Linking STAAR to ISIP Reading

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Executive Summary

This study provides the proficiency projection of Istation's Indicators of Progress (ISIP™) Reading on the STAAR reading assessments for grades three through eight. Classification accuracy is also provided. All data came from students in five school districts in Texas. There was a total of 22,927 students (District A: 229; District B: 2,264; District C: 1,849; District D: 12,723, District E: 5,862).

The Pearson product-moment correlations of ISIP middle-of-the-year scores (MOY) and STAAR scores range from 0.68 to 0.72, and for ISIP end-of-the-year scores (EOY) and STAAR scores, they range from 0.68 to 0.74. This indicates strong associations between ISIP Reading and the STAAR assessments.

The linking study between STAAR and ISIP Reading was conducted using multinomial logistic regression. At MOY, to achieve a greater than .660 probability of meeting STAAR performance level 2 (Approaches) students had to attain ISIP scores at the following percentile ranks:

Third grade: 25th
Fourth grade: 20th
Fifth grade: 20th
Sixth grade: 35th
Seventh: 15th
Eighth grade: 15th

In order to attain a greater than .660 probability of meeting STAAR performance level 3 (Meets) or higher, students needed to reach the following percentile ranks on ISIP Reading:

Third grade: 60th
Fourth grade: 55th
Fifth grade: 50th
Sixth grade: 75th
Seventh: 45th
Eighth grade: 40th

To attain a greater than .660 probability of achieving STAAR performance level 4 (Masters), students had to achieve ISIP scores at the following percentile ranks :

Third grade: 90th
Fourth grade: 90th
Fifth grade: 75th
Sixth grade: 95th
Seventh grade: 75th
Eighth grade: 75th

At EOY, students had to attain ISIP Reading scores at the following percentile ranks to have a greater than .660 probability of meeting STAAR performance level 2 (Approaches) or higher:

Third grade: 25th
Fourth grade: 25h
Fifth grade: 20th
Sixth grade: 35th
Seventh: 15th
Eighth grade: 15th

To attain a greater than .660 probability of meeting STAAR performance level 3 (Meets) or higher, students needed to reach the following percentile ranks on ISIP Reading:

Third grade: 60th
Fourth grade: 55th
Fifth grade: 50th
Sixth grade: 80th
Seventh: 50th
Eighth grade: 45th

To attain a greater than .660 probability of meeting STAAR Reading performance level 4 (Masters), students needed to attain the following percentile ranks:

Third grade: 90th
Fourth grade: 90th
Fifth grade: 75th
Sixth grade: 99th
Seventh grade: 85th
Eighth grade: 90th

Classification accuracy analyses were conducted. At MOY, 78% of students were correctly classified on ISIP Reading with respect to the STAAR. For example, 76% of students who performed below the cut point on ISIP Reading did not meet level 3 or above on STAAR Reading; 81% of students who performed above the cut point on ISIP Reading met level 3 or above on STAAR Reading. ISIP Reading accurately predicted meeting proficiency on STAAR Reading about 80% of the time at the MOY.

At EOY, the percentage of students correctly classified on ISIP Reading with respect to STAAR Reading was approximately 78% across grades: 74% of students who performed below the cut point on ISIP Reading did not meet level 3 or above on STAAR Reading, and 81% of students who performed above the cut point on ISIP Reading met level 3 or above on STAAR Reading. ISIP Reading accurately predicted meeting proficiency on STAAR Reading about 80% of the time at the EOY.

Introduction

This study provides the proficiency projection of Istation's Indicators of Progress (ISIP) Reading observed scores on the State of Texas Assessments of Academic Readiness (STAAR) Reading scores for third through eighth grade. Students took these two assessments during the same school year, and a correlational study and classification accuracy were also conducted.

Because students take ISIP Reading assessments monthly or three times per year under benchmarking assessment months and take STAAR Reading in spring, it is helpful to conduct a linking study between ISIP Reading and STAAR Reading so teachers and school administrators can use this information to properly prepare students.

Since linking studies can be used to project where students will be when they take a state test in spring, we have conducted several, such as linking ISIP assessments with STAAR Reading (Patarapichayatham et al., 2013), Virginia SOL (Campbell, Sutter, and Lambie, 2019), Ohio AIR (LePlante, 2019), Renaissance STAR (Campbell, Sutter, Lambie, and Tinstman Jones, 2019), CMAS ELA (Patarapichayatham, 2019), Idaho SAT (Wolfe & Ross, 2020), and PARCC (Cook & Ross, 2020). All information can be found on our website (www.istation.com).

Methodology

ISIP Reading Assessments

ISIP Reading assessments are computer-adaptive tests (CAT) using the two-parameter item response theory. ISIP gathers and reports frequent information about student progress in critical domains throughout and across academic years. ISIP accomplishes this by delivering monthly tests that target critical areas to inform instruction. With adequate computer resources, it is possible to administer ISIP assessments to an entire classroom, school, or district in a single day. Student results are immediately available online for teachers and administrators, illustrating each student's past and present performance and skill growth. Teachers are alerted when students are not making adequate progress so that the instructional program can be modified before a pattern of failure becomes established (Mathes, et al., 2016).

ISIP Reading measures students' ability and identifies deficits in critical areas to provide continuous differentiated instruction. ISIP Reading is available for

prekindergarten through eighth grade students. Istation provides teachers and other school personnel with easy-to-interpret, web-based reports detailing student strengths and areas for improvement with links to teaching resources and targeted intervention strategies (Istation, 2022). ISIP Reading uses a vertical scale that assumes student proficiency is increased across different grade levels from prekindergarten through eighth grade and reports scaled scores ranging between 100 and 900. There are five performance levels for ISIP Reading:

- Level 1: at or below the 20th percentile rank
- Level 2: at or below the 40th percentile rank
- Level 3: at or below the 60th percentile rank
- Level 4: at or below the 80th percentile rank
- Level 5: above the 80th percentile rank

STAAR Reading Assessments

STAAR Reading is the state testing program for students in grades 3 through 8 in Texas. The Texas Education Agency (TEA), in collaboration with the Texas Higher Education Coordinating Board (THECB) and Texas educators, developed the STAAR program in response to requirements set forth by the 80th and 81st Texas legislatures. STAAR is an assessment program designed to measure how students have learned and can apply the knowledge and skills defined in the state-mandated curriculum standards (http://tea.texas.gov).

