

Linking the Oklahoma OSTP ELA Assessment to Istation Reading Formative Assessment

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Executive Summary

This study provides the proficiency projection of Istation Reading Formative Assessment (Istation Reading) on the Oklahoma School Testing Program (OSTP) English Language Arts (ELA) assessments for grades 3 through 8. Classification accuracy is also provided. All data came from students in three school districts in Oklahoma.

The Pearson product–moment correlations of Istation Reading middle–of–the–year (MOY) scores and OSTP ELA scores range from 0.68 to 0.81, and for Istation end–of–the–year (EOY) scores and OSTP ELA scores, they range from 0.69 to 0.82. This indicates strong associations between Istation Reading and the OSTP ELA assessment. The linking study between the OSTP ELA and Istation Reading was conducted using multinomial logistic regression. Low probability of attaining a level was defined as less than .330, a medium probability of attaining a level was .330–.660, and a high probability of attaining a level was set at greater than .660.

At MOY, in order to achieve a high probability of meeting OSTP ELA performance level 2 (*Basic Proficiency*), students had to attain Istation scores at the following percentile ranks:

- Third grade: 45th
- Fourth grade: 50th
- Fifth grade: 35th
- Sixth grade: 35th
- Seventh grade: 45th
- Eighth grade: 25th

To attain a high probability of meeting OSTP ELA performance level 3 (*Proficient*) or higher, students needed to reach the following percentile ranks on Istation Reading:

- Third grade: 80th
- Fourth grade: 80th
- Fifth grade: 80th
- Sixth grade: 85th
- Seventh grade: 85th
- Eighth grade: 85th

At EOY, students had to attain Istation Reading scores at the following percentile ranks to have a high probability of meeting OSTP ELA performance level 2 (*Basic Proficiency*) or higher:

- Third grade: 50th
- Fourth grade: 45th
- Fifth grade: 40th
- Sixth grade: 35th
- Seventh grade: 40th
- Eighth grade: 30th

To attain a high probability of meeting OSTP ELA performance level 3 (*Proficient*) or higher, students needed to reach the following percentile ranks on Istation Reading:

- Third grade: 85th
- Fourth grade: 80th
- Fifth grade: 80th
- Sixth grade: 85th
- Seventh grade: 95th
- Eighth grade: 95th

Classification accuracy analyses were conducted. At MOY, 82% of students were correctly classified on Istation Reading with respect to the OSTP ELA. For example, 77% of students who performed below the cut point on Istation Reading did not meet level 2 or above on the OSTP ELA assessment; 85% of students who performed above the cut point on Istation Reading met level 2 or above on the OSTP ELA assessment. Istation Reading accurately predicted meeting *Basic Proficiency* on the OSTP ELA assessment about 81% of the time at MOY.

At EOY, the percentage of students correctly classified on Istation Reading with respect to OSTP ELA was approximately 81% across grades: 77% of students who performed below the cut point on Istation Reading did not meet level 2 or above on OSTP ELA, and 84% of students who performed above the cut point on Istation Reading met level 2 or above on OSTP ELA. Istation Reading accurately predicted meeting *Basic Proficiency* on the OSTP ELA assessment about 80% of the time at EOY.

Introduction

This study provides the proficiency projection of Istation Reading Formative Assessment (Istation Reading) observed scores on the OSTP ELA scores for grades 3 through 8. Students took these two assessments during the 2021–2022 school year, and a correlational study and classification accuracy were also conducted.

Regular administration of Istation assessments (either monthly or three times each school year during benchmarking assessment months) and the administration of the OSTP ELA in the spring present an opportunity for conducting a linking study between the Istation Reading and OSTP ELA assessments. The results from this study can be useful for teachers and school administrators to prepare students for the OSTP ELA in the spring.

The Istation Reading assessments have strong correlations with other state assessments, and linking studies with other assessments demonstrated that Istation Reading can be used to project student proficiency on end-of-year assessments such as the State of Texas Assessment of Academic Readiness (STAAR) (Wolf & Locke, 2023), Virginia Standards of Learning (Campbell, Sutter, & Lambie, 2019), Ohio AIR (LePlante, 2019), Renaissance STAR (Campbell, Sutter, Lambie, & Tinstman Jones, 2019), CMAS ELA (Patarapichayatham, 2019), Idaho SAT (Wolfe & Ross, 2020), New Jersey Student Learning Standards (NJSLA) (Wolf & Locke, 2022), and PARCC (Cook & Ross, 2020). All information can be found on our website (www.istation.com).

Background

Istation Reading Assessments

Istation Reading assessments utilize a computer adaptive testing (CAT) approach based on two-parameter item response theory, which enables measurement of critical domains such as reading comprehension, fluency, vocabulary, and spelling. These assessments are highly efficient, capable of tracking progress within or across academic years, and can be administered to an entire classroom, school, or district in as little as 30 minutes, easily fitting within the school day. Immediate online availability of student results provides teachers and administrators insight into each student’s past and current performance, as well as skill growth. Teachers receive alerts when students are not

making adequate progress, allowing them to modify instruction before a pattern of failure develops (Mathes, 2011).

Istation Reading helps teachers identify deficits and provide differentiated instruction according to a student’s pattern of strengths and weaknesses. Istation Reading is available for prekindergarten through 8th grade students and has a continuous vertical scale that assesses reading ability across these grades. In addition to detailed reports, Istation provides teachers and other school personnel with links to teaching resources and targeted intervention strategies (Mathes et al., 2023). Scaled scores range from 100 to 900. There are five performance levels for Istation Reading:

- Level 1: at or below the 20th percentile rank
- Level 2: between the 21st and 40th percentile rank
- Level 3: between the 41st and 60th percentile rank
- Level 4: between the 61st and 80th percentile rank
- Level 5: at or above the 81st percentile rank

Oklahoma OSTP ELA Assessment

The OSTP ELA is a statewide computer based summative assessment for English language arts at the end of grades 3 through 8 and grade 11. Items are aligned to the Oklahoma Academic Standards and are based on passages composed of literary and informational texts. Because it is a single measure taken at the conclusion of a grade, OSTP ELA scores should be interpreted and utilized alongside additional measures. Classroom summative and formative assessments in English language arts and interim assessments can provide important supplementary information.

