



## Play to Learn Evaluation DIBELS Results, 2012 to 2015

The Play to Learn program (“Playgroup”) is an initiative by the Boston Public Schools that supports children, families and schools to promote school readiness. It serves children ages 1-3 in the local communities, exposing them to developmentally appropriate activities that are comparable to those offered in the formal school settings such as BPS K0, K1, or K2. This report focuses on the academic performance of the children who have participated in the Play to Learn program. It looks at DIBELS results for all K2 students at the beginning of the 2012-2013, 2013-2014, and 2014-2015 school years to understand the impact of the Play to Learn program on the acquisition of early literacy and reading skills. The report also comparatively looks at MCAS results for 2013 and 2014.

### Demographics

In the 2012-2013 school year, 3,894 K2 students took their beginning-of-year DIBELS test. 125 of these students (3.2%) had participated in the Play to Learn program. In the 2013-2014 school year, 4,100 students took the DIBELS test and 148 (3.6%) of them had participated in Play to Learn. In the 2014-2015 school year, 3,818 students took the DIBELS test and 166 (4.3%) of them had participated in Play to Learn.

Below is a collapsed breakdown of demographics of all the students who have taken the DIBELS tests in the 2012-2013, 2013-2014, and 2014-2015 school years<sup>1</sup>.

### **Ethnicity:**

	Non Playgroup		Playgroup	
Race	Frequency	Percentage	Frequency	Percentage
Asian	639	6.8%	16	3.7%
Black	2998	31.7%	71	16.2%
Hispanic	4127	43.6%	249	57.0%
Other	327	3.5%	19	4.3%
White	1364	14.4%	82	18.8%
<b>Total</b>	<b>9455</b>		<b>437</b>	

Hispanic students make up a higher percentage of the Playgroup population than they do in the BPS K2 population as a whole (57.0% versus 43.6%). Conversely, black students represent a

<sup>1</sup> Not all information on the students who took the DIBELS tests were available. For the fairness of comparison, this report looks only at the DIBELS results of students who had demographic information. Please be cautious of the interpretation of the results, as it cannot be guaranteed that the omission of such information may not cause any bias.

much smaller percentage in the Playgroup than in the Non Playgroup population (16.2% versus 31.7%). Both of these differences are statistically significant ( $p < .001$ ).

#### Gender:

	Non Playgroup		Playgroup	
Gender	N	Percentage	N	Percentage
F	4610	48.8%	213	48.7%
M	4845	51.2%	224	51.3%
<b>Total</b>	<b>9455</b>		<b>437</b>	

As expected, the gender breakdown of the Playgroup students is comparable to the Non Playgroup. There is no statistically significant difference found between the compositions of these groups ( $p = .99$ ).

#### Home Language:

	Non Playgroup		Playgroup	
Home Language	N	Percentage	N	Percentage
English	7740	81.9%	329	75.3%
Spanish	917	9.7%	75	17.2%
Other	798	8.4%	33	7.6%
<b>Total</b>	<b>9455</b>		<b>437</b>	

A smaller percentage of students in the Playgroup speak English as their home language (75.3% compared to 81.9%). In particular, a higher percentage of students in the Playgroup speak Spanish at home (17.2% compared to 9.7%). Both of these differences are statistically significant ( $p < .01$ ).

#### Special Need:

	Non Playgroup		Playgroup	
Special Need	N	Percentage	N	Percentage
Y	1550	16.4%	66	15.1%
N	7905	83.6%	371	84.9%
<b>Total</b>	<b>9455</b>		<b>437</b>	

The percentage of students with documented special needs is comparable in both groups. There is no statistically significant difference ( $p = .48$ ) found between the compositions of these groups.