After students take the STAAR, their results are reported in two primary ways: scaled scores and achievement levels. Table 1 shows cut scores and achievement levels. There are four performance levels for STAAR:

- Level 1: Did Not Meet Grade Level
- Level 2: Approaches Grade Level
- Level 3: Meets Grade Level
- Level 4: Masters Grade Level

Table 1. *STAAR Reading Cut Scores*

Score Type	Grade	Level 1 Did Not Meet	Level 2 Approaches	Level 3 Meets	Level 4 Masters
Scale Score	3	765-1324	1345-1450	1468-1531	1555-1901
	4	839-1423	1434-1531	1550-1613	1633-1985
	5	861-1456	1470-1571	1582-1650	1667-2016
	6	921-1508	1517-1616	1629-1687	1718-2076
	7	962-1549	1567-1664	1674-1730	1753-2136
	8	980-1570	1587-1693	1700-1757	1783-2163
Raw Score	3	0-16	17-24	25-28	29-34
	4	0-19	20-26	27-30	31-36
	5	0-20	21-28	29-32	33-38
	6	0-21	22-29	30-33	34-40
	7	0-21	22-30	31-34	35-42
	8	0-22	23-32	33-36	37-44

Sample

The sample consisted of third through eighth grade students in five school districts in Texas in the 2021–2022 school year. There were 229 students from District A; 2,264 students from District B; 1,849 students from District C; 12,723 students from District D; and 5,862 from District E. The combined sample was composed of 22,927 students. Students took ISIP reading at the beginning-of-the-year (BOY), middle-of-the-year (MOY), and end-of-the-year (EOY) assessment months and took STAAR in the spring. Table 2 has the demographic breakdown by district and grade.

Table 2. *Demographic Composition of Sample by District and Grade*

District	Grade	N	Gender (M/F)	Black	Hispanic	White	All other Races Combined
A	3	96	49%/51%	73%	24%	1%	2%
	4	71	69%/31%	56%	39%	1%	4%
	5	62	37%/63%	61%	29%	7%	3%
B	4	636	49%/51%	14%	33%	33%	20%
	5	427	51%/49%	15%	32%	32%	21%
	6	398	50%/50%	18%	38%	25%	19%
	7	443	52%/48%	20%	35%	26%	19%
	8	360	53%/47%	17%	38%	24%	21%
C	3	611	53%/47%	8%	84%	5%	3%
	4	641	57%/43%	10%	82%	4%	4%
	5	597	52%/48%	8%	80%	6%	6%
D	3	2,559	51%/49%	3%	81%	14%	2%
	4	2,498	50%/50%	4%	80%	14%	2%
	5	2,246	51%/49%	4%	80%	14%	3%
	6	1,724	52%/48%	4%	77%	15%	4%
	7	1,904	51%/49%	5%	77%	15%	3%
	8	1,792	50%/50%	4%	76%	17%	3%
E	3	2,000	51%/49%	11%	47%	33%	9%
	4	1,925	52%/48%	10%	47%	35%	8%
	5	1,937	50%/50%	10%	47%	34%	9%

Note: Percentages that add up to more than 100% are due to rounding.

Table 3 shows the mean scores of ISIP and STAAR Reading by district. Overall, students across grades in all districts had positive growth trajectories from the BOY to MOY. Third and fourth grade students in District A had positive growth trajectories from the MOY to EOY, though fifth grade students did not. In District B, fourth and fifth grade students had positive growth trajectories, whereas sixth through eighth grade students had negative growth trajectories from the MOY to EOY. In District C, third through fifth grade students had positive growth trajectories between MOY and EOY. A similar pattern was observed in District D, where third through eighth grade students demonstrated positive growth trajectories between MOY and EOY. In District E, third, fourth, and fifth grade students had positive growth trajectories.

Table 3. *ISIP Reading and STAAR Reading Mean Scores and Standard Deviations (SD)*

District	Grade	Sample Size	ISIP BOY Score (SD)	ISIP MOY Score (SD)	ISIP EOY Score (SD)	STAAR Score (SD)
A	3	96	400.64	418.26	439.52	1,384.78
			(74.69)	(84.37)	(88.60)	(149.84)
	4	71	447.92	468.43	482.02	1,489.59
			(53.87)	(58.77)	(63.82)	(117.28)
	5	62	472.56	506.42	468.55	1,526.10
			(62.16)	(70.46)	(90.59)	(176.52)
B	4	636	489.60	512.90	529.59	1,543.74
			(62.33)	(63.66)	(62.77)	(145.26)
	5	427	512.36	531.43	546.15	1,587.64
			(61.52)	(66.78)	(65.62)	(151.73)
	6	398	N/A	540.46	537.94	1,560.13
				(72.81)	(74.30)	(131.38)
	7	443	N/A	567.90	557.52	1,670.99
				(75.49)	(94.98)	(141.24)
	8	360	N/A	580.80	579.34	1,679.13
				(72.76)	(97.49)	(134.59)
C	3	611	404.49	422.17	441.27	1407.26
			(66.41)	(76.14)	(81.94)	(156.14)
	4	641	459.76	472.84	495.40	1512.87
			(66.14)	(75.02)	(72.51)	(138.55)
	5	597	498.03	508.37	525.50	1578.93
			(64.00)	(72.48)	(77.74)	(150.83)
D	3	2559	409.96	436.50	457.39	1392.78
			(66.31)	(75.77)	(81.35)	(153.49)
	4	2498	457.13	485.05	498.67	1482.20
			(67.35)	(68.32)	(72.43)	(142.98)
	5	2246	491.60	512.16	526.49	1549.38
			(66.28)	(69.54)	(72.57)	(152.66)
	6	1724	518.24	529.70	545.11	1540.32
			(69.24)	(80.41)	(88.77)	133.24)
	7	1904	534.32	548.07	569.67	1628.03
			(68.06)	(84.72)	(93.77)	(147.40)
	8	1792	566.70	580.27	582.80	1666.76
			(71.63)	(84.79)	(93.91)	(144.47)

