ($d = 0$), or had a loss ($d < 0$) in the English language arts and mathematics skills that the ISAT measures.

An effect size (i.e., magnitude of the difference between two means) is calculated by dividing the difference between two means by their pooled standard. An effect size (i.e., magnitude of the difference between two means) is

[1] In response to the public records request for all students statewide in grades 3 through 8 who had valid ISAT scores, the SDE decided to redact the scores for students in small districts, ostensibly to protect the privacy of those students. However, individual students, schools, and/or districts cannot be identified from the requested student statewide grade-level data consisting of the number of students statewide, the average scale score for students statewide, and the standard deviation for those students statewide. The only avenue suggested for obtaining the redacted scores was to petition the District Court.

calculated by dividing the difference between two means by their pooled standard deviation.

The Cohen *d* computational formula is:

The Cohen d is defined as the difference between two means divided by a standard deviation for the data, or

$$d = \frac{\bar{x}_2 - \bar{x}_1}{s}$$

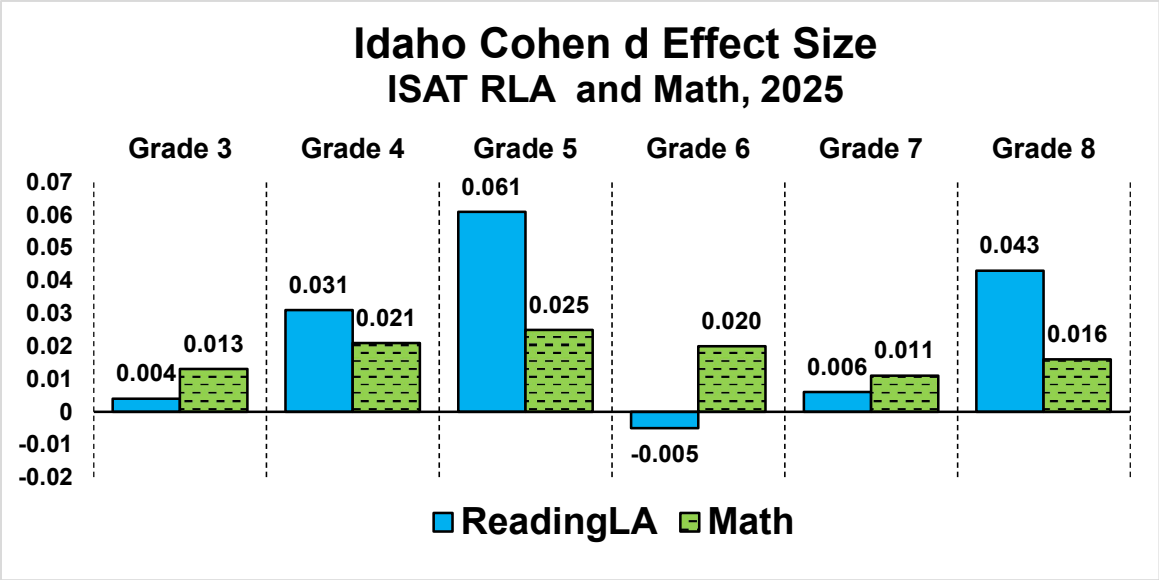
Jacob Cohen defined s (the pooled standard deviation) as

$$s = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

By Cohen's standards the effect size estimates for ISAT are small but they are comparable to those observed in similar analyses of other standardized tests.

ALL GRADE/SUBJECT EFFECT SIZE GRAPH FOR ISAT 2025

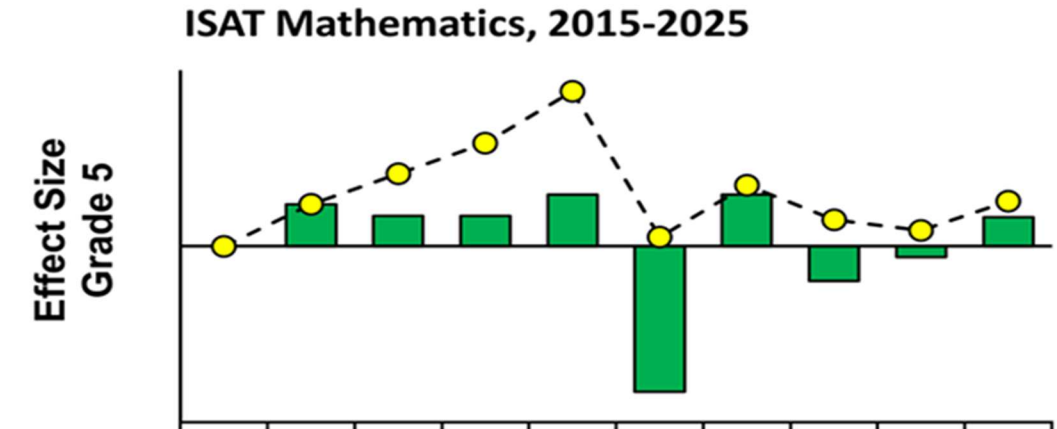
Effect sizes can be illustrated using bar graphs where the bars represent the magnitude of change over time. **Effect sizes bars across subjects and/or grade levels can be compared *ONLY when they are plotted using the same* scale** as illustrated in this graph of Reading Language Arts and Mathematics for 2005 across the grades 3-8 using a scale from -0.02 to +0.07.



READING THE LONGITUDINAL EFFECT SIZE GRAPHS

Bars. The purpose of the longitudinal maps is to **identify a pattern** of academic gain or loss in one subject over time (reading language arts or mathematics). On the ISAT longitudinal maps, the blue or green bars represent the effect size (the magnitude of gain or loss experienced by students this year when compared with the students in the same grade last year).