**Free/Reduced Lunch:**

	<b>Non Playgroup</b>		<b>Playgroup</b>	
<b>Free/Reduced Lunch</b>	<b>N</b>	<b>Percentage</b>	<b>N</b>	<b>Percentage</b>
Y	6980	73.8%	311	71.2%
N	2475	26.2%	126	28.8%
<b>Total</b>	<b>9455</b>		<b>437</b>	

The percentage of students enrolled in a free/reduced lunch program is comparable in both groups. There is no statistically significant difference ( $p=.22$ ) found between the compositions of these groups.

**DIBELS Results**

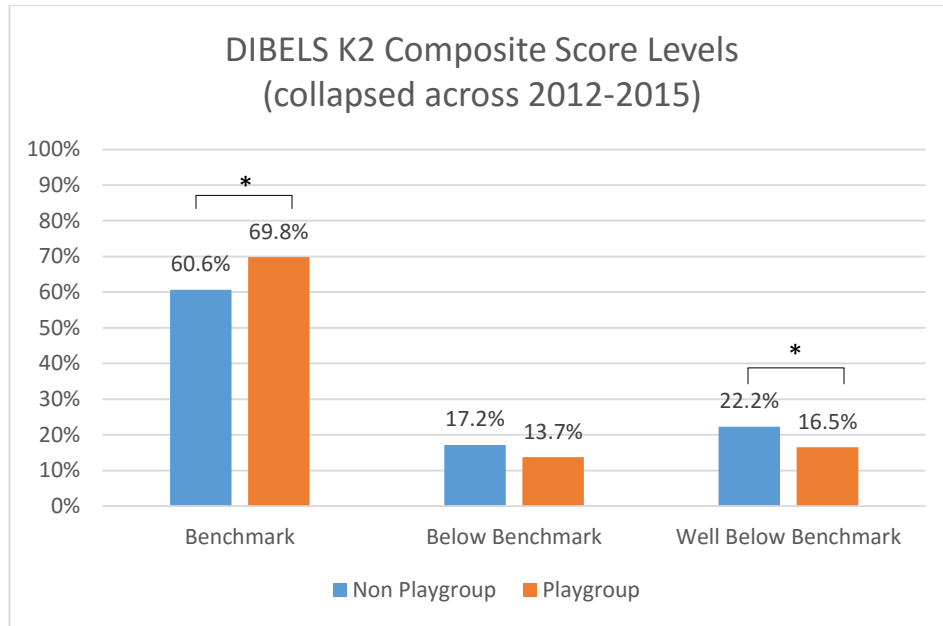
BPS administers the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) district-wide in grades K2, 1 and 2 three times per year. This analysis is limited to K2 results obtained from the beginning-of-year assessment. In short, the DIBELS assesses the acquisition of early literacy skills and is designed to be a formative assessment tool to evaluate the effectiveness of interventions. Though DIBELS is not designed to be the sole measure of a child's academic performance, it is designed to measure a child's readiness for reading, one of several important predictors of later academic success.

Based on their performance on this assessment, each student receives one of three support recommendations: "Benchmark", "Below Benchmark", or "Well Below Benchmark". These support recommendations indicate the probability of the need for additional instructional support for the student in order to meet the next benchmark goal. Again for the purpose of this study, the 2012-2013, 2013-2014, and 2014-2015 school year data were collapsed for analysis.

Below is a collapsed breakdown of support recommendations differentiated by playgroup participation.

