

**MEMORANDUM**

November 7, 2016

TO: Lance Menster  
Officer, Elementary Curriculum and Development

FROM: Carla Stevens  
Assistant Superintendent, Research and Accountability

SUBJECT: **HOUSTON INDEPENDENT SCHOOL DISTRICT (HISD) INNOVATIONS FOR LEARNING TABLET INSTRUCTION FOR EARLY READING IN KINDERGARTEN- AND FIRST-GRADE DATA REPORT, 2015–2016**

Innovations for Learning (IFL) tablet instruction is the use of digital technology for teaching early reading among kindergarten and first-grade students in 29 HISD elementary school during the 2015–2016 school year. This report uses Istation data of students whose teachers participated voluntarily in IFL tablet instruction and who had all there HISD assessment benchmark indexes: beginning of the year (BOY), Middle of the Year (MOY), and end of the year (EOY) to determine the early reading performance of IFL students. Istation is a web-delivered computer adaptive assessment system for continuous progress monitoring of early reading growth for pre-k to third-grade students (Mathes, Jorgesen & Herron, 2016).

Students' reading performance is reported using the Istation Indicators of Progress (ISIP) index for the BOY, MOY and EOY and Tier distribution by grade and other key demographic variables including economic-disadvantaged status, at-risk status and ethnicity. Tier 1 students performed at grade level or above the 40<sup>th</sup> percentile for their grades, Tier 2 students performed moderately below grade level or between the 20<sup>th</sup> and 40<sup>th</sup> percentiles for their grades and require intervention and Tier 3 students performed substantially below grade level or below the 20<sup>th</sup> percentile for their grades and require intensive interventions (Mathes, Jorgesen & Herron, 2016). The data is presented in graphs and charts.

Further distribution of this report is at your discretion. Should you have any further questions, please contact me at 713-556-6700.

 CJS

Attachment

cc: Grenita Lathan



# RESEARCH

Educational Program Report

HOUSTON INDEPENDENT SCHOOL  
DISTRICT INNOVATIONS FOR LEARNING  
TABLET INSTRUCTIONS FOR EARLY  
READING IN KINDERGARDEN- AND  
FIRST-GRADE DATA REPORT  
2015-2016



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# Houston Independent School District (HISD) Innovations for Learning tablet instruction for early reading in kindergarten- and first-grade data report, 2015–2016

This is a data report on the Innovation for Learning (IFL) tablet instruction. The report presents only the performance of students who were exposed to the IFL tablet instruction and does not include a comparable group of students who were not exposed to this instruction. The IFL tablet instruction involved the teaching of early reading in kindergarten and first grade in 29 elementary schools in the Houston Independent School District (HISD) during the 2015–2016 academic year using digital technology. The report used Istation data for students whose teachers participated voluntarily in the IFL table instrucion and who had all three assessment benchmark indexes: beginning of the year (BOY), middle (MOY), and end of the year (EOY). Istation is a web-delivered computer-adaptive assessment system for continuous progress monitoring of early reading growth for pre-k- to third-grade students (Mathes, Torgesen & Herron, 2016). IFL teachers and students were linked using the Public Education Information Management System (PEIMS) and Istation data.

The Istation Indicators of Progress (ISIP) index for the BOY, MOY, and EOY, and Tier distributon of reading performance were analyzed to determine the impact of the IFL tablet instruction. Tier 1 students performed at grade level or above the 40<sup>th</sup> percentile for their grades. Tier 2 students performed moderately below grade level or between the 20<sup>th</sup> and 40<sup>th</sup> percentiles for their grades and require intervention, and Tier 3 students performed substantially below grade level or below the 20<sup>th</sup> percentile for their grades and require intensive intervention (Mathes, Torgesen & Herron, 2016). The BOY ISIP was administered in September 2015, the MOY in January 2016, and the EOY in April, 2016. Average ISIP indexes are calculated by grades. These ISIP indexes were affected by extreme values. The 50<sup>th</sup> percentile ISIP indexes were also used as a measure of central tendency along with the Tier distribution to better interpret student performance. The objective of ISIP is to identify students who are at risk for reading failure (Mathes, Torgesen & Herron, 2016).

**Table 1** and **Table 2** summarize the Istation data for kindergarten and first-grade IFL students and show the wide data spread<sup>1</sup>.

Table 1. Data summary of kindergarten IFL students' ISIP indexes, 2015–2016							
Overall Reading	n	Anticipated Index	50 <sup>th</sup> Percentile	Mean Index	Std. Dev.	Range	
						Min.	Max.
BOY	1,529	184	183.1	247.5	172.9	70.17	758.97
MOY	1,529	185	194.7	259.4	176.9	136.70	879.48
EOY	1,529	200	200.9	260.8	173.0	117.69	904.13

Source: Istation assessment data, 2015–2016

- Table 1 shows large standard deviations in relation to the mean indexes and large ranges indicative of the wide-data spread at each kindergarten Istation benchmark.

<sup>1</sup> Test of normality showed a bimodal data distribution with two distinct student Istation performance groups at both kindergarten and first-grade. One group at each grade level had indexes at or above 600 ISIP and another with indexes at or around the 200 ISIP on the Istation assessments.

Table 2. Data summary for first-grade IFL students' ISIP Indexes, 2015–2016

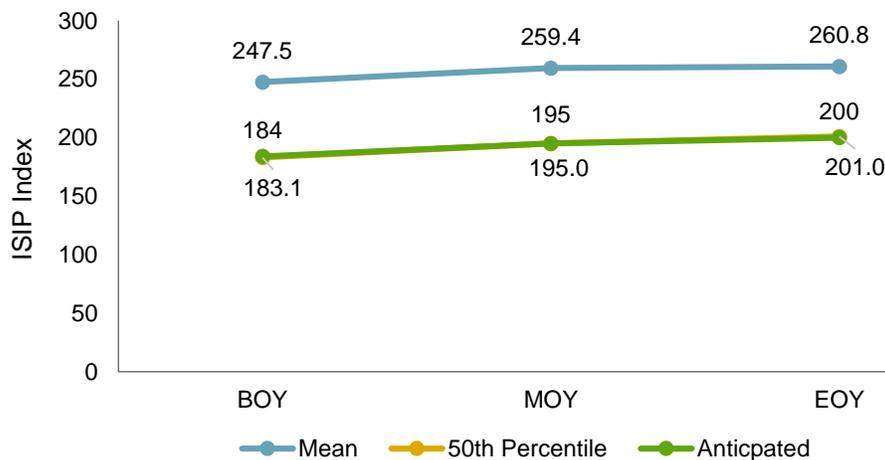
Overall Reading	n	Anticipated Index	50 <sup>th</sup> Percentile	Mean	Std. Dev.	Range	
						Min	Max
BOY	1,421	204	199.6	251.9	172.72	129.57	910.38
MOY	1,421	216	210.1	265.5	180.65	122.41	1006.02
EOY	1,421	221	217.9	269.9	180.85	109.54	1021.31