The OSTP ELA is designed to provide evidence that determines grade-level proficiency. As shown in Table 1, students receive a performance level and a numerical scaled score that corresponds to the knowledge, skills, and abilities that students must demonstrate to be classified into one of four levels:

- *Below Basic*: Students have **not performed** at least at the Basic Level.
- *Basic*: Students demonstrate evidence of **partial mastery** of the essential knowledge and skills appropriate to their grade level.
- *Proficient*: Students demonstrate **mastery** over appropriate grade-level subject matter and readiness for the next grade level.

- *Advanced*: Students demonstrate **superior performance** on challenging subject matter.

The purpose of this study is to predict students’ performance on the OSTP ELA based on their Istation Reading scores. There are two objectives in the current study:

- (1) Use Istation Reading scores from the middle-of-the-year (MOY) benchmark month to predict OSTP ELA outcomes.
- (2) Use Istation Reading scores from the end-of-the-year (EOY) benchmark month to predict OSTP ELA outcomes.

Table 1

Scaled Score Ranges for Performance Levels by Grade on the OSTP ELA

Grade	Level 1 <i>Below Basic</i>	Level 2 <i>Basic</i>	Level 3 <i>Proficient</i>	Level 4 <i>Advanced</i>
3	200–276	277–299	300–328	329–399
4	200–274	275–299	300–330	331–399
5	200–270	271–299	300–322	323–399
6	200–268	269–299	300–329	330–399
7	200–272	273–299	300–322	323–399
8	200–268	269–299	300–321	322–399

Data from the 2021–2022 school year from three districts in the state of Oklahoma were shared with Istation. Data were collected from students in third through eighth grade who had taken the Istation Reading assessment during the 2021–2022 academic school year. The Istation Reading assessment was renormed in 2022 using data from the 2018–2019 school year, and the scores were put on a vertical scale. In the current study, old scores were converted to the new scale using the equating constants from the new norms.

Methodology

Pearson product-moment correlations between the Istation Reading and OSTP ELA assessments were examined in the first step. Next, multinomial logistic regression methodologies were used to compute probabilities for reaching the *Basic* level or above on the OSTP ELA assessment. Lastly, classification accuracy analyses were conducted to

identify the cut points that best predict whether a student will reach the *Basic* level or above on the OSTP ELA assessment.

Analytic Samples

Istation Reading

Only students who had a valid Istation Reading and OSTP ELA score were included in the analyses.

Table 2 presents the analytic sample breakdown by grade and school district. District A had the largest sample with 3,021 students, followed by District B (n = 1,128), and District C (n = 623). District A and B predominately consisted of students who were White/Non-Hispanic whereas District C consisted mostly of White/Non-Hispanic and other races. A full description of demographic characteristics for each district is available in Table 3. Sample characteristics were obtained from the National Center for Education Statistics website.

Table 2

Sample Size per District by Grade

Grade	A	B	C	Combined
3	535	414	218	1,167
4	516	357	215	1,088
5	518	357	190	1,065
6	480			480
7	469			469
8	503			503

Table 3

Demographic Description of the Sample by District

District	Sample Size	Demographic Characteristic	Percentage
		Gender: Female	49%
		Gender: Male	51%
A	N=3,021	Race/Ethnicity: White/Non-Hispanic	69%
		Race/Ethnicity: African American or Black	3%

		Race/Ethnicity: Hispanic or Latino origin	15%
		Race/Ethnicity: Asian or Other	13%
B	N=1,128	Gender: Female	48%
		Gender: Male	52%
		Race/Ethnicity: White/Non-Hispanic	74%
		Race/Ethnicity: African American or Black	4%
		Race/Ethnicity: Hispanic or Latino origin	5%
		Race/Ethnicity: Asian or Other	18%
C	N=623	Gender: Female	48%
		Gender: Male	52%
		Race/Ethnicity: White/Non-Hispanic	44%
		Race/Ethnicity: African American or Black	2%
		Race/Ethnicity: Hispanic or Latino origin	11%
		Race/Ethnicity: Asian or Other	44%

Analytic Framework

To provide teachers and administrators with the information they need to determine whether a student is likely to reach the *Basic* level or above on the OSTP ELA assessment, the analysis first examined Pearson product-moment correlations to confirm the relationship of performance between the two assessments. Next, multinomial logistic regression determined the probabilities of reaching the *Basic* (level 2) level or above on the OSTP ELA. The analysis used the Istation score as the predictor and the OSTP ELA performance levels as outcome variables. Students with Istation scores ranging from the 1st to the 99th percentile ranks were part of the analysis. A selection of 20 Istation Reading scaled scores in MOY and EOY, corresponding to the following percentile ranks, was used: 5, 10, 15, 20, 25, 30, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 99. The model was adapted for each grade individually. The study focused on performance levels 2, 3, and 4.

The probability of achieving OSTP ELA performance level 2 (*Basic*) or above is computed by adding the probabilities of levels 2, 3, and 4. The probability of achieving OSTP ELA performance level 3 (*Proficient*) or above is computed by adding the probabilities of levels 3 and 4. Lastly, the probability of achieving the probability for level 4 (*Advanced*) is the probability only for level 4. The analyses were conducted using R software with the *nnet* package. Lastly, classification accuracy analyses determined Istation cut points that help inform of differentiating students who will or will not achieve level 2 *Basic* or higher on the OSTP ELA.

Results

Istation Reading and OSTP ELA Descriptive Statistics

Tables 4 through 6 present descriptive statistics for OSTP ELA and Istation Reading performance for each benchmark by district and grade. Table 7 shows data for districts combined.