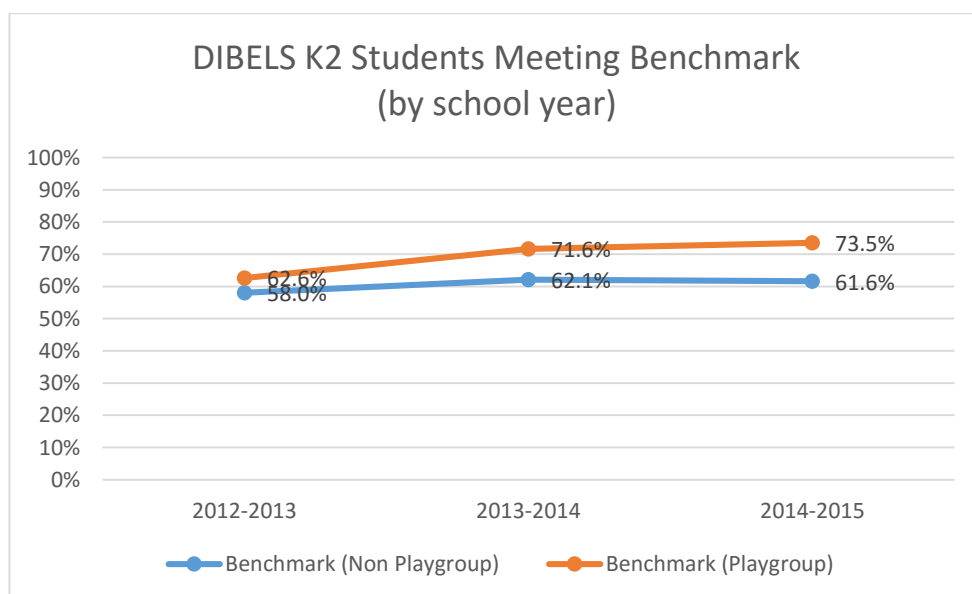
**Support Recommendations:**

	<b>Non Playgroup</b>		<b>Playgroup</b>	
<b>Support Recommendation</b>	<b>N</b>	<b>Percentage</b>	<b>N</b>	<b>Percentage</b>
Benchmark	5723	60.6%	305	69.8%
Below Benchmark	1620	17.2%	60	13.7%
Well Below Benchmark	2098	22.2%	72	16.5%
<b>Total</b>	<b>9441</b>		<b>437</b>	