Source: Istation assessment data, 2015–2016

- Table 2 shows large standard deviations relative to the mean indexes and wide ranges indicative of a wide-data spread at each first-grade Istation benchmark.

**Figure 1** displays the mean ISIP and 50<sup>th</sup> percentile ISIP indexes for overall early reading among kindergarten IFL students at the BOY, MOY, and EOY for the 2015–2016 school year.

**Figure 1. Mean, anticipated, and 50th percentile ISIP indexes for overall early reading, kindergarten, 2015–2016**



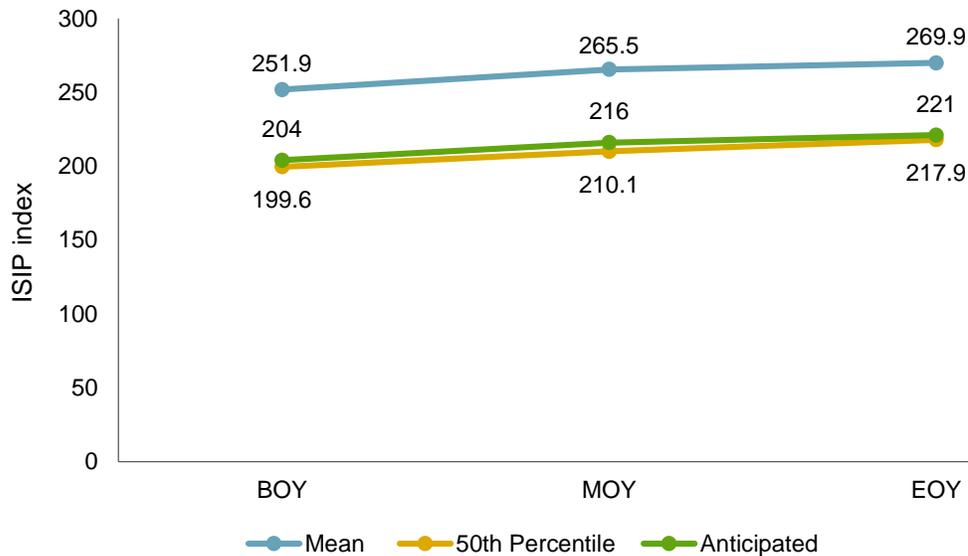
Source: Istation Assessment data, 2015–2016

- The mean ISIP for kindergarten IFL students' early reading increased by 11.9 ISIP points between September 2015 (BOY) and January 2016 (MOY), and by 1.4 points between January (MOY) and April 2016 (EOY). As a group, students had a higher rate of improvement in the first half of the school year when compared to the second half. The actual average kindergarten ISIPs for September (247.5 ISIP points), January (259.4 ISIP points) and April (260.8 ISIP points) were well above the anticipated ISIP indexes of 184, 195, and 200 points, respectively.
- The ISIP 50<sup>th</sup> percentile indexes were similar to the anticipated ISIP indexes indicating that at least 50% of the kindergarten students were performing at the BOY, MOY, and EOY anticipated indexes and the other 50% were above the 50<sup>th</sup> percentile.
- On average, kindergarten IFL students had an ISIP index of 260.8 on the Istation Tier 1 by the EOY. This is well above the anticipated EOY index for the third-grade Tier 1 reading of >248 points at April of the school year indicating that on average, kindergarteners performed above the third-grade level.

The ISIP 50<sup>th</sup> percentile index indexes were similar to the anticipated indexes. This further demonstrates the wide range of the kindergarten performance with half of the students reading below grade level.

**Figure 2** shows the mean ISIP, the 50<sup>th</sup> percentile, and the anticipated ISIP indexes for overall early reading among first-grade IFL students at the BOY, MOY, and EOY for the 2015–2016 school year.