E	3	2000	439.81	465.51	481.61	1468.19
			(55.51)	(62.52)	(67.49)	(148.10)
	4	1925	483.59	507.87	521.86	1548.68
			(57.27)	(60.29)	(62.10)	(130.68)
	5	1937	520.29	535.19	546.37	1619.87
			(59.03)	(60.87)	(61.94)	(148.11)
Combined	3	5266	421.05	445.71	464.86	1422.95
			(64.26)	(72.98)	(77.67)	(156.14)
	4	5771	470.11	494.40	509.66	1514.65
			(64.65)	(67.49)	(69.12)	(414.82)
	5	5269	504.72	521.39	534.89	1581.47
			(64.36)	(67.73)	(69.88)	(154.30)
	6	2122	518.38	530.93	544.26	1544.03
			(69.17)	(79.62)	(87.18)	(133.09)
	7	2347	534.32	550.86	568.13	1636.14
			(68.06)	(83.74)	(93.98)	(147.19)
	8	2152	566.70	580.34	582.39	1668.83
			(71.63)	(83.31)	(94.29)	(142.91)

Analysis

Our analytic plan first evaluated the Pearson product-moment correlation between the ISIP assessments and STAAR Reading. Then we used multinomial logistic regression to determine probabilities for reaching the Approaches, Meets, or Masters levels on STAAR Reading. Finally, we conducted a classification accuracy to determine cut points that best predict whether or not the student will meet Approaches, Meets, or Masters on STAAR Reading.

Linking Study Analysis

We used multinomial logistic regression to determine the probabilities of reaching the STAAR Reading performance level 2 (Approaches), level 3 (Meets), or level 4 (Masters). The ISIP scores are the predictor, and the STAAR Reading performance levels are the outcome variable. Students who had ISIP scores between the 1st and 99th percentile ranks were included in the analysis. The model is fitted for each grade separately. A total of 20 ISIP Reading scaled scores in the MOY and EOY of third through eighth grades are selected, corresponding to the 1st through 99th percentile ranks with an increment of five. For the outcome variable in the multinomial logistic regression, performance levels are defined by the STAAR Reading proficiency cut points (see Table 1). There are four STAAR Reading performance levels, but this study investigates performance levels 2, 3, and 4.

The probability of STAAR Reading performance level 2 (Approaches) or above is computed by adding the probabilities of levels 2, 3, and 4. The probability of STAAR Reading performance level 3 (Meets) or above is calculated by adding the probabilities of levels 3 and 4. The probability of STAAR Reading performance level 4 (Masters) is the probability of level 4 itself. The analyses are computed using R software with the nnet package.

Classification Accuracy Analysis

Classification accuracy is a classification model. It measures the extent to which ISIP Reading scores accurately predicted whether students in the sample would achieve level 3 or higher on STAAR Reading.

Sample students were classified as “Not Proficient” or “Proficient” based on their STAAR Reading scores. They were also classified as “Not Proficient” or “Proficient”

based on their ISIP Reading scores. Table 4 shows a classification of students based on their observed ISIP Reading and status on their STAAR Reading . Students classified in the true negative (TN) category were those both predicted to be Not Proficient based on the ISIP Reading cut scores and also classified as Observed Not Proficient based on the STAAR Reading cut scores. Students classified in the true positive (TP) category were those both predicted to be Proficient based on the ISIP Reading cut scores and also classified as Observed Proficient based on the STAAR Reading cut scores. Students classified in the false positive (FP) category were those predicted to be Proficient based on the ISIP Reading cut scores but classified as Observed Not Proficient based on the STAAR Reading cut scores. Students classified in the false negative (FN) category were those predicted to be Not Proficient based on the ISIP Reading cut scores and classified as Observed Proficient based on the STAAR Reading cut scores. The overall classification accuracy was computed as the proportion of correct classifications among the entire sample by (TP + TN)/(TP + TN + FP + FN).

Table 4. *Performance Classification Based on ISIP Reading and STAAR Reading*

Observed Proficiency	Not Proficient (STAAR)	Proficient (STAAR)
Observed Not Proficient (ISIP)	True Negative	False Negative
Observed Proficient (ISIP)	False Positive	True Positive

We conducted classification accuracy of ISIP cut scores at the 30th, 35th, 40th, 45th, 50th, 55th, 60th, 65th, 70th, 75th, and 80th percentiles and STAAR Reading level 3 or higher. The area under the curve (AUC), sensitivity (TN), specificity (TP), FP, FN, and overall rate were computed and compared to determine the best ISIP Reading cut point to identify students who would most likely meet level 3 or higher on STAAR Reading in the spring.

Results

Correlational Study

The Pearson product-moment correlations of ISIP MOY and STAAR Reading and of ISIP EOY and STAAR Reading are shown in Table 5. In MOY, the correlations range from 0.68 to 0.72, indicating strong relationships between the ISIP Reading and STAAR Reading assessments when students take ISIP Reading at MOY and STAAR Reading in spring. At EOY, the correlations range from 0.68 to 0.74, indicating strong relationships between the ISIP Reading and STAAR Reading assessments when students take both assessments in spring.