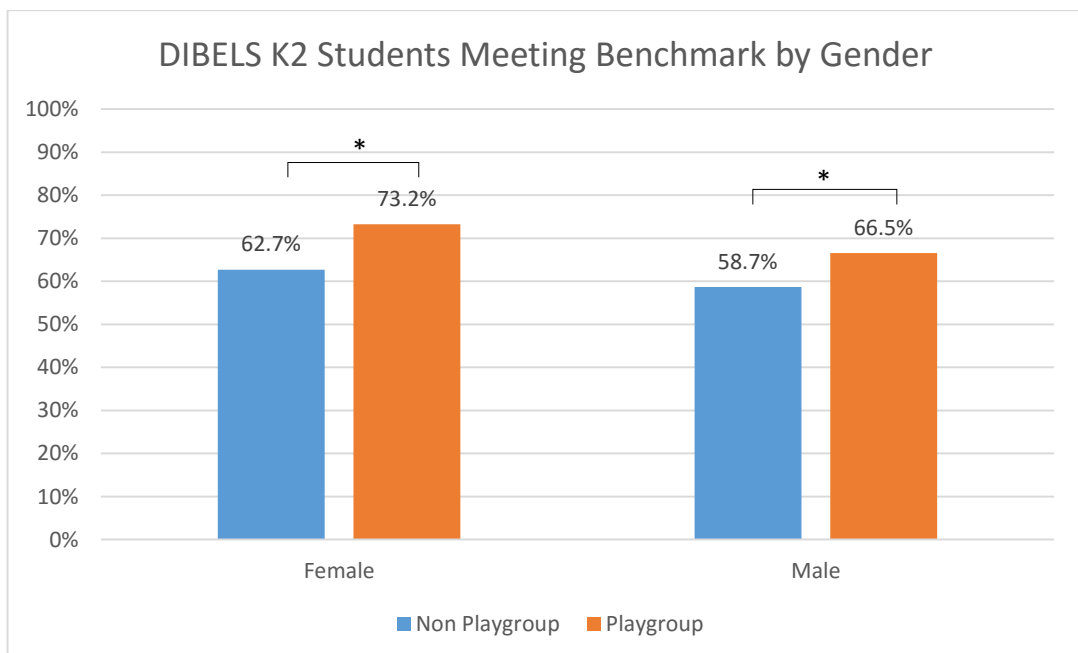
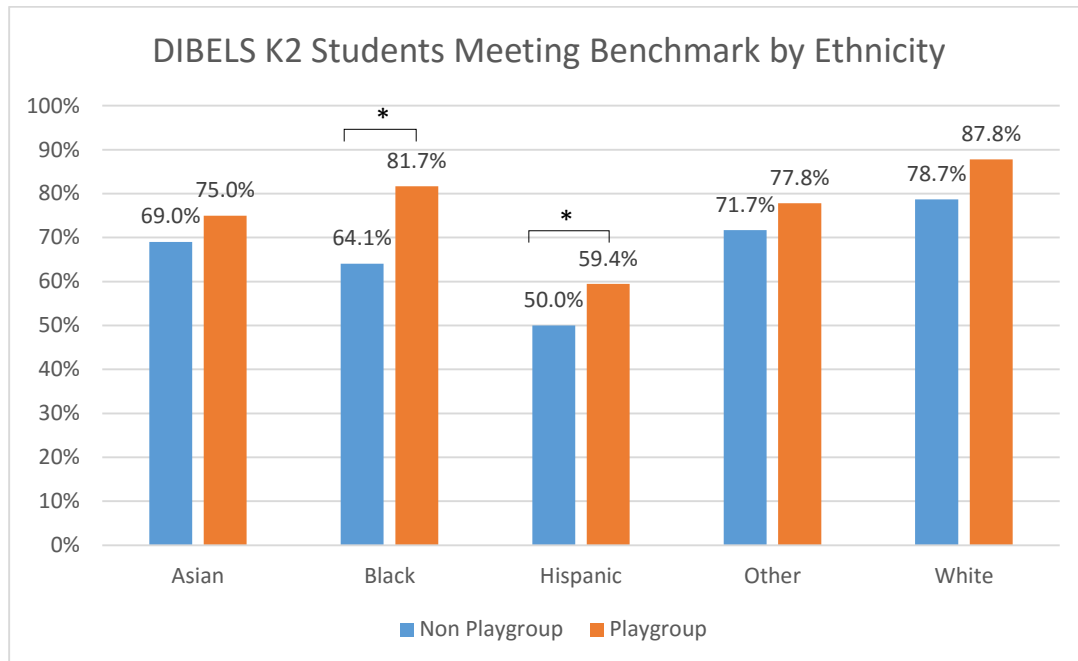
According to our data, attending the Play to Learn program appears to be associated with generally better DIBELS performance at the beginning of the K2 year. Specifically, a larger percentage of Playgroup students receive a “Benchmark” recommendation and a smaller percentage receive a “Well Below Benchmark” recommendation in comparison to the rest of the Non Playgroup student population. Close to seventy percent of the students who attended the Playgroup received “Benchmark” as their support recommendation. In comparison, 60.6% of the students who did not attend the Playgroup received “Benchmark” as their support recommendation. This difference is statistically significant ( $p < .01$ ). Furthermore, a statistically significant ( $p = .01$ ) smaller percentage of the Playgroup students received “Well Below Benchmark” as their support recommendation (16.5% compared to 22.2%).