Dots. The yellow dots are useful to compare a group's achievement level each year with the group's achievement level in 2015. The table at the bottom of the graph displays the Cohen d effect size value for each spring assessment and the cumulative effect size from 2015.



	2015	2016	2017	2018	2019	2021	2022	2023	2024	2025
Annual		0.036	0.026	0.026	0.044	-0.124	0.044	-0.029	-0.009	0.025
Trend	0	0.036	0.062	0.088	0.132	0.008	0.052	0.023	0.014	0.039

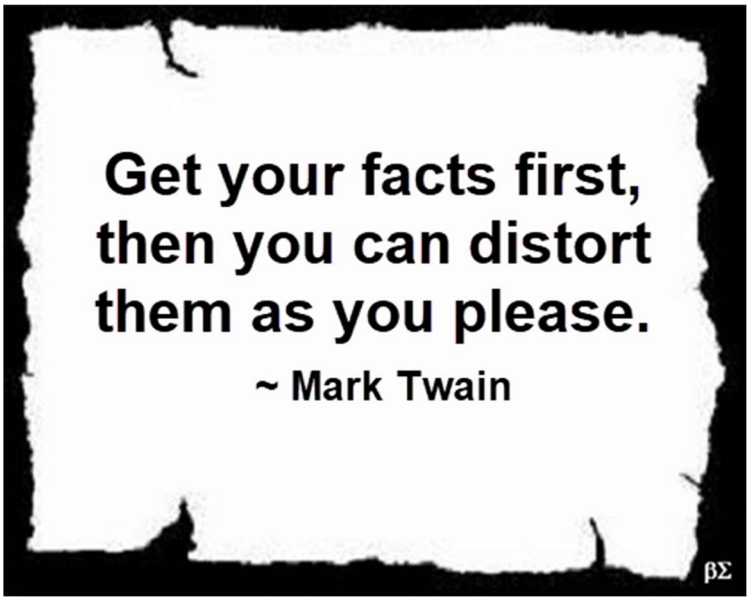
The bar for 2021 on the effect size graph illustrates the "immediate impact of the pandemic" on the group's overall performance, while the bar for 2022 illustrates the one-year post pandemic performance whether it continued to decline, to rebound, or somewhere in between. The effect size results from 2016 to 2019 provide the reader with a context for understanding the magnitude of the achievement gain or loss related to the pandemic.

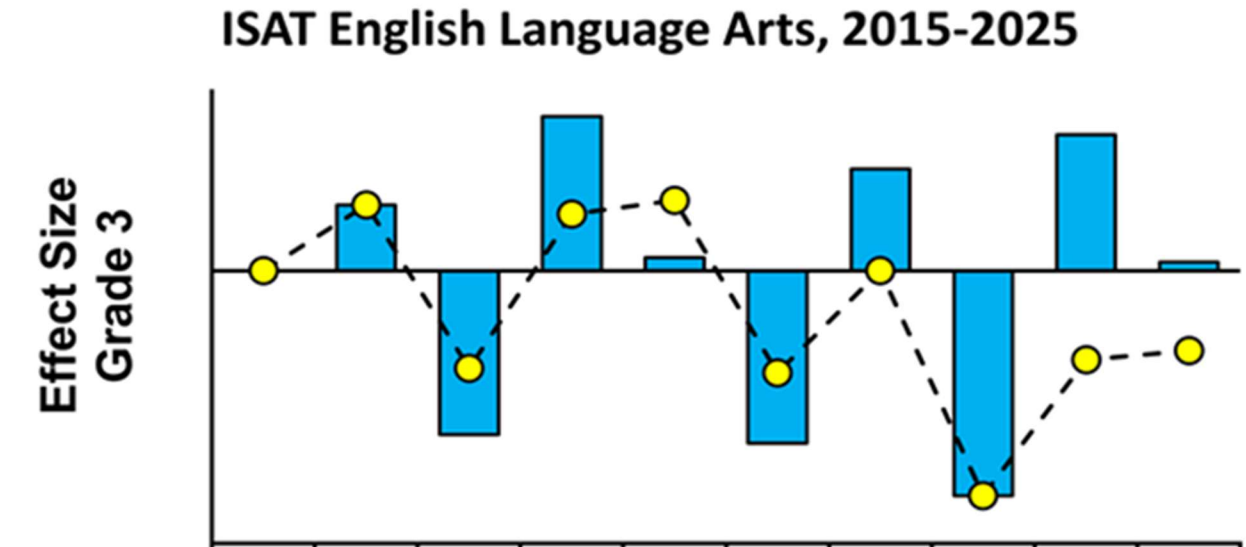
Presentation of the ISAT 2025 Effect Sizes

Twelve longitudinal graphs are presented in Figure 1 (3rd grade Reading LA) through Figure 12 (8th grade math).

Please be aware that a same-sized bar in any two of these graphs may or may not represent equal effect sizes. Such "equality" would have required an identical scale to be used for both graphs. That is not the case in the longitudinal graphs displayed below. Excel was allowed to select a scale that would best fill the plot area, so each graph ended up with a unique Excel-developed scale. Nonetheless, if desired, the magnitudes of the annual effect sizes across subjects or grades may be compared using the Cohen *d* coefficients in the graph's tables.