Table 5: *Pearson Product-Moment Correlations of ISIP Reading and STAAR Reading*

Grade	ISIP MOY	ISIP EOY
3	0.72	0.72
4	0.72	0.74
5	0.72	0.72
6	0.72	0.71
7	0.72	0.70
8	0.68	0.68

Linking Study: ISIP at MOY and STAAR

Tables 6 to 8 are concordance tables derived from statistical linking procedures that directly link ISIP Reading scores and STAAR Reading assessment performance levels. Concordance tables provide helpful information for educators, parents, administrators, researchers, and policymakers to evaluate students' academic performance. We divided the probabilities of meeting a STAAR performance level into low, medium, and high. A low probability is 0 - .330 probability of meeting a level. A medium probability are .331 to .660. High probabilities are greater than .660 .

We used high probabilities to make projections for students' end-of-year STAAR level based on their MOY ISIP Reading score. Third grade students who attain an ISIP Reading score of around 434 (25th percentile rank) or higher are projected to achieve STAAR Reading performance level 2 (Approaches) or higher. Students who attain an ISIP Reading score around 489 (60th percentile rank) or higher are projected to achieve STAAR Reading performance level 3 (Meets) or higher. If they attain an ISIP Reading score around 548 (90th percentile rank) or higher, they are projected to achieve STAAR Reading performance level 4 (Masters).

Students in fourth grade who attain an ISIP Reading score around 465 (20th percentile rank) or higher are projected to achieve STAAR Reading performance level 2 (Approaches) or higher. Students who attain an ISIP Reading score around 524 (55th percentile rank) or higher are projected to achieve STAAR Reading performance level 3 (Meets) or higher. If they attain an ISIP Reading score around 593 (90th percentile rank) or higher, they are projected to achieve STAAR Reading performance level 4 (Masters).

Fifth grade students who attained an ISIP Reading score around 492 (20th percentile rank) or higher are projected to achieve STAAR Reading performance level 2 (Approaches) or higher. Students who attain an ISIP Reading score around 547 (50th percentile rank) or higher are projected to achieve STAAR Reading performance level 3

(Meets) or higher. If they attain an ISIP Reading score around 589 (75th percentile rank) or higher, they are projected to achieve STAAR Reading performance level 4 (Masters).

Students in sixth grade who attain an ISIP Reading score around 543 (35th percentile rank) or higher are projected to achieve STAAR Reading performance level 2 (Approaches) or higher. Students who attain an ISIP Reading score around 612 (75th percentile rank) or higher are projected to achieve STAAR Reading performance level 3 (Meets) or higher. If they attain an ISIP Reading score around 675 (95th percentile rank) or higher, they are projected to achieve STAAR Reading performance level 4 (Masters).

Seventh grade students who attain an ISIP Reading score around 526 (15th percentile rank) or higher are projected to achieve STAAR Reading performance level 2 (Approaches) or higher. Students who attain an ISIP Reading score around 595 (45th percentile rank) or higher are projected to achieve STAAR Reading performance level 3 (Meets) or higher. If they attain an ISIP Reading score around 650 (75th percentile rank) or higher, they are projected to achieve STAAR Reading performance level 4 (Masters).

Students in eighth grade who attain an ISIP Reading score around 552 (15th percentile rank) or higher are projected to achieve STAAR Reading performance level 2 (Approaches) or higher. Students who attain an ISIP Reading score around 617 (40th percentile rank) or higher are projected to achieve STAAR Reading performance level 3 (Meets) or higher. If they attain an ISIP Reading score around 687 (75th percentile rank) or higher, they are projected to achieve STAAR Reading performance level 4 (Masters).

Overall, students in third, fourth, and fifth grades need to be at the 20th – 25th percentile rank to reach performance level 2, sixth grade students need to be at the 35th, and students in grades seven and eight need to be at the 15th percentile rank to achieve STAAR Reading performance level 2 (Approaches). To achieve STAAR performance level 3 (Meets) or higher, percentile ranks ranged from 40th to 60th for every grade expect for 6th, where students needed to be at the 75th percentile. For STAAR Reading performance level 4 (Masters), students needed to be at the 90th percentile in grades 3 and 4, at the 75th percentile in grades 5, 7 and 8. In sixth grade, students needed to be at the 95th percentile to reach Masters.

Table 6. *Third and Fourth Grades Proficiency Projection for ISIP at MOY*

Grade	Overall Score	Percentile	Approaches Probability	Approaches	Meets Probability	Meets	Masters Probability	Masters
3	363	5	0.299	Low	0.040	Low	0.004	Low
	392	10	0.459	Medium	0.098	Low	0.015	Low
	410	15	0.574	Medium	0.163	Low	0.033	Low
	423	20	0.657	Medium	0.226	Low	0.056	Low
	434	25	0.724	High	0.291	Medium	0.084	Low
	443	30	0.775	High	0.351	Medium	0.113	Low
	452	35	0.821	High	0.416	Medium	0.150	Low
	460	40	0.857	High	0.476	Medium	0.188	Low
	467	45	0.885	High	0.529	Medium	0.226	Low
	474	50	0.908	High	0.582	Medium	0.268	Low
	481	55	0.928	High	0.633	Medium	0.312	Low
	489	60	0.946	High	0.688	High	0.365	Medium
	496	65	0.959	High	0.732	High	0.412	Medium
	504	70	0.971	High	0.778	High	0.466	Medium
	512	75	0.979	High	0.819	High	0.520	Medium
	522	80	0.987	High	0.861	High	0.583	Medium
	533	85	0.992	High	0.899	High	0.647	Medium
	548	90	0.996	High	0.936	High	0.724	High
	572	95	0.999	High	0.970	High	0.817	High
	626	99	1.000	High	0.995	High	0.932	High
4	408	5	0.282	Low	0.047	Low	0.004	Low
	435	10	0.451	Medium	0.115	Low	0.015	Low
	452	15	0.575	Medium	0.188	Low	0.031	Low
	465	20	0.669	High	0.261	Low	0.052	Low
	476	25	0.743	High	0.333	Medium	0.078	Low
	485	30	0.796	High	0.397	Medium	0.106	Low
	493	35	0.838	High	0.457	Medium	0.136	Low
	501	40	0.874	High	0.517	Medium	0.170	Low
	509	45	0.904	High	0.576	Medium	0.209	Low
	516	50	0.926	High	0.626	Medium	0.246	Low
	524	55	0.945	High	0.679	High	0.291	Low