### Students Meeting Benchmark by Subgroups

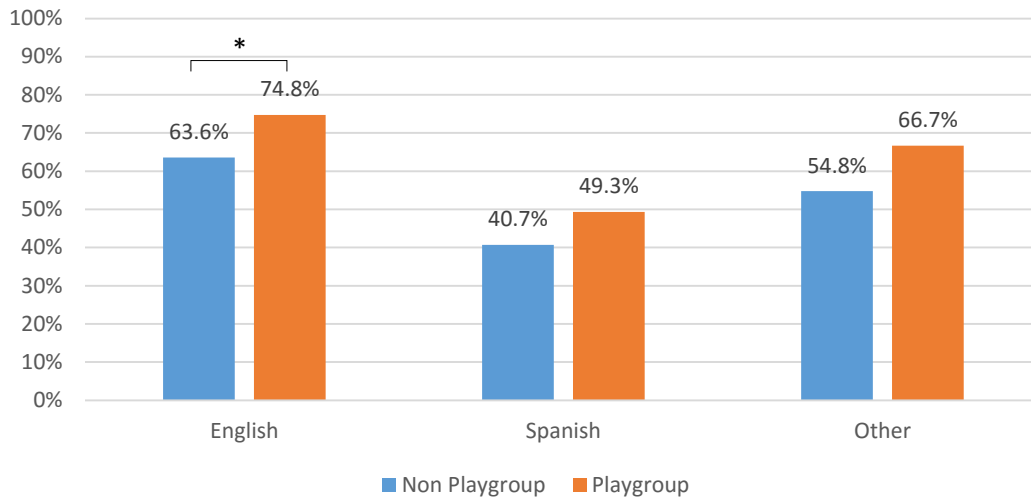


In general we see a positive trend across the years in the overall percentage of students receiving “Benchmark” as their support recommendation on their K2 DIBELS assessment. This holds true for both Playgroup and Non Playgroup populations. As the earlier collapsed data suggested, the Playgroup population outperformed the Non Playgroup population in terms of percentage meeting “Benchmark” by about 8.67 percentage points on average across the three observed school years.

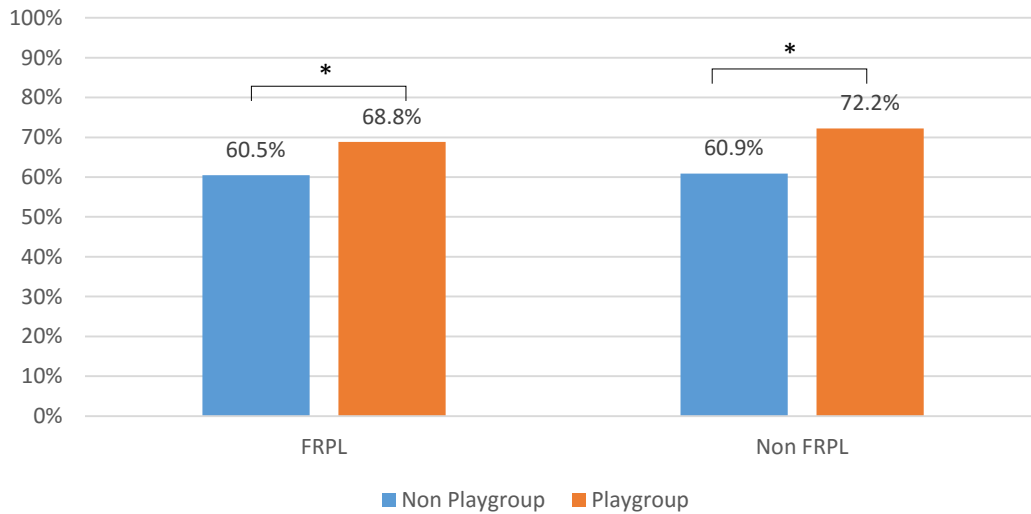
Below are further differences in percentage of students meeting “Benchmark”. This data has been collapsed across 2012-2013, 2013-2014, and 2014-2015 school years and delineated by demographic subgroups.