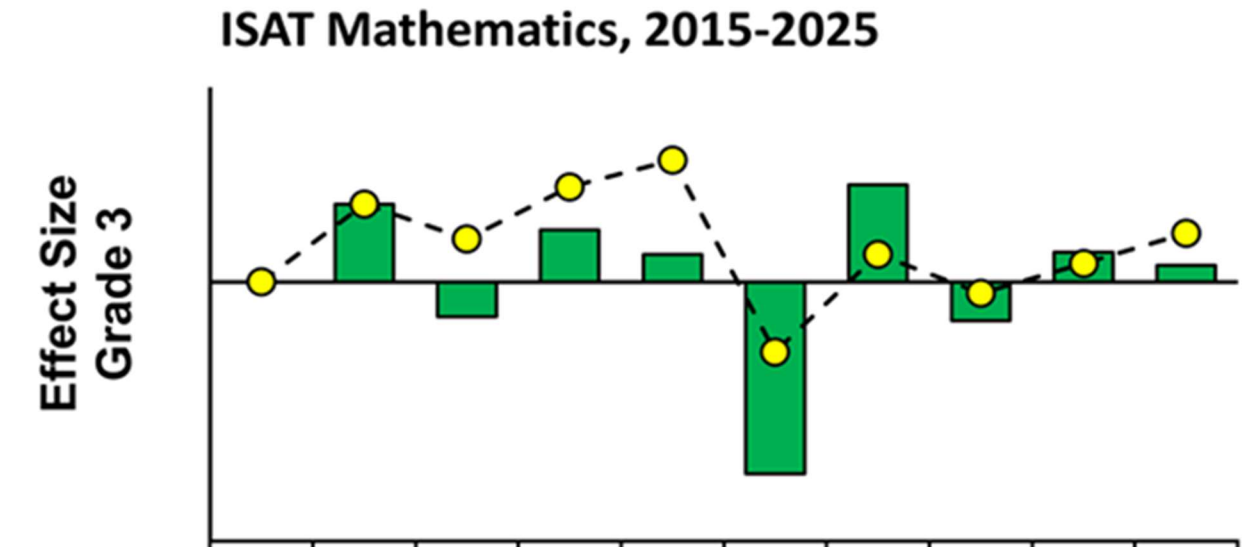
NOTE. Narratives haven't been provided for any of these twelve charts. It might be useful for the reader to have paper and pen at hand for recording your thoughts and questions as you view the graphs . . .





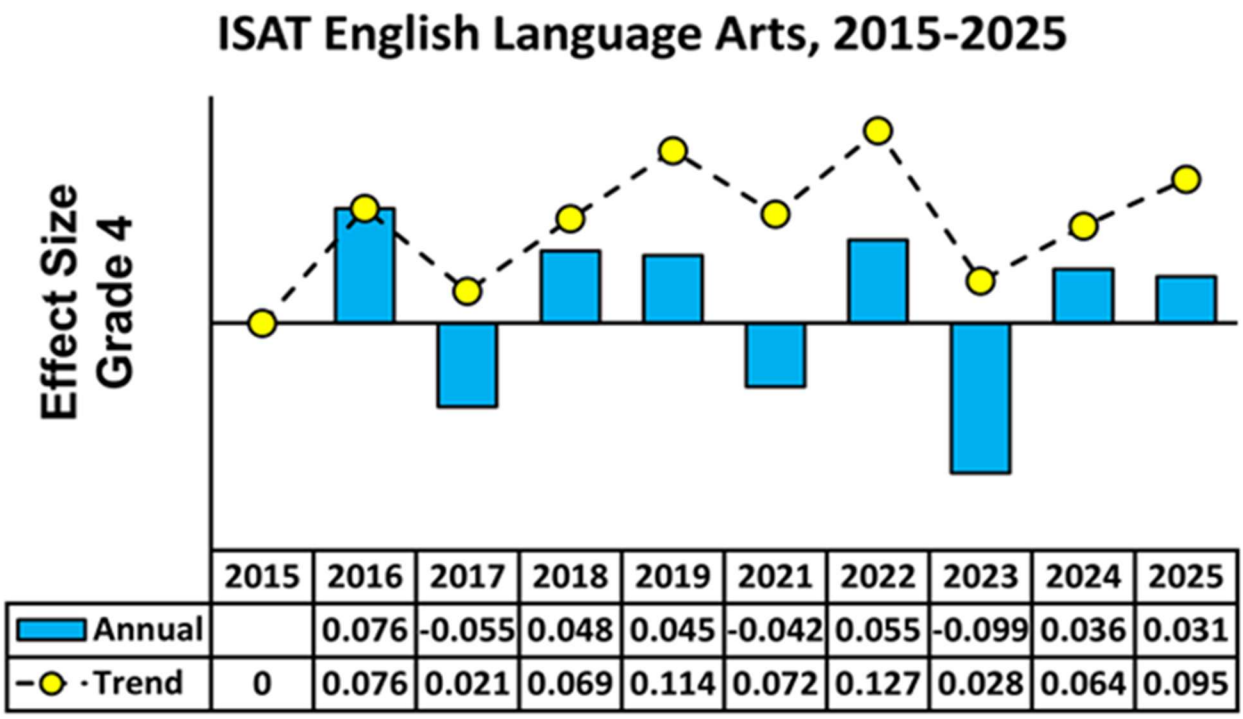
	2015	2016	2017	2018	2019	2021	2022	2023	2024	2025
Annual		0.029	-0.072	0.068	0.006	-0.076	0.045	-0.099	0.060	0.004
Trend	0	0.029	-0.043	0.025	0.031	-0.045	0.000	-0.099	-0.039	-0.035