531	60	0.959	High	0.723	High	0.333	Medium
539	65	0.971	High	0.768	High	0.383	Medium
547	70	0.979	High	0.808	High	0.432	Medium
556	75	0.986	High	0.847	High	0.488	Medium
566	80	0.992	High	0.883	High	0.548	Medium
578	85	0.995	High	0.916	High	0.615	Medium
593	90	0.998	High	0.946	High	0.691	High
616	95	0.999	High	0.974	High	0.784	High
661	99	1.000	High	0.994	High	0.900	High

Table 7. *Fifth and Sixth Grades Proficiency Projection for ISIP at MOY*

Grade	Overall Score	Percentile	Approaches Probability	Approaches	Meets Probability	Meets	Masters Probability	Masters
5	432	5	0.308	Low	0.049	Low	0.005	Low
	461	10	0.495	Medium	0.126	Low	0.023	Low
	479	15	0.624	Medium	0.210	Low	0.051	Low
	492	20	0.714	High	0.289	Low	0.085	Low
	504	25	0.789	High	0.375	Medium	0.130	Low
	513	30	0.837	High	0.445	Medium	0.173	Low
	522	35	0.878	High	0.517	Medium	0.223	Low
	531	40	0.911	High	0.588	Medium	0.280	Low
	539	45	0.935	High	0.648	Medium	0.335	Medium
	547	50	0.953	High	0.705	High	0.392	Medium
	555	55	0.967	High	0.756	High	0.450	Medium
	563	60	0.977	High	0.801	High	0.508	Medium
	571	65	0.984	High	0.840	High	0.563	Medium
	580	70	0.990	High	0.876	High	0.622	Medium
	589	75	0.994	High	0.906	High	0.675	High
	600	80	0.996	High	0.933	High	0.733	High
	612	85	0.998	High	0.955	High	0.786	High
	629	90	0.999	High	0.975	High	0.846	High
	653	95	1.000	High	0.989	High	0.904	High
	702	99	1.000	High	0.998	High	0.964	High
6	453	5	0.163	Low	0.020	Low	0.001	Low
	480	10	0.278	Low	0.050	Low	0.004	Low
	498	15	0.381	Medium	0.086	Low	0.009	Low
	512	20	0.473	Medium	0.127	Low	0.017	Low
	523	25	0.549	Medium	0.169	Low	0.026	Low
	533	30	0.619	Medium	0.214	Low	0.039	Low
	543	35	0.685	High	0.265	Low	0.056	Low
	552	40	0.741	High	0.317	Low	0.075	Low
	560	45	0.786	High	0.365	Medium	0.097	Low
	568	50	0.827	High	0.416	Medium	0.123	Low
	576	55	0.862	High	0.468	Medium	0.152	Low

585	60	0.895	High	0.527	Medium	0.191	Low
593	65	0.919	High	0.578	Medium	0.229	Low
602	70	0.941	High	0.634	Medium	0.277	Low
612	75	0.959	High	0.692	High	0.333	Medium
622	80	0.972	High	0.745	High	0.393	Medium
635	85	0.984	High	0.806	High	0.471	Medium
651	90	0.992	High	0.865	High	0.565	Medium
675	95	0.997	High	0.927	High	0.690	High
721	99	1.000	High	0.980	High	0.853	High

Table 8. *Seventh and Eighth Grades Proficiency Projection for ISIP at MOY*

Grade	Overall Score	Percentile	Approaches Probability	Approaches	Meets Probability	Meets	Masters Probability	Masters
7	476	5	0.358	Medium	0.067	Low	0.011	Low
	506	10	0.540	Medium	0.149	Low	0.036	Low
	526	15	0.667	High	0.237	Low	0.073	Low
	541	20	0.754	High	0.319	Low	0.116	Low
	554	25	0.819	High	0.400	Medium	0.165	Low
	565	30	0.866	High	0.472	Medium	0.216	Low
	576	35	0.903	High	0.544	Medium	0.274	Low
	585	40	0.927	High	0.602	Medium	0.325	Low
	595	45	0.948	High	0.664	High	0.385	Medium
	604	50	0.963	High	0.715	High	0.440	Medium
	612	55	0.972	High	0.756	High	0.489	Medium
	621	60	0.981	High	0.798	High	0.542	Medium
	630	65	0.987	High	0.834	High	0.593	Medium
	640	70	0.991	High	0.868	High	0.645	Medium
	650	75	0.994	High	0.897	High	0.693	High
	662	80	0.997	High	0.924	High	0.744	High
	675	85	0.998	High	0.946	High	0.791	High
	692	90	0.999	High	0.966	High	0.842	High
	717	95	1.000	High	0.983	High	0.895	High
	764	99	1.000	High	0.996	High	0.953	High
8	496	5	0.442	Medium	0.092	Low	0.023	Low
	530	10	0.621	Medium	0.197	Low	0.065	Low
	552	15	0.733	High	0.297	Low	0.116	Low
	569	20	0.808	High	0.390	Medium	0.170	Low
	583	25	0.859	High	0.471	Medium	0.225	Low
	595	30	0.896	High	0.541	Medium	0.278	Low
	606	35	0.922	High	0.604	Medium	0.330	Low
	617	40	0.943	High	0.663	High	0.383	Medium
	627	45	0.958	High	0.712	High	0.432	Medium
	636	50	0.968	High	0.753	High	0.475	Medium
	646	55	0.977	High	0.793	High	0.522	Medium