**Figure 2. Mean, anticipated, and 50th percentile ISIP indexes for overall early reading, first grade, 2015–2016**

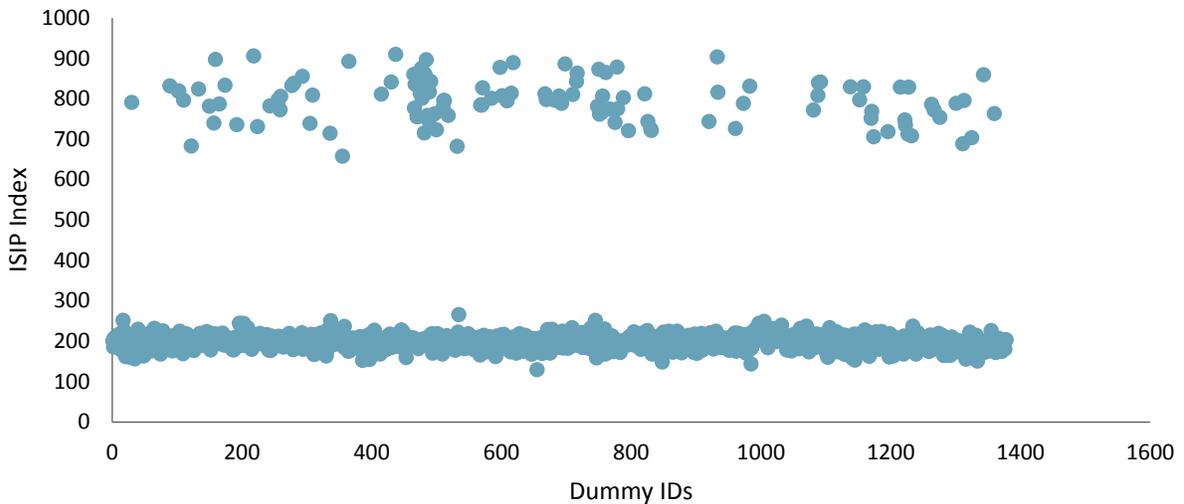


Source: Istation Assessment data, 2015–2016

- On average, first-grade IFL students had ISIP indexes at the BOY, MOY, and EOY that were well above the anticipated index levels.
- Additionally, the ISIP 50<sup>th</sup> percentile indexes were slightly lower than the anticipated ISIP indexes indicating that more than 50% of the kindergarten students were performing slightly below the anticipated indexes at the BOY, MOY, and EOY.
- The first-grade mean ISIP index increased from 251.9 points in September 2015 (BOY) to 265.5 ISIP points in January 2016 (MOY) to 269.9 ISIP points in April 2016 (EOY), a difference of 13.6 ISIP points in the first half of the school year and 4.4 in the second half. The rate of improvement was higher in the first half of the year than it was in the second half.

**Figure 3** and **Figure 4** show the distribution of ISIP indexes for kindergarten students who were exposed to the IFL tablet instruction.

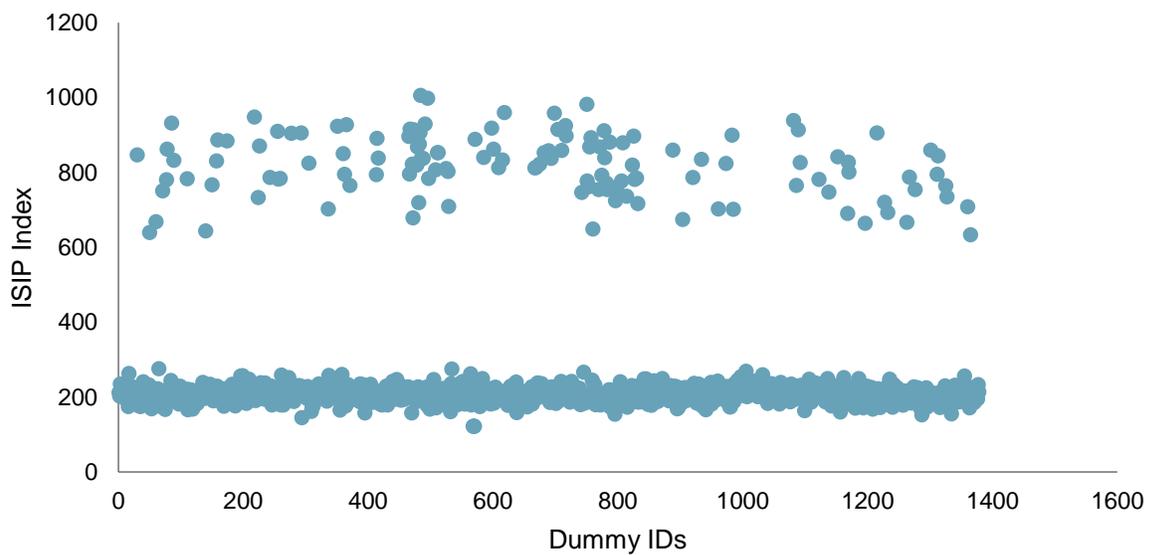
**Figure 3. Scatter graph showing kindergarten IFL students' ISIP indexes, BOY, 2015–2016**



Source: Istation Assessment data, 2015–2016

- Figure 3 and Figure 4 show the bimodal distribution of the sample of students who were exposed to the IFL instruction. This bimodal distribution accounts for the high mean ISIP indexes shown earlier, and the lower 50<sup>th</sup> percentile index.
- Figures 3 and 4 show two distinct performance groups among kindergarten students who were exposed to the IFL tablet instruction. One group had indexes that were above the 600 ISIP index while the other had ISIP indexes at around 200 because of the wide variability in students' abilities and performance at grade level.

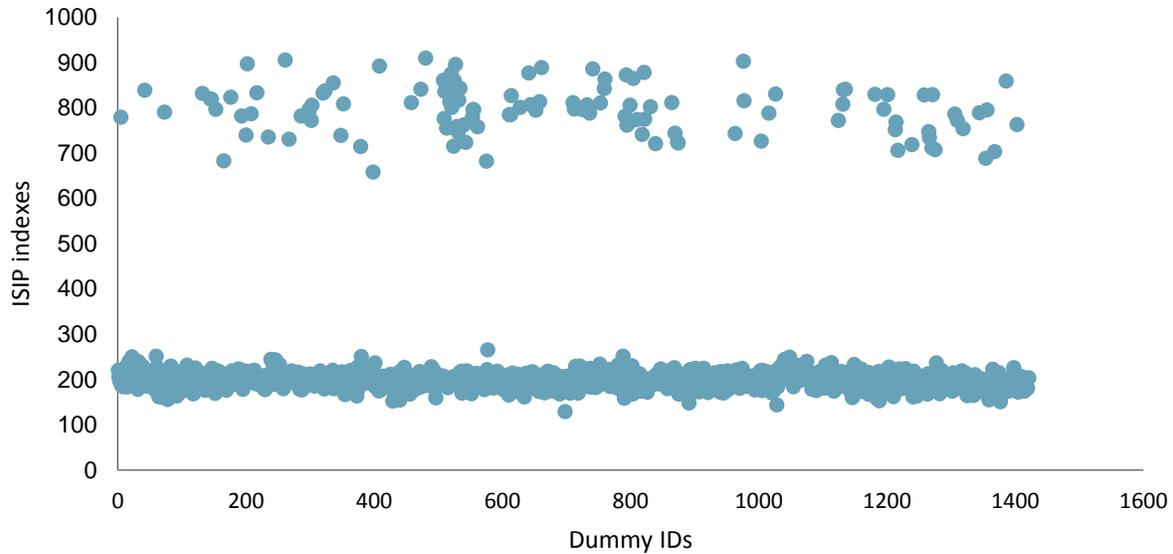
**Figure 4. Scatter graph showing kindergarten IFL students' ISIP indexes, EOY, 2015–2016**



Source: Istation Assessment data, 2015–2016

Figure 5 and Figure 6 show the distribution of ISIP indexes for first-grade students who were exposed to the IFL tablet instruction.