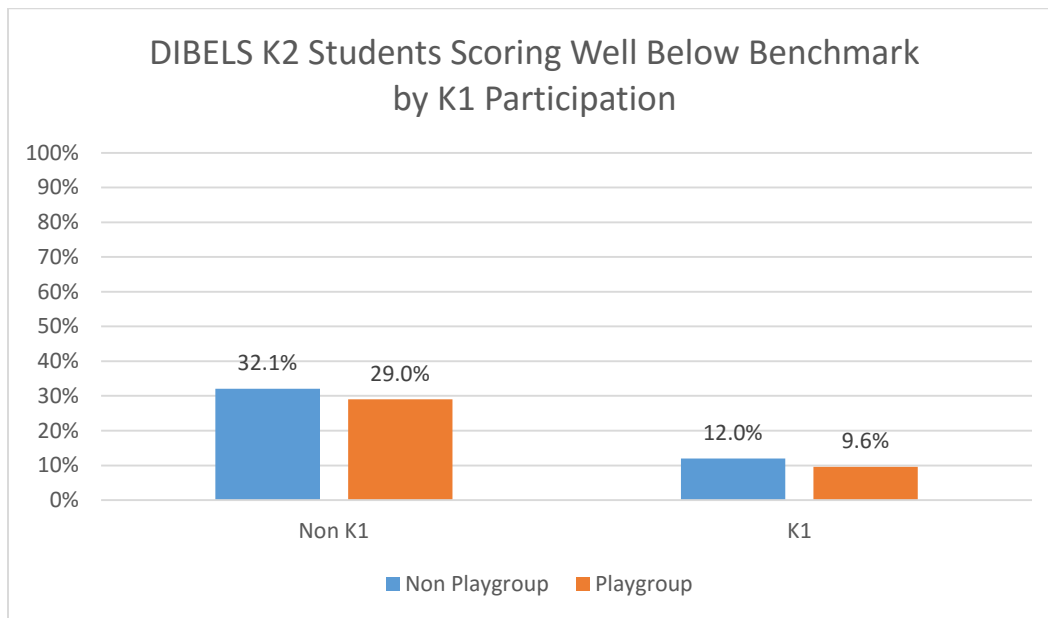
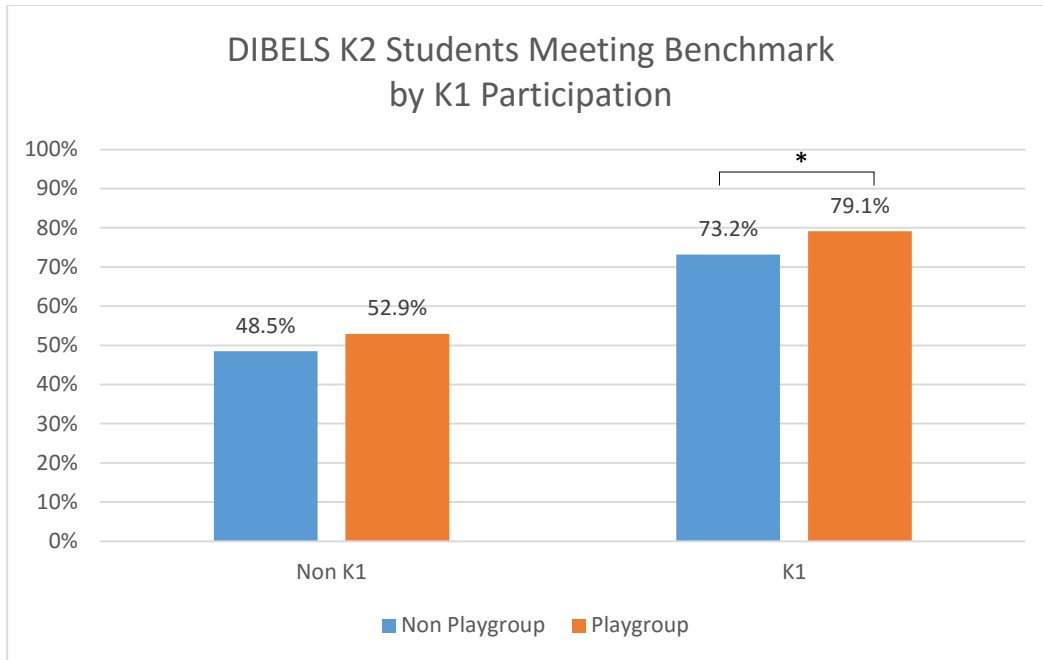