Figure 1. ISAT Reading Language Arts Effect Sizes for Grade 3, 2015-2025



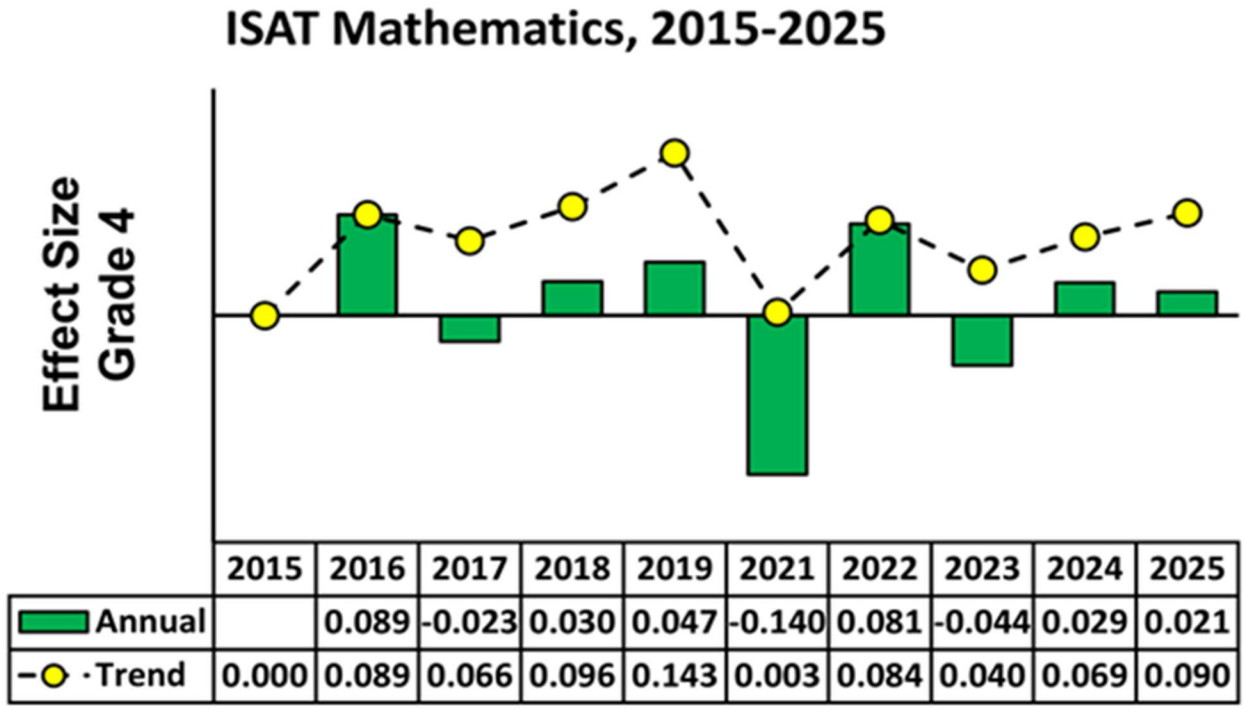
	2015	2016	2017	2018	2019	2021	2022	2023	2024	2025
Annual		0.060	-0.027	0.040	0.021	-0.148	0.075	-0.030	0.023	0.013
Trend	0.000	0.060	0.033	0.073	0.094	-0.054	0.021	-0.009	0.014	0.037

Figure 2. ISAT Mathematics Effect Sizes for Grade 3, 2015-2025



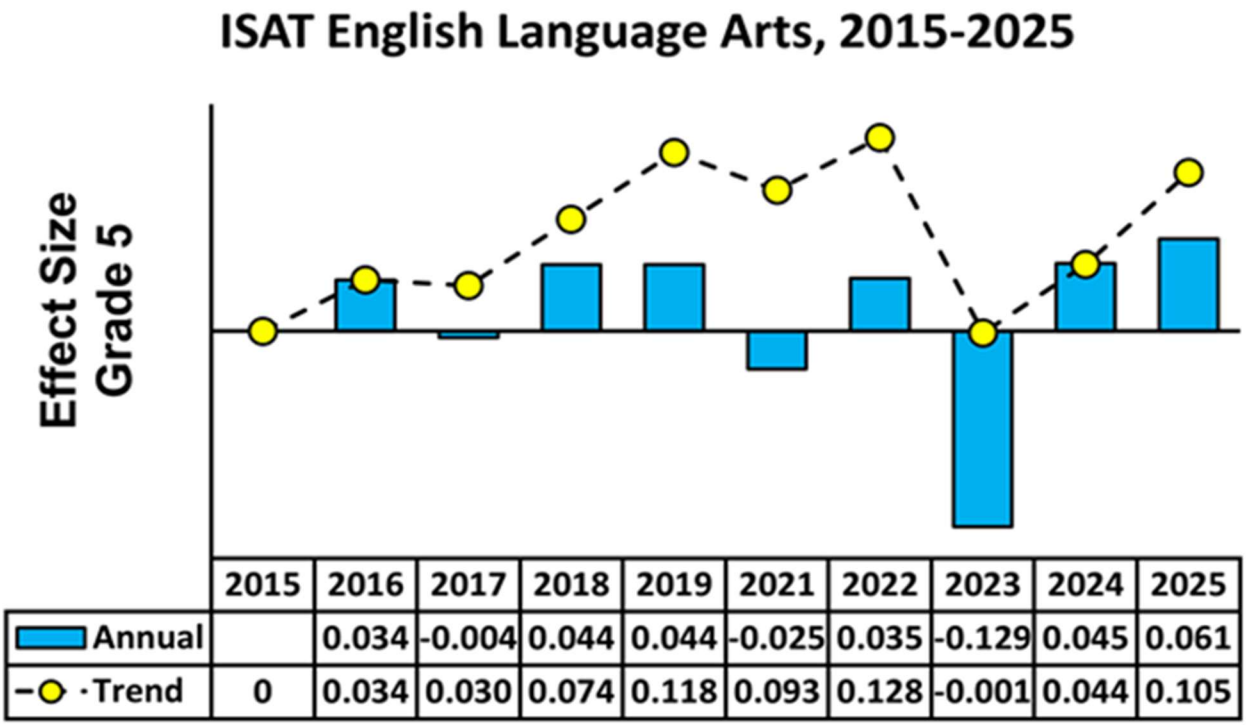
	2015	2016	2017	2018	2019	2021	2022	2023	2024	2025
Annual		0.076	-0.055	0.048	0.045	-0.042	0.055	-0.099	0.036	0.031
Trend	0	0.076	0.021	0.069	0.114	0.072	0.127	0.028	0.064	0.095