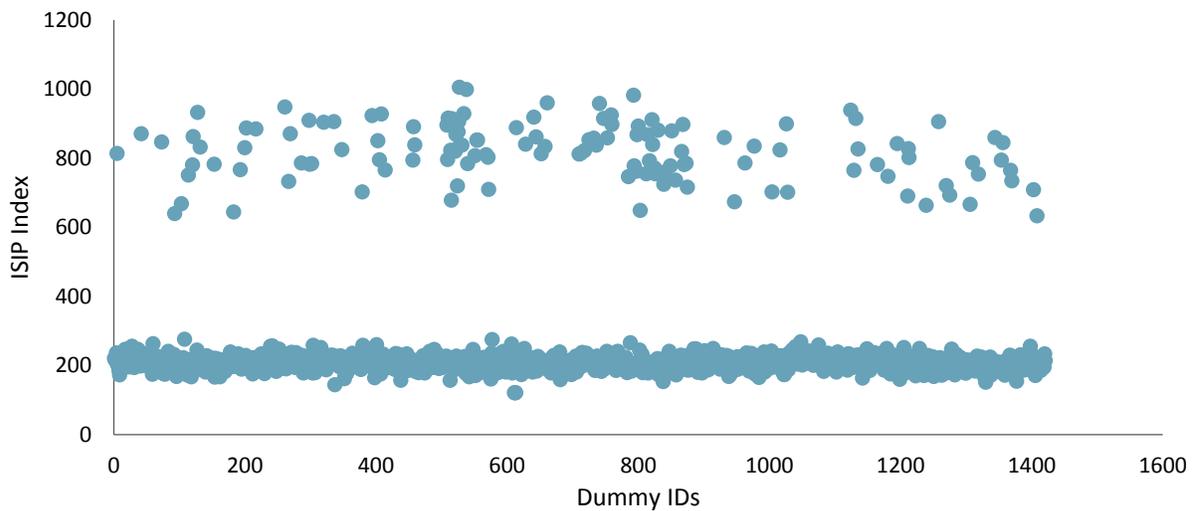
**Figure 5. Scatter graph showing first-grade IFL students' ISIP indexes, BOY, 2015–2016**



Source: Istation Assessment data, 2015–2016

- Figure 5 and Figure 6 show the bimodal distribution of the sample of first-grade students who were exposed to the IFL instruction. This bimodal distribution explains the high mean ISIP indexes, and the lower 50<sup>th</sup> percentile index.
- Figures 5 and 6 display show two distinct performance groups among first-grade students who were exposed to the IFL tablet instruction. One group had ISIP indexes above 600 and the other had indexes at around 200 due to the wide variability in students' abilities and performance.

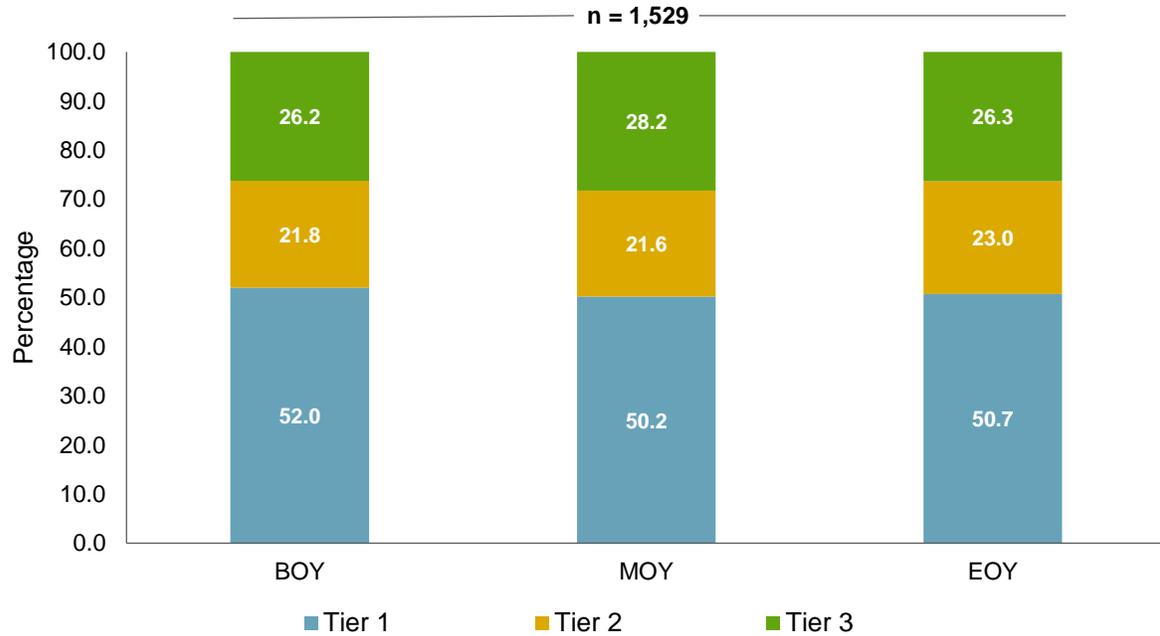
**Figure 6. Scatter graph showing first-grade IFL ISIP indexes, EOY, 2015–2016**



Source: Istation Assessment data, 2015–2016

**Figure 7** displays the Tier distribution for overall early reading among kindergarten IFL students at the beginning (BOY), middle (MOY), and end (EOY) of the 2015–2016 school year. Tier 1 are students reading on grade level or at or above the 40<sup>th</sup> percentile.