656	60	0.984	High	0.828	High	0.567	Medium
665	65	0.988	High	0.856	High	0.605	Medium
676	70	0.992	High	0.885	High	0.649	Medium
687	75	0.995	High	0.908	High	0.688	High
699	80	0.997	High	0.929	High	0.727	High
713	85	0.998	High	0.948	High	0.768	High
730	90	0.999	High	0.965	High	0.809	High
756	95	1.000	High	0.981	High	0.859	High
805	99	1.000	High	0.994	High	0.921	High

Linking Study: ISIP at EOY and STAAR

We also provide projections for STAAR based on a student's EOY ISIP Reading score. Similar to the MOY, all projections are based on the percentile ranks where the probabilities are high (greater than .660). Third grade students who attain an ISIP Reading score of 448 (25th percentile rank) or higher are projected to achieve STAAR Reading performance level 2 (Approaches) or higher. Students who attain an ISIP Reading score of 506 (60th percentile rank) or higher are projected to achieve STAAR Reading performance level 3 (Meets) or higher. If they attain an ISIP Reading score of 571 (90th percentile rank) or higher, they are projected to achieve STAAR Reading performance level 4 (Masters).

Students in fourth grade who attain an ISIP Reading score around 490 (25th percentile rank) or higher are projected to achieve STAAR Reading performance level 2 (Approaches) or higher. Students who attain an ISIP Reading score around 541 (55th percentile rank) or higher are projected to achieve STAAR Reading performance level 3 (Meets) or higher. If they attain an ISIP Reading score around 614 (90th percentile rank) or higher, they are projected to achieve STAAR Reading performance level 4 (Masters).

Fifth grade students who attain an ISIP Reading score of around 502 (20th percentile rank) or higher are projected to achieve STAAR performance level 2 (Approaches) or higher. Students who attain an ISIP Reading score around 559 (50th percentile rank) or higher are projected to achieve STAAR Reading performance level 3 (Meets) or higher. If they attain an ISIP Reading score around 603 (75th percentile rank) or higher, they are projected to achieve STAAR Reading performance level 4 (Masters).

Students in sixth grade who attain an ISIP Reading score around 556 (35th percentile rank) or higher are projected to achieve STAAR Reading performance level 2 (Approaches) or higher. Students who attain an ISIP Reading score around 638 (80th percentile rank) or higher are projected to achieve STAAR Reading performance level 3 (Meets) or higher. If they attain an ISIP Reading score around 739 (99th percentile rank) or higher, they are projected to achieve STAAR Reading performance level 4 (Masters).

Seventh grade students who attain an ISIP Reading score around 537 (15th percentile rank) or higher are projected to achieve STAAR Reading performance level 2 (Approaches) or higher. Students who attain an ISIP Reading score around 617 (50th percentile rank) or higher are projected to achieve STAAR Reading performance level 3 (Meets) or higher. If they attain an ISIP Reading score around 690 (85th percentile

rank) or higher, they are projected to achieve STAAR Reading performance level 4 (Masters).

Students in eighth grade who attain an ISIP Reading score around 561 (15th percentile rank) or higher are projected to achieve STAAR Reading performance level 2 (Approaches) or higher. Students who attain an ISIP Reading score around 639 (45th percentile rank) or higher are projected to achieve STAAR Reading performance level 3 (Meets) or higher. If they attain an ISIP Reading score around 745 (90th percentile rank) or higher, they are projected to achieve STAAR Reading performance level 4 (Masters).

Table 9. *Third and Fourth Grade Proficiency Projection for ISIP at EOY*

Grade	Overall Score	Percentile	Approaches Probability	Approaches	Meets Probability	Meets	Masters Probability	Masters
3	371	5	0.232	Low	0.022	Low	0.002	Low
	402	10	0.392	Medium	0.065	Low	0.010	Low
	422	15	0.522	Medium	0.124	Low	0.025	Low
	436	20	0.618	Medium	0.186	Low	0.045	Low
	448	25	0.698	High	0.253	Low	0.072	Low
	458	30	0.760	High	0.319	Low	0.102	Low
	467	35	0.810	High	0.384	Medium	0.135	Low
	475	40	0.848	High	0.446	Medium	0.171	Low
	483	45	0.882	High	0.508	Medium	0.211	Low
	491	50	0.910	High	0.570	Medium	0.255	Low
	499	55	0.933	High	0.630	Medium	0.303	Low
	506	60	0.949	High	0.679	High	0.346	Medium
	514	65	0.963	High	0.731	High	0.397	Medium
	523	70	0.975	High	0.782	High	0.453	Medium
	532	75	0.983	High	0.827	High	0.509	Medium
	542	80	0.989	High	0.867	High	0.567	Medium
	555	85	0.994	High	0.908	High	0.637	Medium
	571	90	0.998	High	0.943	High	0.711	High
	596	95	0.999	High	0.974	High	0.802	High
	653	99	1.000	High	0.996	High	0.919	High
4	419	5	0.233	Low	0.033	Low	0.002	Low
	448	10	0.414	Medium	0.094	Low	0.010	Low
	465	15	0.544	Medium	0.163	Low	0.023	Low
	479	20	0.654	Medium	0.240	Low	0.042	Low
	490	25	0.734	High	0.314	Low	0.066	Low
	500	30	0.798	High	0.388	Medium	0.095	Low
	509	35	0.847	High	0.458	Medium	0.127	Low
	517	40	0.884	High	0.521	Medium	0.162	Low
	525	45	0.914	High	0.583	Medium	0.201	Low
	533	50	0.937	High	0.642	Medium	0.245	Low
	541	55	0.955	High	0.697	High	0.293	Low
	549	60	0.968	High	0.747	High	0.343	Medium