Table 4

District A Mean and Standard Deviation (SD) for OSTP ELA and Istation Reading Scores by Grade

Grade	OSTP Score (SD)	Istation BOY Reading (SD)	Istation MOY Reading (SD)	Istation EOY Reading (SD)
3	280.36 (31.28)	427.57 (61.45)	460.57 (65.33)	485.13 (69.29)
4	276.09 (32.61)	474.35 (61.55)	496.55 (67.13)	510.61 (68.57)
5	284.19 (27.88)	515.17 (61.08)	531.60 (62.63)	544.80 (60.86)
6	276.93 (30.35)	529.70 (68.75)	534.89 (86.73)	547.90 (85.90)
7	268.50 (32.96)	546.54 (72.06)	549.14 (96.71)	557.92 (106.24)
8	273.98 (30.10)	559.80 (79.92)	577.55 (98.45)	595.75 (112.75)

Table 5

District B Mean and Standard Deviation (SD) for OSTP ELA and Istation Reading Scores by Grade

Grade	OSTP Score (SD)	Istation BOY Reading (SD)	Istation MOY Reading (SD)	Istation EOY Reading (SD)
3	292.79 (35.76)	448.95 (64.63)	480.28 (70.75)	501.16 (71.43)
4	284.87 (33.89)	490.61 (69.59)	520.87 (73.18)	536.07 (71.94)
5	292.47 (28.40)	536.90 (58.51)	560.32 (62.93)	573.90 (62.58)

Table 6

District C Mean and Standard Deviation (SD) for OSTP ELA and Istation Reading Scores

Grade	OSTP Score (SD)	Istation BOY Reading (SD)	Istation MOY Reading (SD)	Istation EOY Reading (SD)
3	281.22 (33.56)	434.77 (55.88)	470.98 (65.64)	490.26 (70.96)
4	274.82 (41.04)	478.85 (62.05)	499.07 (64.73)	509.06 (69.57)
5	284.95 (33.07)	522.88 (63.05)	539.50 (69.99)	569.35 (71.20)

Table 7

Combined Sample Mean and Standard Deviation (SD) for OSTP ELA and Istation Reading Scores by Grade

Grade	OSTP Score (SD)	Istation BOY Reading (SD)	Istation MOY Reading (SD)	Istation EOY Reading (SD)
3	284.93 (33.84)	436.50 (62.31)	469.42 (67.85)	491.76 (70.67)
4	278.72 (35.07)	480.59 (64.75)	504.91 (69.51)	518.67 (70.88)
5	287.10 (29.27)	523.84 (61.30)	542.54 (65.32)	557.26 (63.63)
6	276.93 (30.35)	529.70 (68.75)	534.89 (86.73)	547.90 (85.90)
7	268.50 (32.96)	546.54 (72.06)	549.14 (96.71)	557.92 (106.24)
8	273.98 (30.10)	559.80 (79.92)	577.55 (98.45)	595.75 (112.75)

Table 8 presents the proportion of students in each OSTP ELA level by grade for all districts. The largest proportion of students performed at the *Below Basic* and *Basic* levels across all grades.

Table 8*Percentage of Students by OSTP ELA Performance Level*

Grade	Below Basic	Basic	Proficient	Advanced
3	37%	30%	25%	8%
4	43%	29%	24%	4%
5	28%	39%	24%	9%
6	38%	39%	20%	3%
7	52%	31%	14%	3%
8	41%	37%	18%	3%

Correlational Study: Istation Reading and OSTP ELA

Table 9 shows the Pearson product-moment correlation coefficients between Istation Reading scores and OSTP ELA scores for MOY and EOY for all districts combined. The coefficients for grades 3 through 8 range from .68 (grade 7) to .82 (grade 4), indicating a strong positive relationship between Istation Reading and the OSTP ELA. If a student does well on Istation Reading, then it is likely that the student will do well on the OSTP ELA assessment, particularly for grades 3 through 8.

Table 9*Pearson Product-Moment Correlation Coefficients between Istation and OSTP*

Grade	MOY Istation Reading	EOY Istation Reading
3	.79*	.79*
4	.78*	.82*
5	.81*	.80*
6	.75*	.76*
7	.68*	.69*
8	.76*	.71*

* $p < .001$

Linking Study: Istation Reading and OSTP ELA

MOY Istation and OSTP ELA at Winter Benchmarking

Tables 10 through 12 are concordance tables derived from statistical linking procedures that link Istation Reading scores and OSTP ELA performance levels. Concordance tables serve as valuable tools for various stakeholders, including educators, parents, administrators, researchers, and policymakers, by offering essential information to assess students' academic performance. For example, concordance tables may aid in identifying strengths and weaknesses in specific subject areas, assisting in the development of targeted interventions and support programs.

The probabilities of meeting a OSTP ELA performance level were divided into low (less than .330), medium (.330–.660), and high (greater than .660).

Table 10
Third and Fourth Grades Proficiency Projection for Istation Reading at MOY

Grade	Overall Score	Percentile	Basic Probability	Basic	Proficient Probability	Proficient	Advanced Probability	Advanced
3	363	5	0.031	Low	0.001	Low	0.000	Low
	392	10	0.087	Low	0.004	Low	0.000	Low
	410	15	0.162	Low	0.011	Low	0.000	Low
	423	20	0.244	Low	0.023	Low	0.001	Low
	434	25	0.335	Medium	0.043	Low	0.002	Low
	443	30	0.423	Medium	0.068	Low	0.004	Low
	452	35	0.519	Medium	0.104	Low	0.007	Low
	460	40	0.605	Medium	0.147	Low	0.011	Low
	467	45	0.678	High	0.192	Low	0.017	Low
	474	50	0.745	High	0.246	Low	0.025	Low
	481	55	0.804	High	0.305	Low	0.037	Low
	489	60	0.860	High	0.379	Medium	0.051	Low
	496	65	0.898	High	0.446	Medium	0.073	Low
	504	70	0.932	High	0.523	Medium	0.099	Low
	512	75	0.956	High	0.597	Medium	0.141	Low
	522	80	0.975	High	0.684	High	0.197	Low
	533	85	0.987	High	0.766	High	0.448	Low
548	90	0.995	High	0.854	High	0.290	Low	
572	95	0.999	High	0.940	High	0.463	Medium	
626	99	1.000	High	0.995	High	0.798	High	
	408	5	0.035	Low	0.000	Low	0.000	Low
	435	10	0.089	Low	0.003	Low	0.000	Low
	452	15	0.157	Low	0.008	Low	0.000	Low
	465	20	0.234	Low	0.019	Low	0.000	Low
	476	25	0.320	Low	0.035	Low	0.000	Low
	485	30	0.403	Medium	0.056	Low	0.000	Low