**Figure 7. Kindergarten Tier distribution, overall early reading, 2015–2016**

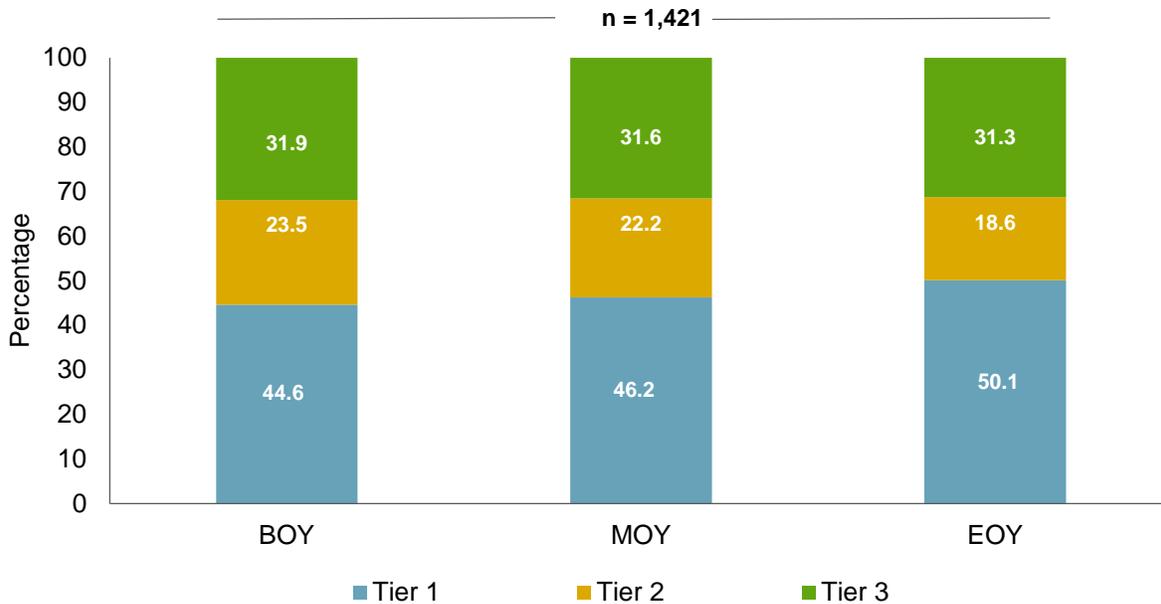


Source: Istation Assessment data, 2015–2016

- Between 50.2 and 52.0 percent of kindergarten IFL students were reading on grade level (Tier 1) during the 2015–2016 school year.
- Between 48.0 and 49.8 percent of kindergarten IFL students required some kind of reading intervention (Tier 2 and Tier 3 combined) during the 2015–2016, with a 1.3-percentage point increase in the proportion of these students requiring intervention between September 2015 (BOY) and April 2016 (EOY) that is, a change from 48.0 percent to 49.3 percent.

**Figure 8** displays the Tier distribution for the overall early reading among first-grade IFL students at the beginning (BOY), middle (MOY), and end (EOY) of the 2015–2016 school year.

**Figure 8. First-grade IFL Tier distribution, overall early reading, 2015–2016**

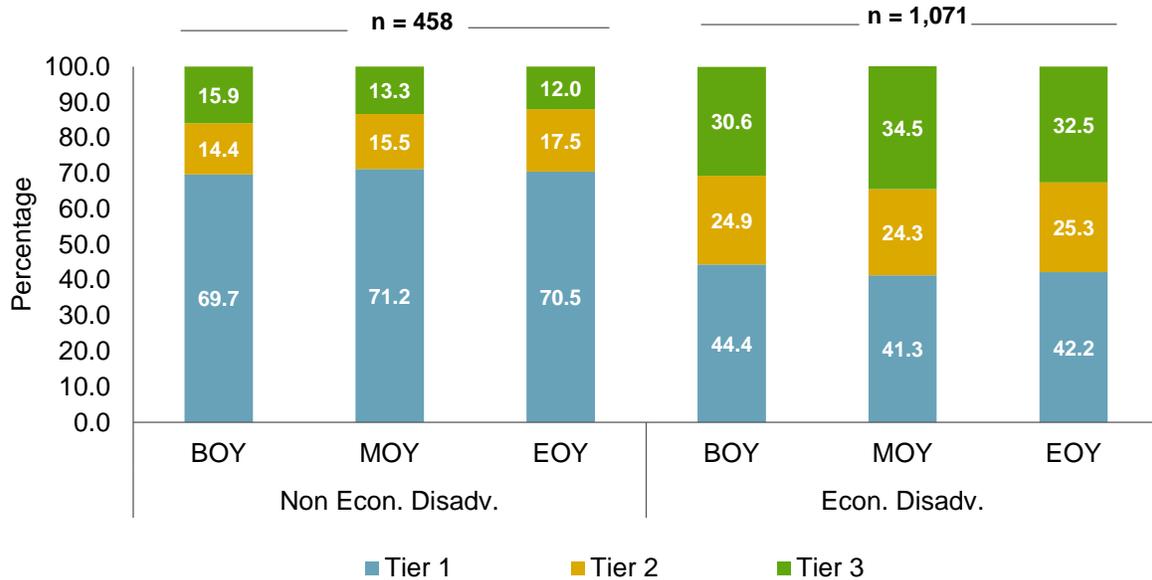


Source: Istation Assessment data, 2015–2016

- The proportion of first-grade IFL students who were reading on grade level and who did not require intervention increased from 44.6 percent in September 2015 (BOY) to 46.2 percent in January 2016 (MOY) to 50.1 percent in April 2016 (EOY). This is an overall increase of 5.5-percentage points.
- The percentage of first-grade IFL students requiring some kind of intervention (Tier 2 and Tier 3 combined) declined from 55.4 percent in September 2015 (BOY) to 53.8 in January 2016 (MOY), and to 49.9 percent in April 2016 (EOY). Overall, this is a decrease of 5.5-percentage points.

**Figure 9** depicts the Tier distribution for overall early reading by economically-disadvantaged status among kindergarten IFL students at the beginning (BOY), middle (MOY), and end (EOY) of the 2015–2016 school year.