	557	65	0.978	High	0.792	High	0.394	Medium
	565	70	0.985	High	0.830	High	0.446	Medium
	575	75	0.991	High	0.871	High	0.510	Medium
	586	80	0.995	High	0.906	High	0.577	Medium
	598	85	0.997	High	0.935	High	0.645	Medium
	614	90	0.999	High	0.961	High	0.724	High
	638	95	1.000	High	0.983	High	0.816	High
	685	99	1.000	High	0.997	High	0.922	High

Table 10. *Fifth and Sixth Grade Proficiency Projection for ISIP at EOY*

Grade	Overall Score	Percentile	Approaches Probability	Approaches	Meets Probability	Meets	Masters Probability	Masters
5	440	5	0.253	Low	0.035	Low	0.004	Low
	470	10	0.450	Medium	0.103	Low	0.018	Low
	488	15	0.590	Medium	0.180	Low	0.041	Low
	502	20	0.696	High	0.262	Low	0.074	Low
	514	25	0.778	High	0.347	Medium	0.115	Low
	524	30	0.836	High	0.425	Medium	0.161	Low
	533	35	0.879	High	0.498	Medium	0.209	Low
	542	40	0.914	High	0.570	Medium	0.265	Low
	550	45	0.937	High	0.632	Medium	0.319	Low
	559	50	0.957	High	0.696	High	0.383	Medium
	567	55	0.971	High	0.748	High	0.440	Medium
	575	60	0.980	High	0.794	High	0.498	Medium
	584	65	0.987	High	0.839	High	0.560	Medium
	593	70	0.992	High	0.875	High	0.618	Medium
	603	75	0.995	High	0.908	High	0.677	High
	614	80	0.997	High	0.935	High	0.734	High
	627	85	0.999	High	0.957	High	0.790	High
	643	90	1.000	High	0.975	High	0.845	High
	669	95	1.000	High	0.990	High	0.907	High
	719	99	1.000	High	0.998	High	0.966	High
6	462	5	0.172	Low	0.029	Low	0.002	Low
	491	10	0.295	Low	0.066	Low	0.006	Low

	509	15	0.394	Medium	0.105	Low	0.012	Low
	524	20	0.488	Medium	0.149	Low	0.022	Low
	536	25	0.565	Medium	0.193	Low	0.033	Low
	547	30	0.635	Medium	0.240	Low	0.048	Low
	556	35	0.690	High	0.281	Low	0.063	Low
	565	40	0.741	High	0.326	Low	0.082	Low
	574	45	0.787	High	0.374	Medium	0.105	Low
	583	50	0.828	High	0.422	Medium	0.131	Low
	591	55	0.860	High	0.466	Medium	0.158	Low
	600	60	0.890	High	0.516	Medium	0.193	Low
	608	65	0.913	High	0.559	Medium	0.226	Low
	617	70	0.934	High	0.607	Medium	0.267	Low
	627	75	0.952	High	0.657	Medium	0.316	Low
	638	80	0.967	High	0.710	High	0.373	Medium
	651	85	0.979	High	0.765	High	0.443	Medium
	667	90	0.989	High	0.824	High	0.528	Medium
	692	95	0.996	High	0.893	High	0.652	Medium
	739	99	0.999	High	0.964	High	0.822	High

Table 11. *Seventh and Eighth Grade Proficiency Projection for ISIP at EOY*

Grade	Overall Score	Percentile	Approaches Probability	Approaches	Meets Probability	Meets	Masters Probability	Masters
7	484	5	0.372	Medium	0.084	Low	0.018	Low
	516	10	0.548	Medium	0.171	Low	0.049	Low
	537	15	0.667	High	0.254	Low	0.088	Low
	553	20	0.749	High	0.330	Low	0.129	Low
	566	25	0.807	High	0.397	Medium	0.171	Low
	578	30	0.853	High	0.462	Medium	0.215	Low
	588	35	0.885	High	0.515	Medium	0.257	Low
	598	40	0.911	High	0.568	Medium	0.300	Low
	608	45	0.933	High	0.619	Medium	0.346	Medium
	617	50	0.948	High	0.663	High	0.389	Medium
	626	55	0.961	High	0.703	High	0.432	Medium
	635	60	0.970	High	0.741	High	0.474	Medium

	645	65	0.979	High	0.779	High	0.520	Medium
	655	70	0.985	High	0.813	High	0.565	Medium
	665	75	0.989	High	0.843	High	0.607	Medium
	677	80	0.993	High	0.874	High	0.655	Medium
	690	85	0.996	High	0.901	High	0.702	High
	707	90	0.998	High	0.929	High	0.755	High
	733	95	0.999	High	0.958	High	0.821	High
	781	99	1.000	High	0.985	High	0.902	High
8	503	5	0.375	Medium	0.091	Low	0.026	Low
	539	10	0.595	Medium	0.205	Low	0.071	Low
	561	15	0.724	High	0.302	Low	0.117	Low
	579	20	0.811	High	0.390	Medium	0.165	Low
	593	25	0.864	High	0.460	Medium	0.206	Low
	606	30	0.903	High	0.524	Medium	0.248	Low
	618	35	0.930	High	0.579	Medium	0.288	Low
	628	40	0.948	High	0.623	Medium	0.322	Low
	639	45	0.962	High	0.669	High	0.360	Medium
	649	50	0.972	High	0.706	High	0.394	Medium
	659	55	0.980	High	0.741	High	0.427	Medium
	669	60	0.985	High	0.773	High	0.460	Medium
	679	65	0.990	High	0.802	High	0.492	Medium
	689	70	0.993	High	0.827	High	0.523	Medium
	700	75	0.995	High	0.853	High	0.556	Medium
	713	80	0.997	High	0.878	High	0.593	Medium
	727	85	0.998	High	0.902	High	0.630	Medium
	745	90	0.999	High	0.926	High	0.673	High
	771	95	1.000	High	0.951	High	0.728	High
	820	99	1.000	High	0.979	High	0.810	High

At EOY, the following cut points were observed for achieving STAAR Reading performance level 2 (Approaches) or higher: 25th percentile rank for grades 3 and 4, the 20th percentile for grade 5, the 35th percentile for grade 6, and the 15th percentile for grades 7 and 8.