4	493	35	0.484	Medium	0.084	Low	0.001	Low
	501	40	0.568	Medium	0.121	Low	0.001	Low
	509	45	0.651	Medium	0.169	Low	0.003	Low
	516	50	0.719	High	0.219	Low	0.004	Low
	524	55	0.788	High	0.285	Low	0.007	Low
	531	60	0.840	High	0.349	Medium	0.011	Low
	539	65	0.887	High	0.425	Medium	0.016	Low
	547	70	0.923	High	0.503	Medium	0.024	Low
	556	75	0.952	High	0.588	Medium	0.037	Low
	566	80	0.973	High	0.674	High	0.056	Low
	578	85	0.987	High	0.764	High	0.089	Low
	593	90	0.995	High	0.850	High	0.146	Low
	616	95	0.999	High	0.933	High	0.276	Low
	661	99	1.000	High	0.991	High	0.619	Medium

Table 11
Fifth and Sixth Grades Proficiency Projection for Istation Reading at MOY

Grade	Overall Score	Percentile	Basic Probability	Basic	Proficient Probability	Proficient	Advanced Probability	Advanced
5	432	5	0.042	Low	0.000	Low	0.000	Low
	461	10	0.131	Low	0.003	Low	0.000	Low
	479	15	0.248	Low	0.009	Low	0.000	Low
	492	20	0.370	Medium	0.020	Low	0.000	Low
	504	25	0.501	Medium	0.039	Low	0.001	Low
	513	30	0.602	Medium	0.062	Low	0.002	Low
	522	35	0.697	High	0.094	Low	0.004	Low
	531	40	0.780	High	0.135	Low	0.008	Low
	539	45	0.840	High	0.182	Low	0.012	Low
	547	50	0.887	High	0.236	Low	0.019	Low
	555	55	0.923	High	0.299	Low	0.029	Low
	563	60	0.949	High	0.368	Medium	0.042	Low
	571	65	0.967	High	0.442	Medium	0.060	Low
	580	70	0.981	High	0.528	Medium	0.085	Low
	589	75	0.989	High	0.612	Medium	0.118	Low
	600	80	0.995	High	0.707	High	0.168	Low
	612	85	0.998	High	0.795	High	0.232	Low
	629	90	0.999	High	0.886	High	0.339	Medium
653	95	1.000	High	0.956	High	0.500	Medium	
702	99	1.000	High	0.996	High	0.775	High	
	453	5	0.142	Low	0.001	Low	0.000	Low
	480	10	0.267	Low	0.004	Low	0.000	Low
	498	15	0.383	Medium	0.010	Low	0.000	Low
	512	20	0.486	Medium	0.021	Low	0.000	Low
	523	25	0.569	Medium	0.034	Low	0.000	Low
	533	30	0.644	Medium	0.053	Low	0.000	Low
	543	35	0.714	High	0.080	Low	0.000	Low
	552	40	0.771	High	0.113	Low	0.001	Low

6	560	45	0.816	High	0.150	Low	0.001	Low
	568	50	0.855	High	0.196	Low	0.002	Low
	576	55	0.888	High	0.250	Low	0.004	Low
	585	60	0.919	High	0.319	Low	0.007	Low
	593	65	0.941	High	0.388	Medium	0.011	Low
	602	70	0.960	High	0.470	Medium	0.017	Low
	612	75	0.975	High	0.563	Medium	0.028	Low
	622	80	0.985	High	0.651	Medium	0.045	Low
	635	85	0.992	High	0.753	High	0.076	Low
	651	90	0.997	High	0.850	High	0.136	Low
	675	95	0.999	High	0.939	High	0.278	Low
	721	99	1.000	High	0.993	High	0.652	Medium

Table 12

Seventh and Eighth Grades Proficiency Projection for Istation Reading at MOY

Grade	Overall Score	Percentile	Basic Probability	Basic	Proficient Probability	Proficient	Advanced Probability	Advanced
7	432	5	0.092	Low	0.003	Low	0.000	Low
	461	10	0.178	Low	0.010	Low	0.000	Low
	479	15	0.267	Low	0.022	Low	0.000	Low
	492	20	0.351	Medium	0.038	Low	0.000	Low
	504	25	0.435	Medium	0.059	Low	0.001	Low
	513	30	0.510	Medium	0.084	Low	0.001	Low
	522	35	0.587	Medium	0.117	Low	0.002	Low
	531	40	0.649	Medium	0.150	Low	0.004	Low
	539	45	0.714	High	0.194	Low	0.006	Low
	547	50	0.767	High	0.239	Low	0.010	Low
	555	55	0.809	High	0.283	Low	0.014	Low
	563	60	0.851	High	0.338	Medium	0.022	Low
571	65	0.886	High	0.396	Medium	0.032	Low	