Figure 3. ISAT Reading Language Arts Effect Sizes for Grade 4, 2015-2025



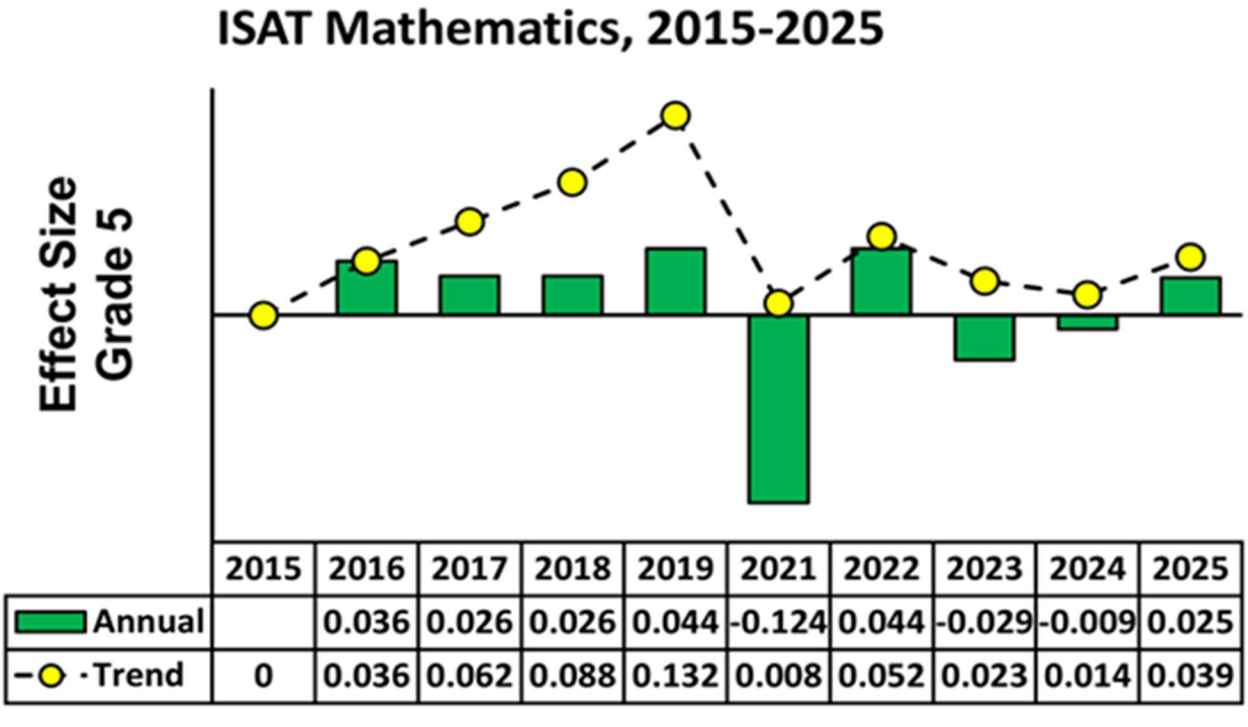
	2015	2016	2017	2018	2019	2021	2022	2023	2024	2025
Annual		0.089	-0.023	0.030	0.047	-0.140	0.081	-0.044	0.029	0.021
Trend	0.000	0.089	0.066	0.096	0.143	0.003	0.084	0.040	0.069	0.090