DIBELS K2 Students Meeting Benchmark  
by Home Language



DIBELS K2 Students Meeting Benchmark  
by Free/Reduced Lunch (FRPL)





Our data suggest that attending K1 is positively associated with students' DIBELS performance, regardless of Playgroup attendance. In both groups, a higher percentage of the students received "Benchmark" as their support recommendation if they attended K1. The difference in percentages of K1 students meeting "Benchmark" between Playgroup and Non Playgroup is statistically significant ( $p=.02$ ). Participation in K1 also signals less students scoring "Well Below Benchmark" for both groups. On an interesting side note, data indicate that a higher proportion of Playgroup students end up attending K1 (64.5%) than the Non Playgroup (49.0%).

### FSF and LNF Scores:

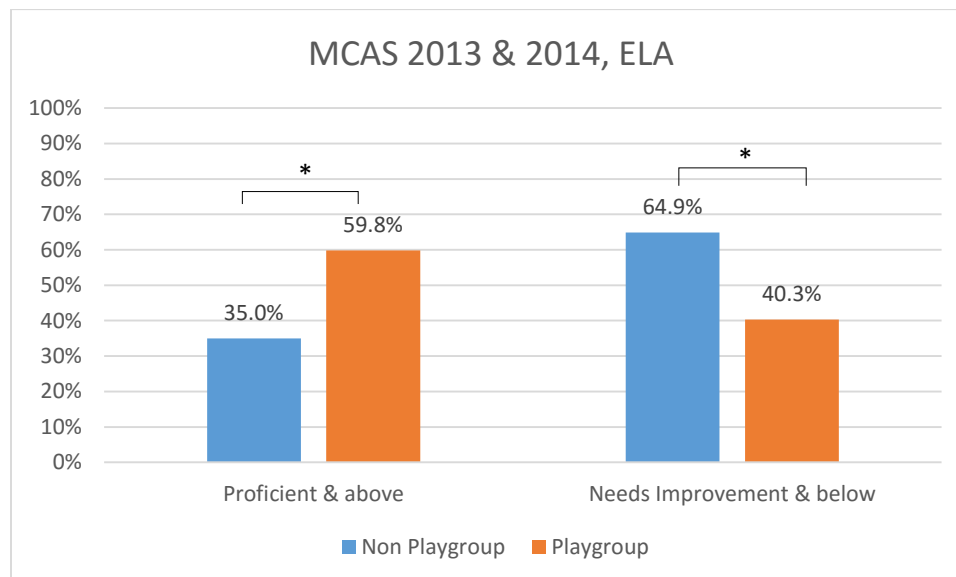
We now look at the First Sound Fluency (FSF) and Letter Naming Fluency (LNF) subtests of the DIBELS. The First Sound Fluency subtest is a standardized test of phonological awareness. The FSF is designed to measure a child's ability to recognize and produce the initial sound in a word pronounced by the examiner. The Letter Naming Fluency subtest is a brief, direct measure of student's fluency in naming letters. The LNF assesses a student's ability to recognize individual letters and say their letter names.

	Non Playgroup	Playgroup
FSF mean score	13.1	15
LNF mean score	22.6	24.7

The Playgroup student population on average outperform their Non Playgroup peers in both the First Sound Fluency and Letter Naming Fluency measures. Both of these differences are statistically significant ( $p < .01$ ).