	580	70	0.917	High	0.463	Medium	0.050	Low
	589	75	0.941	High	0.532	Medium	0.074	Low
	600	80	0.963	High	0.614	Medium	0.114	Low
	612	85	0.978	High	0.699	High	0.175	Low
	629	90	0.990	High	0.796	High	0.282	Low
	653	95	0.997	High	0.902	High	0.481	Medium
	702	99	1.000	High	0.985	High	0.806	High
8	453	5	0.194	Low	0.009	Low	0.000	Low
	480	10	0.347	Medium	0.028	Low	0.001	Low
	498	15	0.474	Medium	0.054	Low	0.002	Low
	512	20	0.578	Medium	0.086	Low	0.004	Low
	523	25	0.661	High	0.121	Low	0.007	Low
	533	30	0.726	High	0.158	Low	0.010	Low
	543	35	0.780	High	0.198	Low	0.014	Low
	552	40	0.827	High	0.243	Low	0.019	Low
	560	45	0.864	High	0.287	Low	0.025	Low
	568	50	0.892	High	0.330	Low	0.031	Low
	576	55	0.917	High	0.380	Medium	0.040	Low
	585	60	0.937	High	0.432	Medium	0.050	Low
	593	65	0.952	High	0.478	Medium	0.060	Low
	602	70	0.966	High	0.535	Medium	0.075	Low
	612	75	0.976	High	0.591	Medium	0.092	Low
	622	80	0.984	High	0.649	Medium	0.113	Low
	635	85	0.990	High	0.711	High	0.141	Low
651	90	0.995	High	0.777	High	0.179	Low	
675	95	0.998	High	0.856	High	0.245	Low	
721	99	1.000	High	0.945	High	0.387	Medium	

Figure 1 is a graphical representation of the MOY Istation Reading percentiles associated with the probabilities of attaining the OSTP ELA *Proficient* performance level by grade.

Third grade students who attained an Istation Reading score of 489–512 (60th to 75th percentile ranks) had a medium probability of achieving the OSTP ELA *Proficient* level or higher. Students with a score higher than 522 and higher than the 80th percentile had a high probability of achieving the *Proficient* level or higher.

Fourth grade students who attained an Istation Reading score of 531–556 (60th to 75th percentile ranks) had a medium probability of achieving the OSTP ELA *Proficient* level or higher. Students with a score higher than 566 had a high probability of reaching the *Proficient* level or higher.

Fifth grade students who attained an Istation Reading score of 563–589 (60th to 75th percentile ranks) had a medium probability of achieving the *Proficient* level or higher. Students with a score of 600 or greater had a high probability of achieving the *Proficient* level or higher.

Sixth grade students who attained an Istation Reading score of 593–622 (65th to 80th percentile ranks) had a medium probability of reaching the *Proficient* level or higher. Students who attained an Istation Reading score above 635 (85th percentile rank) had a high probability of reaching the *Proficient* level.

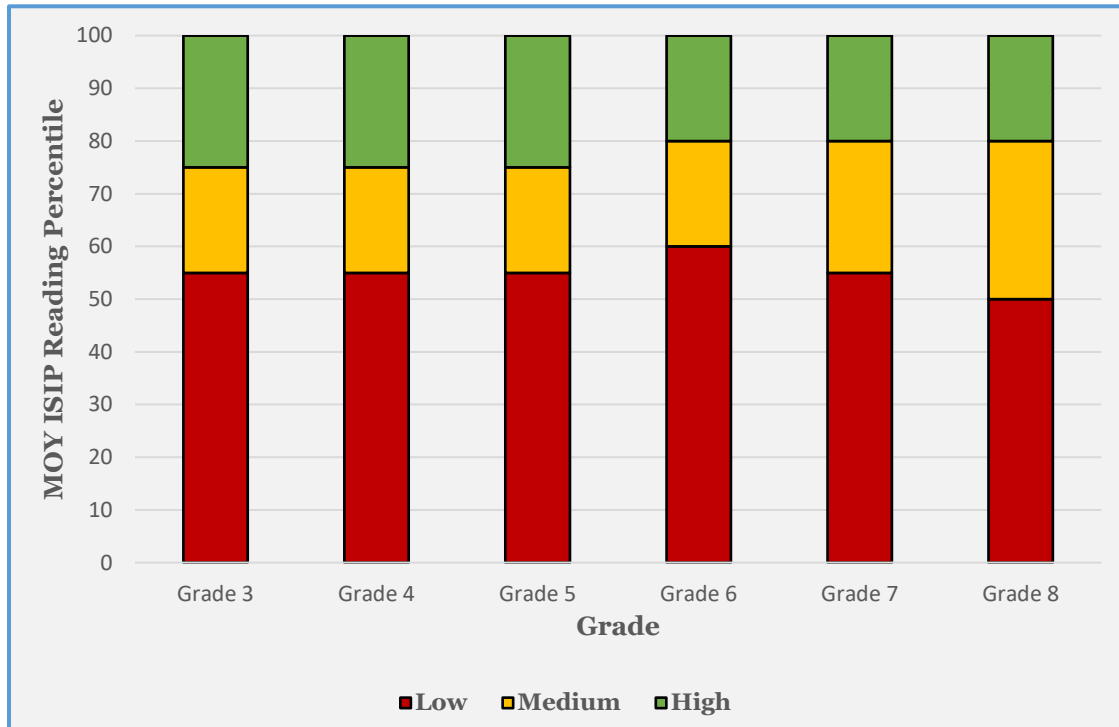
Seventh grade students who attained an Istation Reading score of 563–600 (60th to 80th percentile ranks) had a medium probability of achieving the OSTP ELA *Proficient* level or higher. Students with a score higher than 612 and higher than the 85th percentile had a high probability of achieving the *Proficient* level or higher.

Eighth grade students who attained an Istation Reading score of 576–622 (55th to 80th percentile ranks) had a medium probability of achieving the OSTP ELA *Proficient* level or higher. Students with a score higher than 635 and higher than the 85th percentile had a high probability of achieving the *Proficient* level or higher.

These results show that attaining the *Proficient* level or above on the OSTP ELA students needed Istation scores higher than the 80th percentile to have a high probability of attaining *Proficient* or higher on the OSTP ELA. This was consistent across grades three through five. Students in grades six through eight had to attain Istation scores at or above the 85th percentile to achieve a high probability of attaining *Proficient* or higher on the OSTP ELA.