**Figure 9. Kindergarten IFL Tier distribution by students’ economically-disadvantaged status, overall early reading, 2015–2016**

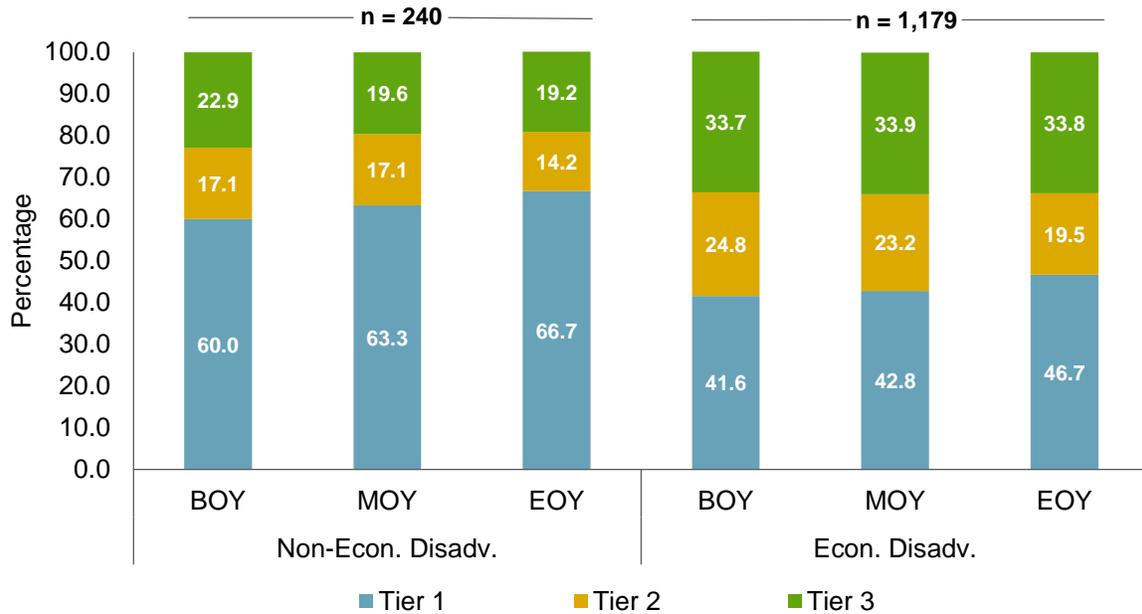


Source: Istation Assessment data, 2015–2016

- At the end of the 2015–2016 school year (EOY), fewer non-economically-disadvantaged kindergarten IFL students required reading intervention (Tier 2 and Tier 3 combined) compared to their economically-disadvantaged peers (29.5 % versus 57.8%, respectively).
- By the end of the 2015–2016 school year (EOY), 70.5 percent of non-economically-disadvantaged kindergarten IFL students read at grade level, while 42.2 percent of their economically-disadvantaged peers were reading at grade level. This is a gap of 28.3-percentage points.

**Figure 10** displays the Tier distribution of overall early reading by economically-disadvantaged status among first-grade IFL students at the beginning (BOY), middle (MOY), and end (EOY) of the 2015–2016 school year.

**Figure 10. First-grade IFL Tier distribution by students economically-disadvantaged status, overall reading, 2015 –2016**

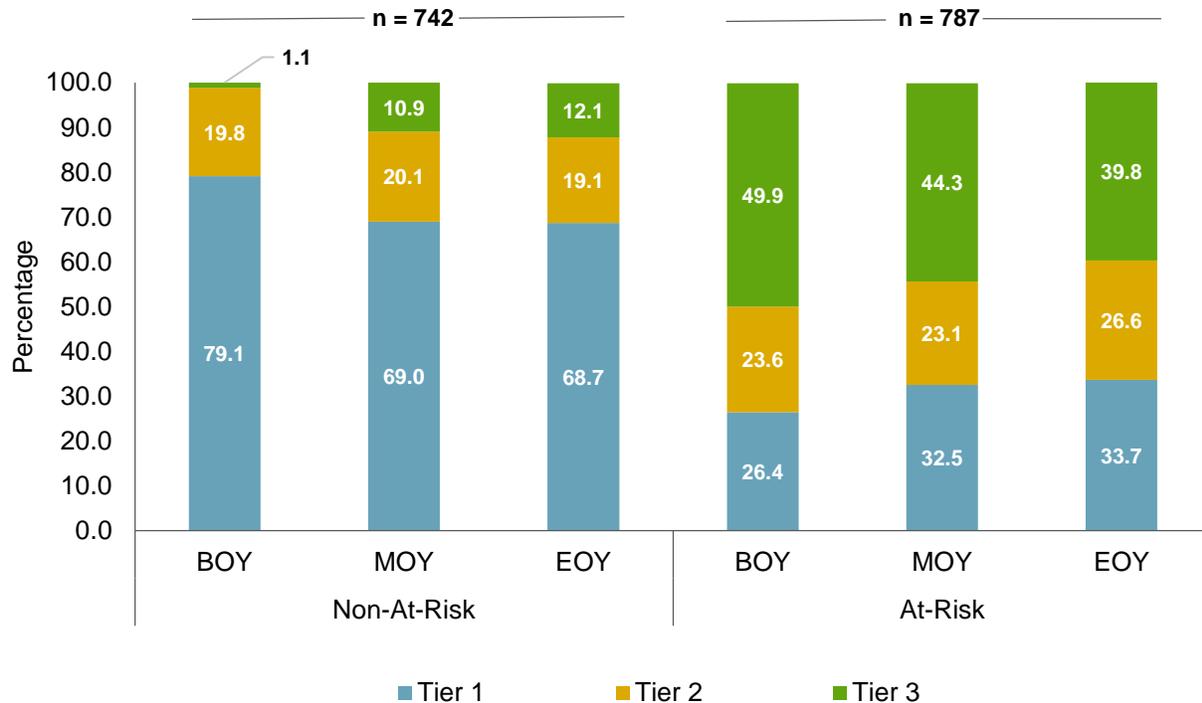


Source: Istation Assessment data, 2015–2016

- The proportion of first-grade, non-economically-disadvantaged IFL students reading at the Tier 1 increased by 6.7-percentage points during the school year, that is a change from 60.0 to 66.7 percent compared to an increase of 5.1-percentage points of their economically disadvantaged peers, which changed from 41.6 percent to 46.7 percent.
- First-grade IFL students requiring some kind of intervention (Tier 2 and Tier 3 combined) at the end of the school year (EOY) was higher among economically-disadvantaged (53.3%) first-grade students compared to 33.4 percent for their non-economically disadvantaged peers. This was a gap of 19.9-percentage points.