Figure 4. ISAT Mathematics Effect Sizes for Grade 4, 2015-2025



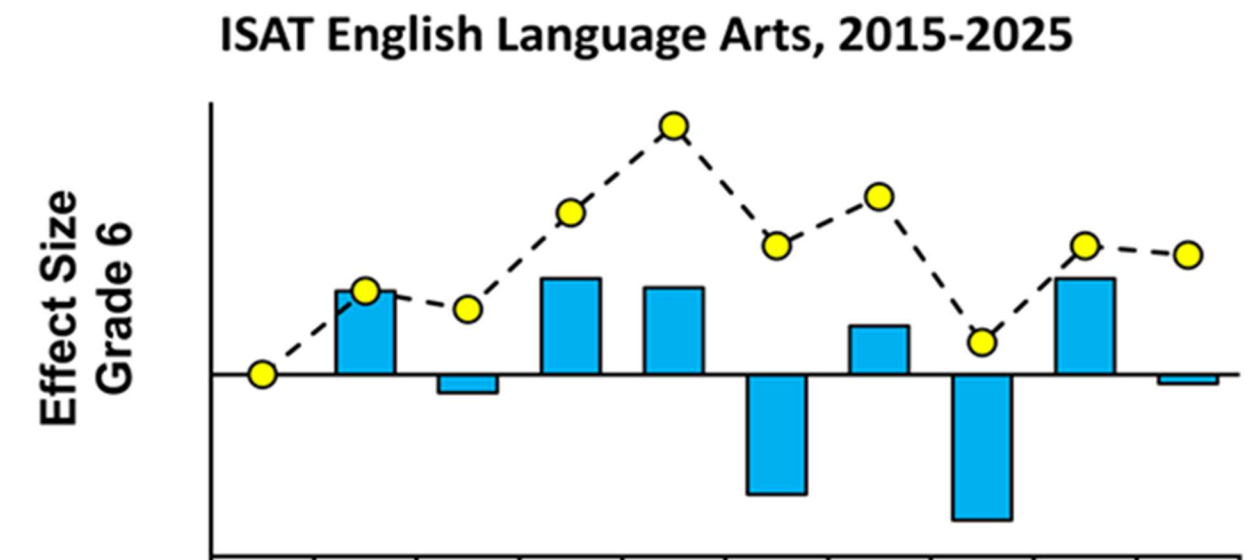
	2015	2016	2017	2018	2019	2021	2022	2023	2024	2025
Annual		0.034	-0.004	0.044	0.044	-0.025	0.035	-0.129	0.045	0.061
Trend	0	0.034	0.030	0.074	0.118	0.093	0.128	-0.001	0.044	0.105

Figure 5. ISAT English Language Arts Effect Sizes for Grade 5, 2015-2025



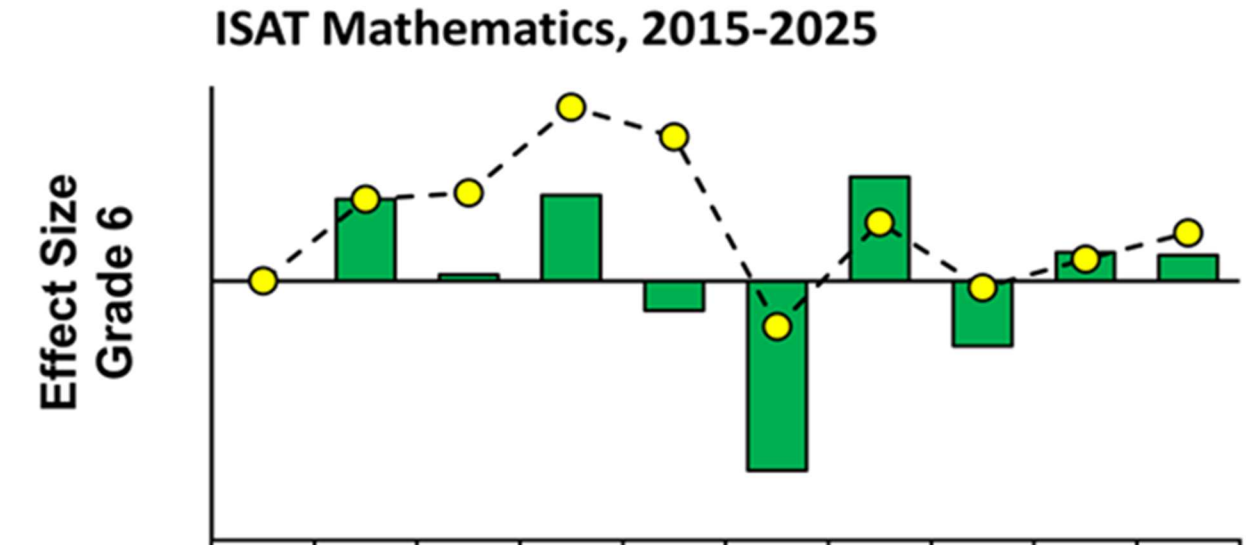
	2015	2016	2017	2018	2019	2021	2022	2023	2024	2025
Annual		0.036	0.026	0.026	0.044	-0.124	0.044	-0.029	-0.009	0.025
Trend	0	0.036	0.062	0.088	0.132	0.008	0.052	0.023	0.014	0.039

Figure 6. ISAT Mathematics Effect Sizes for Grade 5, 2015 to 2025



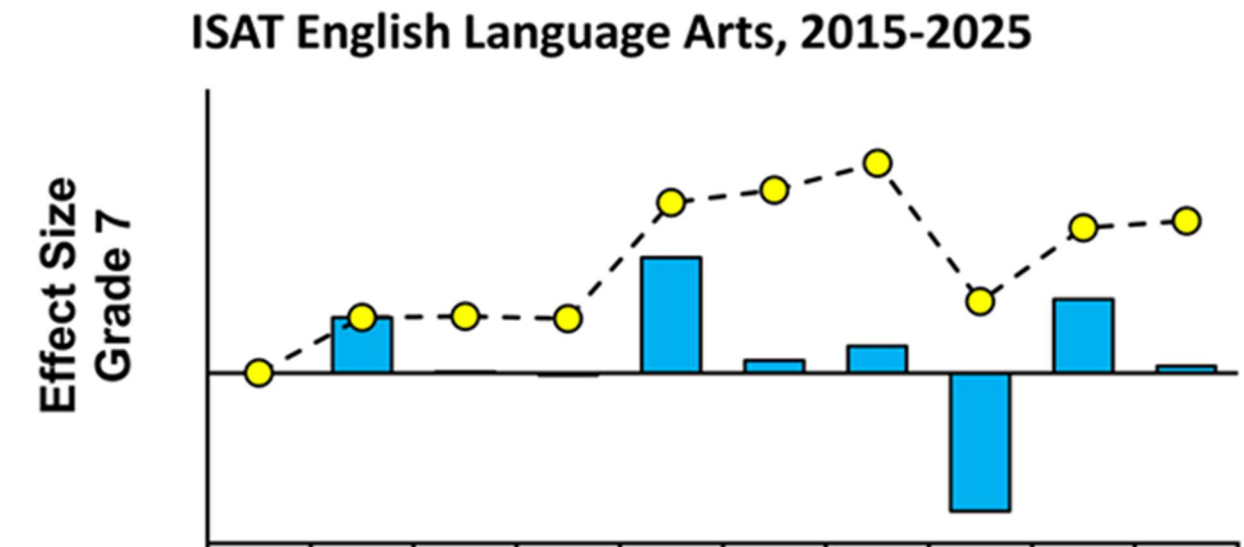
	2015	2016	2017	2018	2019	2021	2022	2023	2024	2025
Annual		0.046	-0.010	0.053	0.048	-0.066	0.027	-0.080	0.053	-0.005
Trend	0	0.046	0.036	0.089	0.137	0.071	0.098	0.018	0.071	0.066