Figure 1

MOY Istation Reading Percentiles and OSTP ELA Proficient Probabilities by Grade



EOY Istation Reading and OSTP ELA at Spring Benchmarking

Tables 13 through 15 are concordance tables derived from statistical linking procedures that link Istation Reading scores and OSTP ELA performance levels.

Table 13
Third and Fourth Grade Proficiency Projection for Istation Reading at EOY

Grade	Overall Score	Percentile	Basic Probability	Basic	Proficient Probability	Proficient	Advanced Probability	Advanced
3	371	5	0.014	Low	0.000	Low	0.000	Low
	402	10	0.048	Low	0.002	Low	0.000	Low
	422	15	0.103	Low	0.006	Low	0.000	Low
	436	20	0.173	Low	0.015	Low	0.000	Low
	448	25	0.260	Low	0.031	Low	0.001	Low
	458	30	0.354	Medium	0.053	Low	0.002	Low
	467	35	0.451	Medium	0.084	Low	0.005	Low
	475	40	0.543	Medium	0.120	Low	0.008	Low
	483	45	0.635	Medium	0.167	Low	0.013	Low
	491	50	0.719	High	0.222	Low	0.019	Low
	499	55	0.793	High	0.285	Low	0.029	Low
	506	60	0.846	High	0.345	Medium	0.039	Low
	514	65	0.894	High	0.415	Medium	0.055	Low
	523	70	0.932	High	0.495	Medium	0.076	Low
	532	75	0.959	High	0.573	Medium	0.103	Low
	542	80	0.977	High	0.653	Medium	0.138	Low
	555	85	0.990	High	0.744	High	0.193	Low
	571	90	0.996	High	0.833	High	0.271	Low
596	95	0.999	High	0.923	High	0.411	Medium	
653	99	1.000	High	0.991	High	0.711	High	
	419	5	0.013	Low	0.000	Low	0.000	Low
	448	10	0.048	Low	0.001	Low	0.000	Low
	465	15	0.101	Low	0.005	Low	0.000	Low
	479	20	0.180	Low	0.013	Low	0.000	Low
	490	25	0.271	Low	0.027	Low	0.000	Low
	500	30	0.378	Medium	0.049	Low	0.000	Low
	509	35	0.489	Medium	0.081	Low	0.001	Low
	517	40	0.591	Medium	0.122	Low	0.002	Low

4	525	45	0.688	High	0.173	Low	0.003	Low
	533	50	0.774	High	0.235	Low	0.005	Low
	541	55	0.843	High	0.304	Low	0.008	Low
	549	60	0.895	High	0.380	Medium	0.013	Low
	557	65	0.933	High	0.457	Medium	0.020	Low
	565	70	0.958	High	0.533	Medium	0.030	Low
	575	75	0.978	High	0.624	Medium	0.046	Low
	586	80	0.990	High	0.713	High	0.071	Low
	598	85	0.996	High	0.794	High	0.110	Low
	614	90	0.999	High	0.876	High	0.182	Low
	638	95	1.000	High	0.949	High	0.335	Medium
	685	99	1.000	High	0.994	High	0.692	High

Table 14

Fifth and Sixth Grade Proficiency Projection for Istation Reading at EOY

Grade	Overall Score	Percentile	Basic Probability	Basic	Proficient Probability	Proficient	Advanced Probability	Advanced
	440	5	0.041	Low	0.001	Low	0.000	Low
	470	10	0.119	Low	0.004	Low	0.000	Low
	488	15	0.215	Low	0.011	Low	0.000	Low
	502	20	0.324	Low	0.024	Low	0.001	Low
	514	25	0.438	Medium	0.045	Low	0.001	Low
	524	30	0.541	Medium	0.072	Low	0.003	Low
	533	35	0.633	Medium	0.105	Low	0.005	Low
	542	40	0.719	High	0.148	Low	0.009	Low
	550	45	0.785	High	0.194	Low	0.014	Low

5	559	50	0.847	High	0.255	Low	0.022	Low
	567	55	0.890	High	0.315	Low	0.032	Low
	575	60	0.924	High	0.381	Medium	0.045	Low
	584	65	0.951	High	0.457	Medium	0.065	Low
	593	70	0.969	High	0.535	Medium	0.091	Low
	603	75	0.982	High	0.619	Medium	0.127	Low
	614	80	0.991	High	0.704	High	0.176	Low
	627	85	0.996	High	0.791	High	0.246	Low
	643	90	0.999	High	0.872	High	0.345	Medium
	669	95	1.000	High	0.950	High	0.516	Medium
	719	99	1.000	High	0.994	High	0.786	High
6	462	5	0.138	Low	0.001	Low	0.000	Low
	491	10	0.273	Low	0.006	Low	0.000	Low
	509	15	0.391	Medium	0.015	Low	0.000	Low
	524	20	0.503	Medium	0.030	Low	0.000	Low
	536	25	0.595	Medium	0.050	Low	0.000	Low
	547	30	0.676	Medium	0.076	Low	0.001	Low
	556	35	0.737	High	0.105	Low	0.001	Low
	565	40	0.792	High	0.142	Low	0.002	Low
	574	45	0.839	High	0.187	Low	0.003	Low
	583	50	0.878	High	0.240	Low	0.005	Low
	591	55	0.907	High	0.294	Low	0.007	Low
	600	60	0.933	High	0.361	Medium	0.011	Low
	608	65	0.951	High	0.425	Medium	0.017	Low
	617	70	0.967	High	0.499	Medium	0.025	Low
	627	75	0.979	High	0.582	Medium	0.039	Low
	638	80	0.988	High	0.667	Medium	0.060	Low
	651	85	0.994	High	0.757	High	0.096	Low
	667	90	0.997	High	0.845	High	0.160	Low

	692	95	0.999	High	0.933	High	0.307	Low
	739	99	1.000	High	0.991	High	0.659	Medium