If third through eighth grade students have ISIP Reading scores around the 60th, 55th, 50th, 80th, 50th, and 45th percentile ranks, respectively, they are likely to achieve STAAR performance level 3 (Meets) or higher. To achieve STAAR Reading performance level 4 (Masters), third through eighth grade students need ISIP Reading scores around the 90th, 90th, 75th, 99th, 85th, and 90th percentile ranks, respectively.

Classification Accuracy

Classification accuracy was conducted to predict whether students in the sample would achieve level 3 or higher on the STAAR. A higher classification accuracy rate indicates stronger congruence between ISIP Reading and STAAR Reading assessments. We conducted a classification accuracy for third through eighth grade ISIP Reading scores at MOY and EOY and STAAR Reading ranking of level 3 and higher. Classification accuracy analyses determine ISIP cut points that can help differentiate students who would or would not attain level 3 (Meets) or level 4 (Masters) on STAAR Reading. Table 12 has the breakdown of our sample by STAAR Reading level and grade.

Table 12. *Percentage of Students in STAAR Levels by Grade*

Grade	Level 1 (Did Not Meet)	Level 2 (Approaches)	Level 3 (Meets)	Level 4 (Masters)
3	30%	28%	19%	23%
4	28%	26%	25%	22%
5	24%	26%	20%	30%
6	44%	27%	17%	12%
7	32%	27%	16%	25%
8	28%	29%	18%	25%

Note: Percentages that add up to more than 100% are due to rounding.

We conducted classification accuracy of ISIP cut scores at the 30th, 35th, 40th, 45th, 50th, 55th, 60th, 65th, 70th, 75th, and 80th percentile ranks and STAAR level 3 or higher. The area under the curve (AUC), sensitivity, specificity, positive predictive power, negative predictive power, and the overall rate were computed and compared to determine the best ISIP Reading cut points to identify students who would most likely

meet level 3 or higher on STAAR Reading in the spring. Results show that the best cut scores vary by grade on ISIP at MOY and EOY.

Table 13 shows results at the MOY. The AUC ranged from 0.77 to 0.79, indicating that the percentage of students correctly classified on ISIP Reading with respect to STAAR Reading was approximately 78% across grades. Sensitivity ranged from 0.71 to 0.80, indicating that about 76% of students who performed below the cut point on ISIP Reading did not meet level 3 or above on STAAR Reading. The specificity ranged from 0.77 to 0.86, indicating that approximately 81% of students who performed above the cut point on ISIP were likely to meet level 3 or above on STAAR Reading. ISIP Reading accurately predicted meeting ELA proficiency on STAAR Reading about 80% of the time at the MOY.

Table 13. *Classification Accuracy Indices at MOY*

Grade	Cut Point	AUC	Sensitivity	Specificity
3	40th	0.78	0.77	0.80
4	40th	0.78	0.77	0.79
5	40th	0.79	0.73	0.84
6	40th	0.79	0.80	0.77
7	35th	0.79	0.72	0.86
8	30th	0.77	0.71	0.83

Table 14 shows results at the EOY. The AUC ranged from 0.76 to 0.80, indicating that the percentage of students correctly classified on ISIP Reading with respect to the STAAR Reading was approximately 78% across grades. Sensitivity ranged from 0.69 to 0.79, indicating that approximately 74% of students who performed below the cut point on ISIP did not meet level 3 or above on STAAR Reading. The specificity ranged from 0.78 to 0.84, indicating that approximately 81% of students who performed above the cut point on ISIP Reading were likely to meet level 3 or above on STAAR Reading. ISIP Reading accurately predicted meeting ELA proficiency on STAAR Reading about 80% of the time at the EOY.

Table 14. *Classification Accuracy Indices at EOY*

Grade	Cut Point	AUC	Sensitivity	Specificity
3	40th	0.80	0.79	0.80
4	40th	0.79	0.77	0.80
5	40th	0.79	0.75	0.82
6	40th	0.78	0.78	0.78
7	35th	0.77	0.71	0.84
8	30th	0.76	0.69	0.83

Conclusion and Limitations

This study demonstrates how ISIP scores can predict students' performance on the STAAR Reading. This study provides helpful information to teachers and administrators to prepare their third through eighth grade students for the STAAR Reading assessments in the spring. Projections based on multinomial logistic regression and classification accuracy provide information to help teachers and administrators identify students who may be at risk of not meeting expectations on the STAAR.

To achieve performance level three (Meeting Expectations) on STAAR Reading, students must attain MOY ISIP scores ranging from the 40th (eighth grade) to 75th (sixth grade) percentile rank. A similar trend was observed for EOY scores. The sixth grade test appears to be more difficult, as sixth graders need to attain a higher ISIP Reading score to reach the Meets and Masters levels than do seventh or eighth graders.

The results confirm a positive relationship between the ISIP Reading and STAAR Reading assessments. While results are promising, the complete certainty of passing the STAAR Reading assessment is unknown. Other factors may affect students' STAAR Reading scores besides their reading abilities measured by the ISIP assessment. While the sample was comprised of several school districts across the state, the data may not be representative of all students in the state, or across all districts.

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