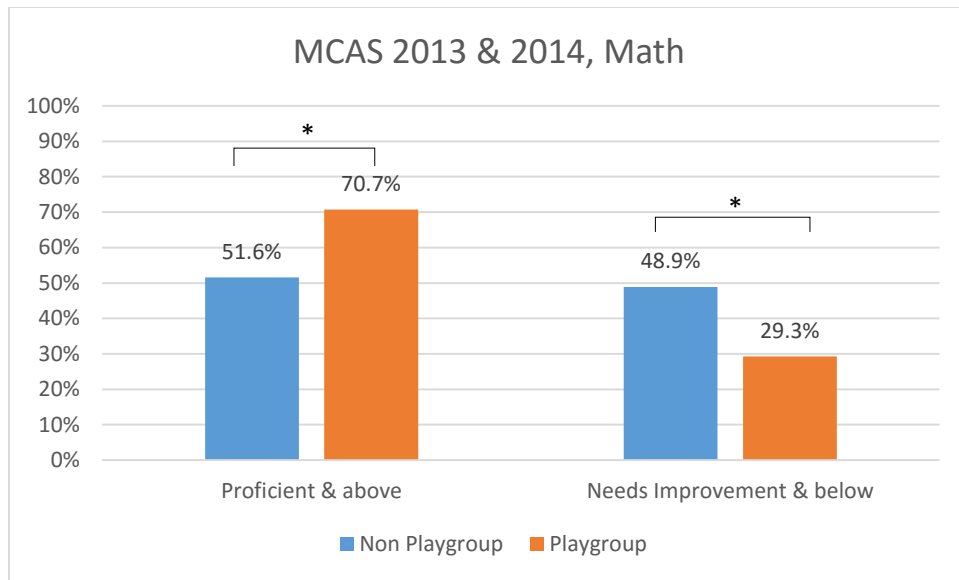
### MCAS Results

Finally, we look at the 3<sup>rd</sup> grade MCAS results of Playgroup and Non Playgroup student populations. For this subset of analysis we collected and collapsed data from the 5,789 BPS 3<sup>rd</sup> graders who took the MCAS in spring 2013 or 2014. Again, for the fairness of comparison, students without complete demographic information were dropped in this analysis.



In ELA, there is a statistically significant ( $p < .001$ ) higher percentage of students scoring “Proficient” and “Advanced” in the Playgroup (59.8% compared to 35%). There is also a statistically significant ( $p < .001$ ) smaller percentage of Playgroup students scoring “Needs Improvement” and “Warning” (40.3% compared to 64.9%).





In Math, there is a statistically significant ( $p < .001$ ) higher percentage of students scoring “Proficient” and “Advanced” in the Playgroup (70.7% compared to 51.6%). There is also a statistically significant ( $p < .001$ ) smaller percentage of Playgroup students scoring “Needs Improvement” and “Warning” (29.3% compared to 48.9%).

### **Conclusion**

Overall, our analysis reveals some very promising data on the impact of the Play to Learn program on BPS students from participation to 3<sup>rd</sup> grade. Across most demographic subgroups, the Playgroup population had a higher percentage of students receiving “Benchmark” on their K2 DIBELS assessment and a smaller percentage of students receiving “Below Benchmark” and “Well Below Benchmark” in comparison to the Non Playgroup population. It is particularly interesting that a smaller percentage of students in the Playgroup indicated English as their home language, but proportionally outperformed the Non Playgroup population- more of whom speak English at home. The MCAS 2013 and 2014 data reveal similar trends and suggest a positive association with Playgroup participation. Generally a larger percentage of students Playgroup participants scored “Proficient” and “Advanced” compared to the Non Playgroup population. Similarly, a smaller percentage of students in the Playgroup scored “Needs Improvement” and “Warning” compared to the Non Playgroup population.

The last report of this nature was conducted in 2012 and revealed generally similar findings. One advantage of this report was the decision to collapse three school years of student data to increase statistical power. The results of this analysis are very promising for Play to Learn. As time passes and sample sizes increase, it will be useful and interesting to continue this study on a larger scale.