Table 15

Seventh and Eighth Grade Proficiency Projection for Istation Reading at EOY

Grade	Overall Score	Percentile	Basic Probability	Basic	Proficient Probability	Proficient	Advanced Probability	Advanced
7	440	5	0.133	Low	0.012	Low	0.000	Low
	470	10	0.234	Low	0.030	Low	0.000	Low
	488	15	0.327	Low	0.051	Low	0.001	Low
	502	20	0.409	Medium	0.074	Low	0.002	Low
	514	25	0.482	Medium	0.098	Low	0.003	Low
	524	30	0.550	Medium	0.125	Low	0.005	Low
	533	35	0.607	Medium	0.151	Low	0.008	Low
	542	40	0.661	High	0.179	Low	0.010	Low
	550	45	0.712	High	0.211	Low	0.014	Low
	559	50	0.755	High	0.241	Low	0.019	Low
	567	55	0.793	High	0.273	Low	0.024	Low
	575	60	0.827	High	0.306	Low	0.031	Low
	584	65	0.861	High	0.345	Medium	0.041	Low
	593	70	0.889	High	0.384	Medium	0.053	Low
	603	75	0.912	High	0.425	Medium	0.067	Low
	614	80	0.935	High	0.474	Medium	0.088	Low
	627	85	0.954	High	0.528	Medium	0.116	Low
	643	90	0.972	High	0.598	Medium	0.163	Low
669	95	0.987	High	0.701	High	0.256	Low	
719	99	0.998	High	0.855	High	0.478	High	

8	462	5	0.272	Low	0.019	Low	0.001	Low
	491	10	0.397	Medium	0.043	Low	0.002	Low
	509	15	0.484	Medium	0.068	Low	0.004	Low
	524	20	0.559	Medium	0.096	Low	0.006	Low
	536	25	0.616	Medium	0.123	Low	0.009	Low
	547	30	0.668	High	0.153	Low	0.012	Low
	556	35	0.714	High	0.185	Low	0.015	Low
	565	40	0.750	High	0.214	Low	0.019	Low
	574	45	0.786	High	0.249	Low	0.024	Low
	583	50	0.816	High	0.284	Low	0.029	Low
	591	55	0.844	High	0.320	Low	0.035	Low
	600	60	0.868	High	0.357	Medium	0.042	Low
	608	65	0.890	High	0.396	Medium	0.050	Low
	617	70	0.909	High	0.436	Medium	0.059	Low
	627	75	0.927	High	0.480	Medium	0.070	Low
	638	80	0.944	High	0.531	Medium	0.084	Low
	651	85	0.959	High	0.585	Medium	0.102	Low
	667	90	0.973	High	0.651	Medium	0.126	Low
	692	95	0.985	High	0.736	High	0.167	Low
	739	99	0.996	High	0.855	High	0.257	Low

Figure 2 is a graphical representation of the EOY Istation Reading percentiles associated with the probabilities of attaining the OSTPA ELA *Proficient* performance level by grade.

Third grade students who attained an Istation Reading score of 506–542 (60th to 80th percentile ranks) had a medium probability of achieving the OSTP ELA *Proficient* level or higher. Students with a score higher than 555 and higher than the 85th percentile had a high probability of achieving the *Proficient* level or higher.

Fourth grade students who attained an Istation Reading score of 549–575 (60th to 75th percentile ranks) had a medium probability of achieving the OSTP ELA *Proficient* level or higher. Students with a score higher than 586 (80th percentile) had a high probability of reaching the *Proficient* level or higher.

Fifth grade students who attained an Istation Reading score of 575–603 (60th to 75th percentile ranks) had a medium probability of achieving the *Proficient* level or higher. Students with a score of 614 or greater had a high probability of achieving the *Proficient* level or higher (80th percentile).

Sixth grade students who attained an Istation Reading score of 600–638 (60th to 80th percentile ranks) had a medium probability of reaching the *Proficient* level or higher. Students who attained an Istation Reading score around 651 (85th percentile or higher) had a high probability of reaching *Proficient*.

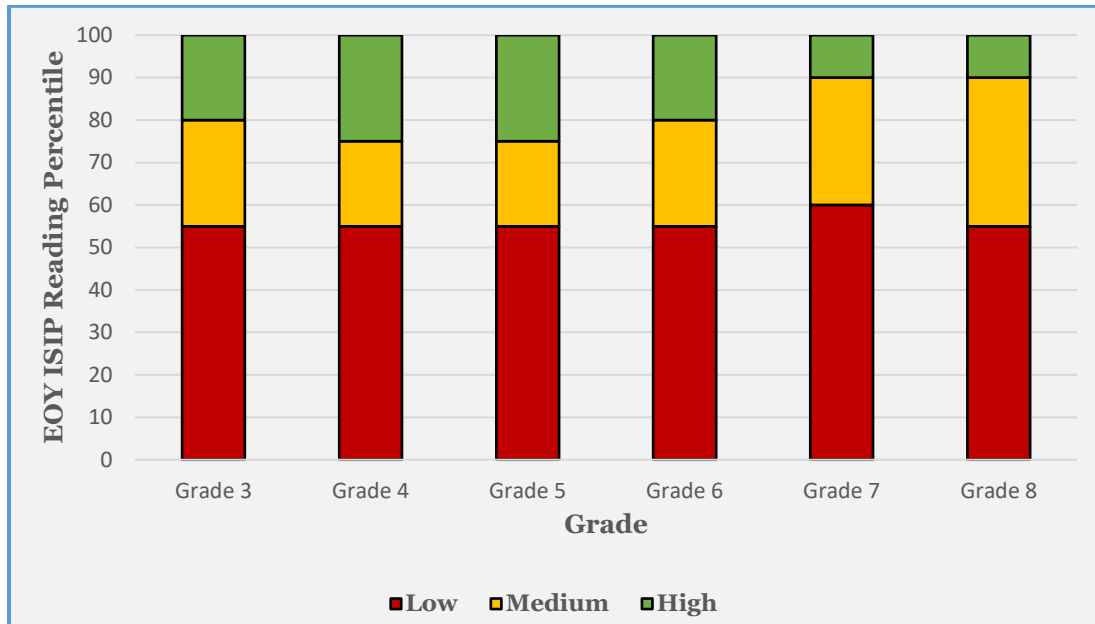
Seventh grade students who attained an Istation Reading score of 584–643 (65th to 90th percentile ranks) had a medium probability of achieving the OSTP ELA *Proficient* level or higher. Students with a score higher than 669 and higher than the 95th percentile had a high probability of achieving the *Proficient* level or higher.