**Figure 11** displays the Tier distribution of overall early reading by at-risk status among kindergarten IFL students at the beginning (BOY), middle (MOY), and end (EOY) of the 2015–2016 school year.

**Figure 11. Kindergarten IFL Tier distribution by at-risk status, overall early reading, 2015–2016**

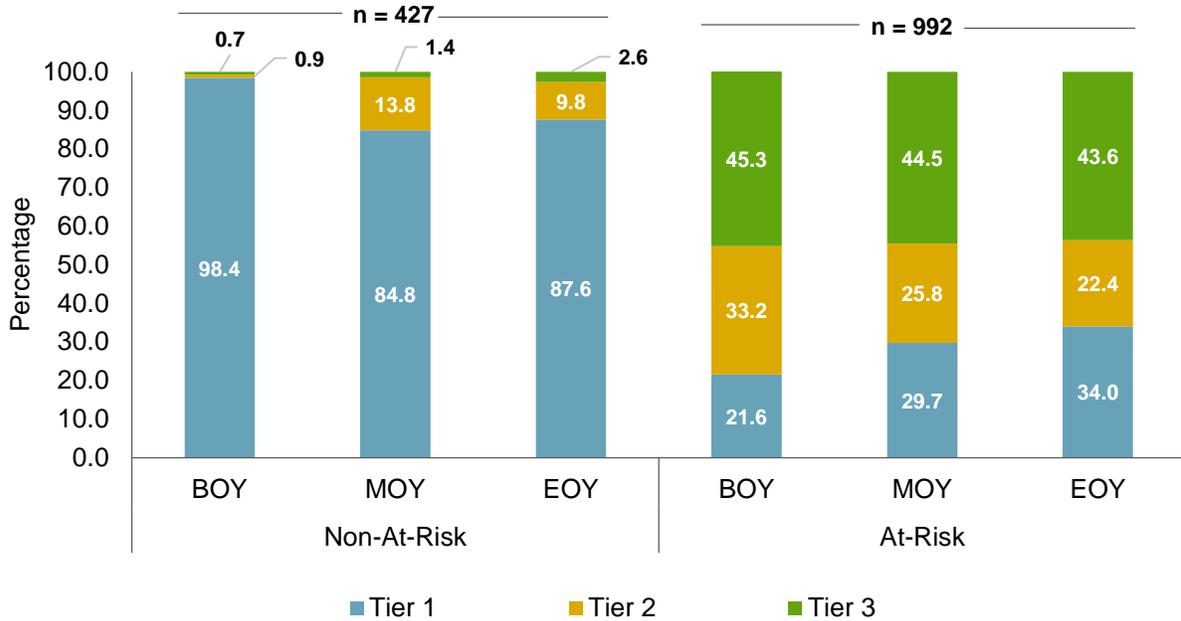


Source: Istation Assessment data, 2015–2016

- Although the proportion of non-at-risk kindergarten IFL students reading on grade level (TIER 1) declined from the beginning to the end of the 2015–2016 school year (79.1 to 68.7%), their EOY proportion remained substantially higher than their at-risk peers' proportion which increased from 26.4 percent to 33.7 percent.
- The EOY proportion of students requiring some kind of intervention (Tier 2 and Tier 3 combined) among the at-risk kindergarten IFL students was 66.4 percent compared to their proportion of non-at-risk peers, 31.2 percent, who required intervention.

**Figure 12** displays the Tier distribution of overall early reading by at-risk status among first-grade IFL students at the beginning (BOY), middle (MOY), and end (EOY) of the 2015–2016 school year.

**Figure 12. First-grade IFL Tier distribution by students' at-risk status, overall early reading, 2015–2016**

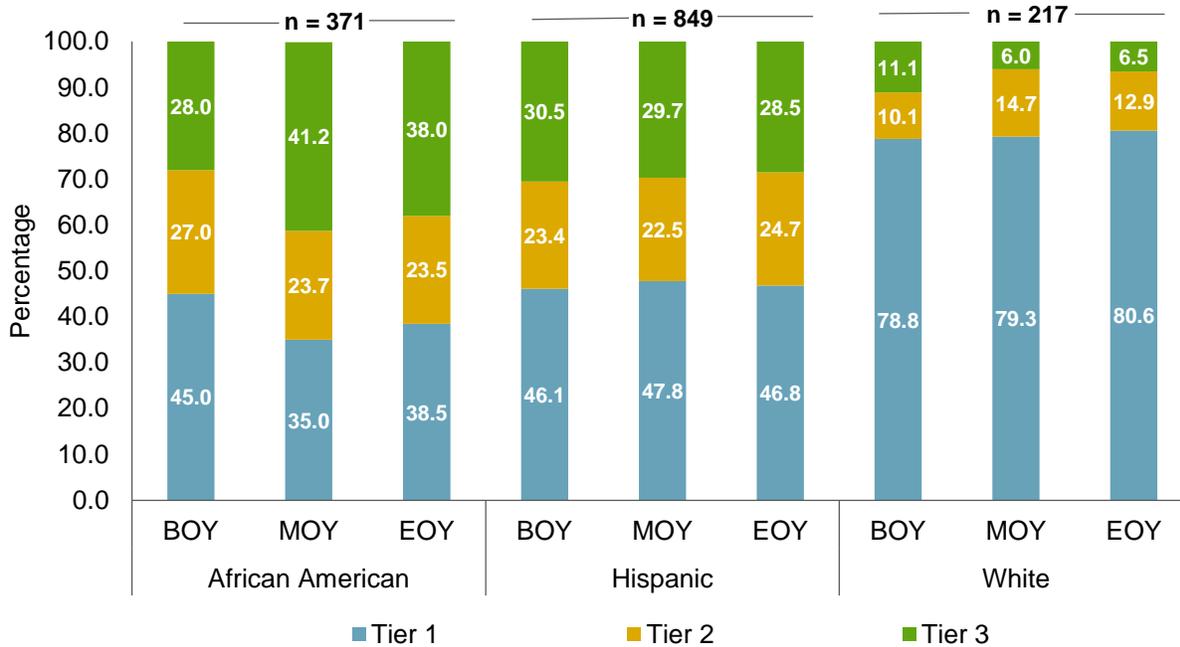


Source: Istation Assessment data, 2015–2016

- The percentage of first-grade non-at-risk IFL students reading at grade level (Tier 1) decreased from 98.4 percent at the beginning of the school year (BOY) to 87.6 percent at the end of the year (EOY).
- Between 78.5 percent and 66.0 percent of at-risk first-grade IFL students required some kind of intervention (Tier 2 and Tier 3 combined) during the school year. Of these, between 43.6 and 45.3 percent required intense intervention in contrast with the proportion of non-at-risk peers, between 1.6 and 15.2 percent, who required intervention.
- The proportion of first-grade at-risk IFL students requiring intervention decreased by 18-percentage points during the 2015–2016 school year.