Figure 7. ISAT English Language Arts Effect Sizes for Grade 6, 2015-2025



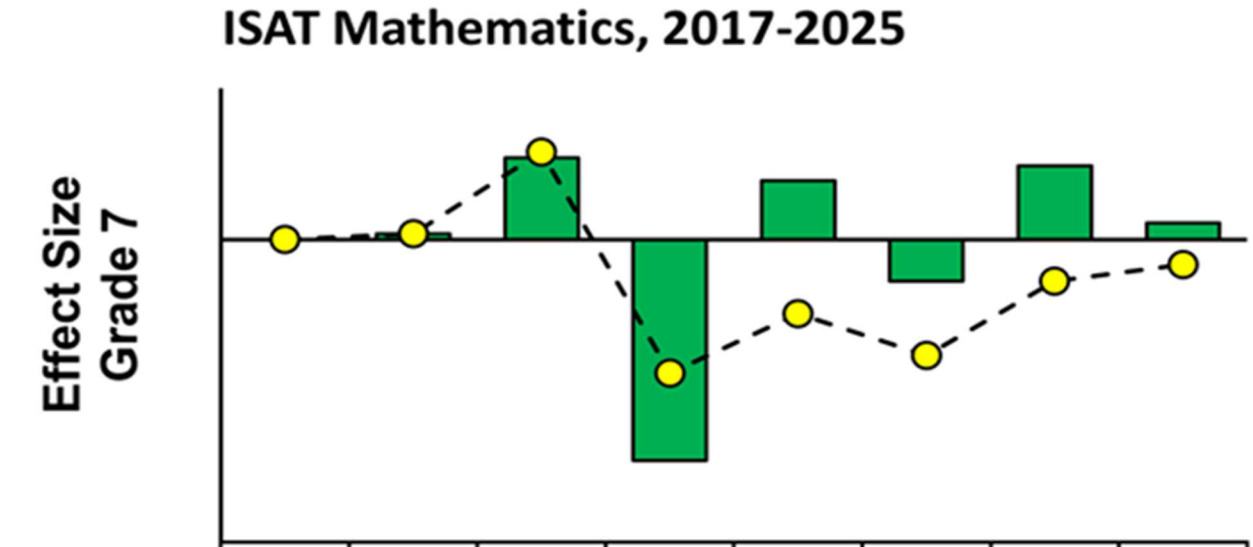
	2015	2016	2017	2018	2019	2021	2022	2023	2024	2025
Annual		0.063	0.005	0.066	-0.023	-0.146	0.080	-0.050	0.022	0.020
Trend	0	0.063	0.068	0.134	0.111	-0.035	0.045	-0.005	0.017	0.037

Figure 8. ISAT Mathematics Effect Sizes for Grade 6, 2015-2025



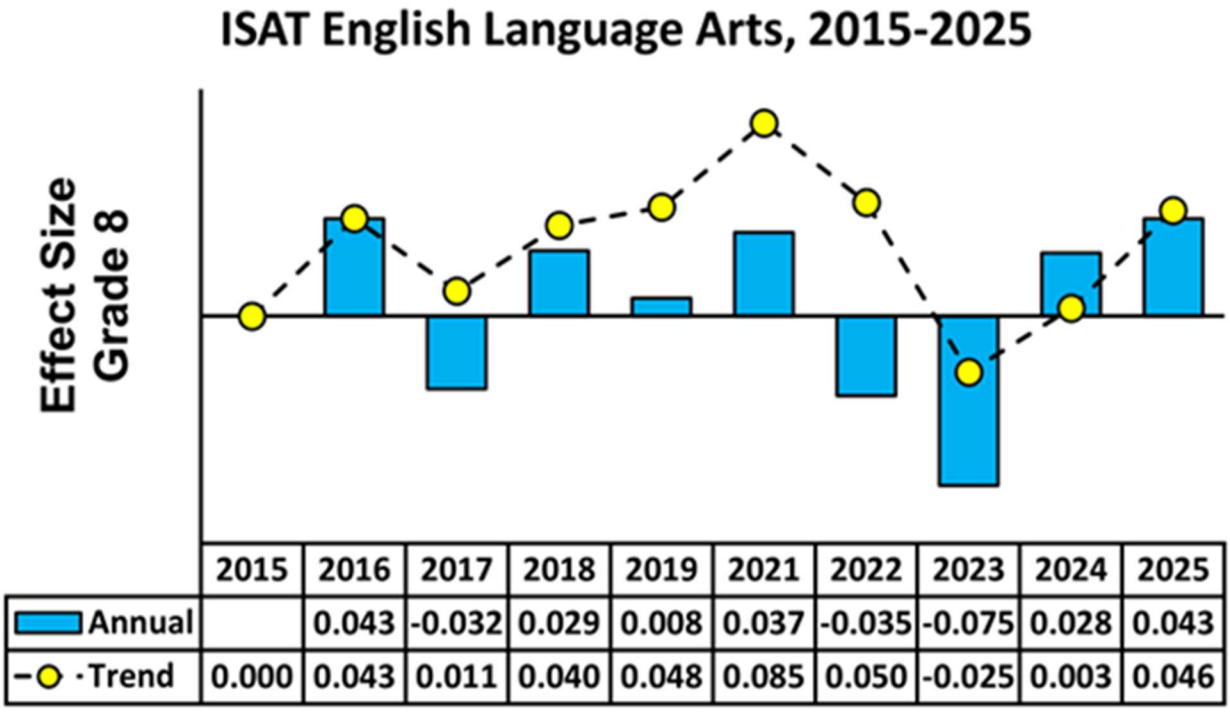
	2015	2016	2017	2018	2019	2021	2022	2023	2024	2025
Annual		0.049	0.001	-0.002	0.102	0.011	0.024	-0.122	0.065	0.006
Trend	0	0.049	0.050	0.048	0.150	0.161	0.185	0.063	0.128	0.134