Eighth grade students who attained an Istation Reading score of 600–667 (60th to 90th percentile ranks) had a medium probability of achieving the *Proficient* level or higher on OSTP ELA. Students with a score of 692 or greater had a high probability of achieving the *Proficient* level or higher (95th percentile).

These results show that attaining the *Proficient* level or above on the OSTP ELA students need to score at the 80th percentile rank or higher to attain a high probability of reaching the *Proficient* level or higher. This was found across all grades.

Figure 2

EOY Istation Reading Percentiles and OSTP ELA Proficient Probabilities by Grade



Classification Accuracy: Istation Reading and OSTP ELA

Classification accuracy was conducted at MOY and EOY to predict whether students in the sample would achieve the *Basic* level or higher on the OSTP ELA assessment. A higher classification accuracy rate indicates stronger congruence between Istation Reading and OSTP ELA assessments. The purpose of these analyses was to determine Istation Reading cut points that could help differentiate students who would or would not attain *Basic Proficiency* or higher levels on the OSTP ELA assessment.

Classification accuracy of Istation Reading cut scores was performed at the 30–40th percentiles and OSTP ELA *Basic Proficiency* level 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 Istation Reading cut point to identify students who would most likely meet the *Basic Proficiency* level or higher on the OSTP ELA assessment. Results in Table 16 show that the cut scores vary by grade and benchmark on Istation Reading at MOY and EOY.

MOY Classification Accuracy: Istation Reading and OSTP ELA

The AUC ranged from 0.79 to 0.85, indicating that the percentage of students correctly classified on Istation Reading with respect to the OSTP ELA assessment was approximately 82% across grade levels. Sensitivity ranged from 0.66 to 0.87, indicating that approximately 77% of students who performed below the cut point on Istation Reading did not meet the *Basic Proficiency* level or above on the OSTP ELA assessment. The specificity ranged from 0.78 to 0.92, indicating that approximately 85% of students who performed above the cut point on Istation Reading were likely to meet the *Basic Proficiency* level or above on the OSTP ELA. Istation Reading accurately predicted attaining *Basic Proficiency* and above on the OSTP ELA assessment about 80% of the time.

EOY Classification Accuracy: Istation Reading and OSTP ELA

The AUC ranged from 0.77 to 0.85, indicating that the percentage of students correctly classified on Istation Reading with respect to the OSTP ELA assessment was approximately 81% across grade levels. Sensitivity ranged from 0.66 to 0.87, indicating that approximately 77% of students who performed below the cut point on Istation Reading did not meet the *Basic Proficiency* level or above on the OSTP ELA assessment. The specificity ranged from 0.80 to 0.89, indicating that approximately 84% of students

who performed above the cut point on Istation Reading were likely to meet the *Basic Proficiency* level or above on the OSTP ELA. Istation Reading accurately predicted attaining *Basic Proficiency* and above on the OSTP ELA assessment about 80% of the time.

Table 16

Classification Accuracy Indices by Benchmark and Grade

Grade	Cut Point	Benchmark	AUC	Sensitivity	Specificity
3	35th	Winter	0.82	0.87	0.78
	40th	Spring	0.83	0.86	0.80
4	40th	Winter	0.82	0.80	0.84
	40th	Spring	0.85	0.83	0.87
5	35th	Winter	0.85	0.84	0.86
	35th	Spring	0.84	0.87	0.81
6	30th	Winter	0.83	0.77	0.87
	30th	Spring	0.83	0.78	0.89
7	30th	Winter	0.79	0.76	0.83
	30th	Spring	0.78	0.71	0.82
8	30th	Winter	0.79	0.66	0.92
	30th	Spring	0.77	0.66	0.88

Conclusion

The present study demonstrated a strong positive correlation between Istation Reading scores and OSTP ELA performance. The MOY and EOY Istation Reading scores were effective predictors of student achievement on the OSTP ELA assessment. The predictive power was strong for grades 3 through 8, where a clear relationship between higher Istation Reading scores and the likelihood of attaining the *Proficient* level or above on the OSTP ELA assessment was observed.

The Pearson product–moment correlation coefficients for these grades ranged between .68 and .82, confirming the presence of a robust relationship between Istation Reading and OSTP ELA scores. The probabilities of meeting various performance levels on the OSTP ELA assessment showed a clear trend: the likelihood of achieving high performance levels on the OSTP ELA assessment increased as students attained higher Istation Reading scores. The findings from the classification accuracy analysis reinforced the predictive validity of Istation Reading scores, with approximately 80% of students correctly classified based on their Istation Reading scores in relation to their OSTP ELA performance.

These results align with the percentage of students in Oklahoma who reached the proficient or advanced levels. The Oklahoma State Department of Education reported that in spring of 2022, between 21% to 29% of students reached the proficient level (Oklahoma State Department of Education, 2022). Similarly, in our research students needed to be around the 80th percentile at MOY to have a high probability of reaching proficient, and around the 70th percentile to have greater than .50 probability of reaching proficient on the OSTP ELA.

The results underscore the value of Istation Reading as an assessment tool, not only for tracking student progress within or across academic years, but also for predicting student performance on end-of-grade summative assessments such as the OSTP ELA. Teachers and administrators can effectively utilize these insights to target interventions and support programs more efficiently, thereby promoting improved learning outcomes.

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