**Figure 13** displays the Tier distribution of overall early reading by ethnicity among kindergarten IFL students at the beginning (BOY), middle (MOY), and end (EOY) of the 2015–2016 school year.

**Figure 13. Kindergarten IFL Tier distribution by students' ethnicity, overall early reading, 2015–2016**

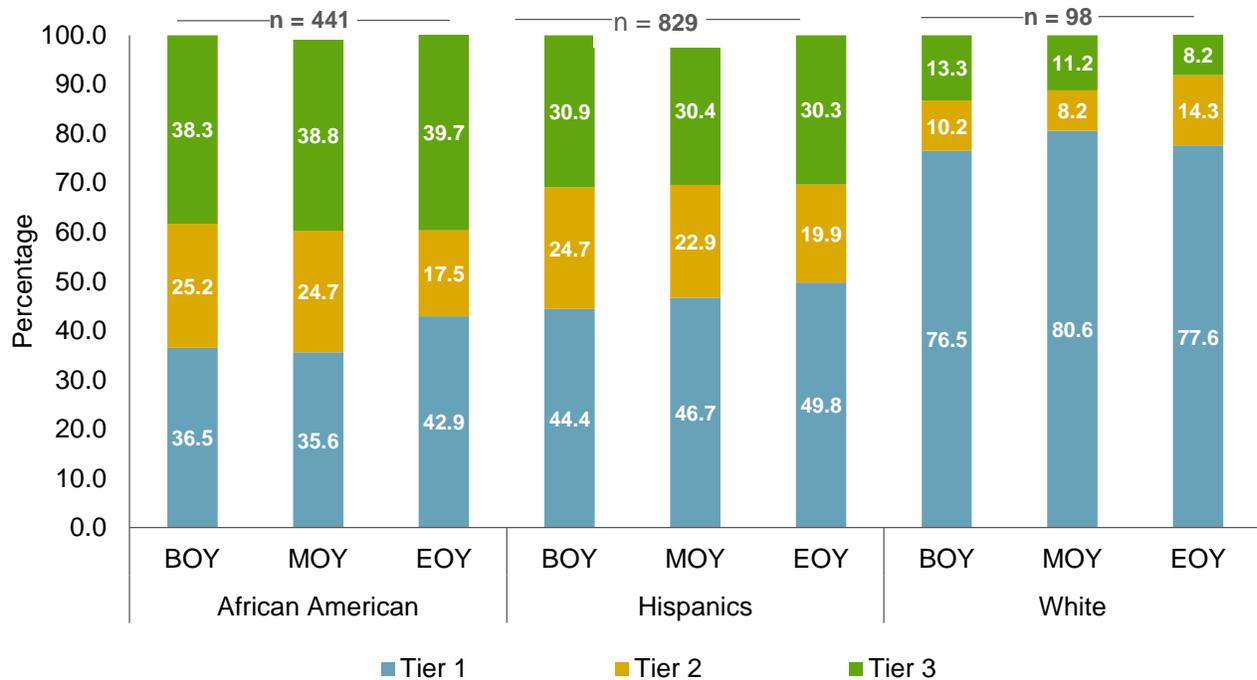


Source: Istation Assessment data, 2015–2016

- Between 35.0 and 47.8 percent of African American and 46.1 and 47.8 percent of Hispanic IFL students were reading on grade level (Tier 1) during the 2015–2016 school year.
- The proportion of African-American kindergarten IFL students reading on grade level (Tier 1) declined from 45.0 percent at the beginning of the school year to 38.5 percent by the end of the school year.
- The proportion of Hispanic kindergarten IFL students reading on grade level increased slightly from 46.1 to 46.8 percent.
- By the end of the 2015–2016 school year (EOY), 80.6 percent of White kindergarten IFL students were reading on grade level. This increased from 78.8 percent at the beginning of the school year (BOY). However, they remained well above the average figures for their African American and Hispanic peers.
- Between 55.0 and 64.9 percent of African-American, 52.2 and 53.9 percent Hispanic, and 19.4 and 21.2 percent White kindergarten IFL students required some kind of intervention (Tier 2 and Tier 3 combined) during the 2015–2016 school year. Of the three ethnic groups, a higher proportion of African Americans required intervention.

**Figure 14** displays the Tier distribution of overall early reading by ethnicity among first-grade IFL students at the beginning (BOY), middle (MOY), and end (EOY) of the 2015–2016 school year.

**Figure 14. First-grade IFL Tier distribution by students ethnicity, overall early reading 2015–2016**



Source: Istation Assessment data, 2015–2016

- The largest proportion of first-grade IFL students reading on grade level (Tier 1) for all three assessments periods were White students followed by Hispanics and then African American students. The EOY White-African-American gap was 34.7-percentage points and the White-Hispanic gap was 27.8-percentage points.
- During the 2015–2016 school year, African Americans had the largest increase (6.4-percentage points) in the percentage of first-grade IFL students reading on grade level (Tier 1), from 36.5 (BOY) to 42.9 (EOY) percent.
- A substantially higher proportion of African American (between 57.2% and 63.5%) and Hispanic (between 50.2% and 55.6%) first-grade IFL students required some kind of intervention (Tier 2 and Tier 3 combined) during the 2015–2016 school year compared to their White counterparts (between 19.4% and 23.5%).

## Reference

Mathes, P., Torgesen, J., & Herron, J. (2016). *Istation's indicators of progress (ISIP) early reading: Technical report*. Dallas, TX: Istation.