Figure 9. ISAT English Language Arts Effect Sizes for Grade 7, 2015-2025



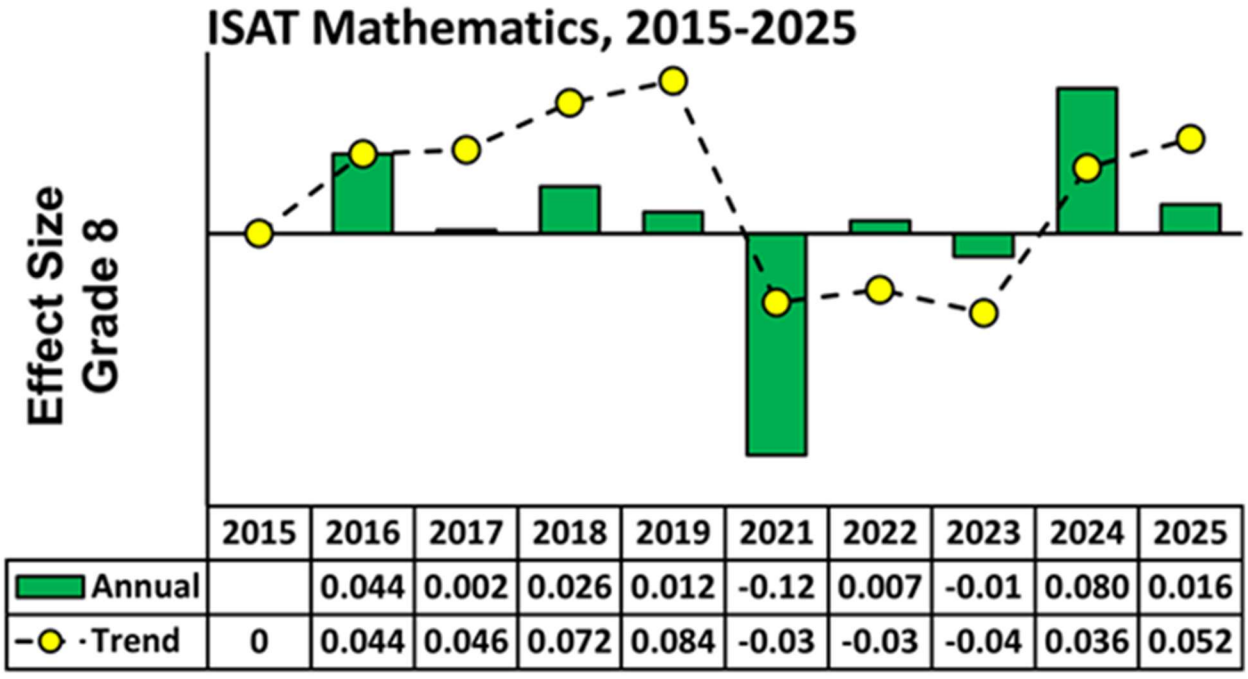
	2017	2018	2019	2021	2022	2023	2024	2025
Annual		0.004	0.054	-0.146	0.039	-0.027	0.049	0.011
Trend	0	0.004	0.058	-0.088	-0.049	-0.076	-0.027	-0.016

Figure 10. ISAT Mathematics Effect Sizes for Grade 7, 2017-2025



	2015	2016	2017	2018	2019	2021	2022	2023	2024	2025
Annual		0.043	-0.032	0.029	0.008	0.037	-0.035	-0.075	0.028	0.043
Trend	0.000	0.043	0.011	0.040	0.048	0.085	0.050	-0.025	0.003	0.046

Figure 11. ISAT English Language Arts Effect Sizes for Grade 8, 2015-2025



	2015	2016	2017	2018	2019	2021	2022	2023	2024	2025
Annual		0.044	0.002	0.026	0.012	-0.12	0.007	-0.01	0.080	0.016
Trend	0	0.044	0.046	0.072	0.084	-0.03	-0.03	-0.04	0.036	0.052

Figure 12. ISAT Mathematics Effect Sizes for Grade 8, 2015-2025