Blueprint: Program Users Outperform Non-Users

Texas School District Report

Executive Summary

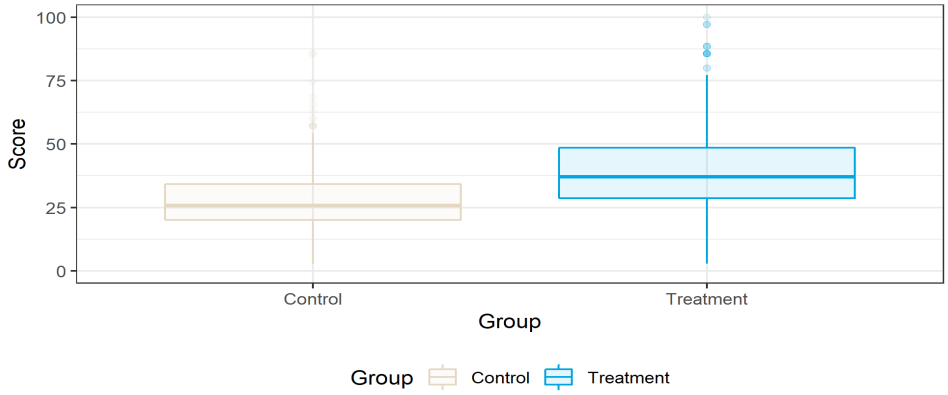
Blueprint is a supplemental, digital math program that builds the foundational mathematical skills for pre-K through grade one students. A school district in Texas wanted to investigate the effectiveness of Imagine Learning's Blueprint product for the 2017–2018 academic year. For the study, the district chose three schools to pilot Blueprint (Pre-K grade-level) before an assessment was administered (the treatment schools) and three other schools of similar demographics to serve as control schools. Baseline equivalence of the treatment and control groups of students is assumed to exist via the selection process of schools.

Results

We first compared the overall accuracy of treatment students and control students on the Blueprint assessment. In this comparison, only the students that submitted answers for all thirty-five questions were included—925 students in total. Comparisons were made based on post-test performance on the Blueprint assessment.

The boxplots for the assessment scores (percentage correct) of the control and treatment students are shown in Figure 1. The horizontal lines indicate the median scores of each group. On average, treatment students scored higher (40.01) on the posttest than control students (28.12) meaning students who used Blueprint scored 42% higher on program assessments than non-users.

Figure 1. Boxplots for Control and Treatment Group



A *t*-test on the results for each group indicates there is a significant difference in the average scores (p=6.41e-28), with the treatment students achieving an average score nearly twelve percentage points higher than the control students (95% CI: [9.84, 13.94]; Effect size: 0.75).

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We also analyzed student performance on specific skills. The *t*-test results indicate there is a significant difference in average scores in each topic, with the treatment group outperforming the control group. Those results are summarized in Table 1.

Table 1. Treatment and Control Group Performance on Blueprint Skills

Topic	Control Avg.	Treatment Avg.	Difference Avg.	Effect Size	95% CI	p
2D Shapes	23.49	44.18	20.68	0.83	[17.46, 23.90]	1.42e-33
Colors	61.26	73.33	12.07	0.33	[7.37, 16.78]	5.75e-07
Comparison	36.55	40.25	3.70	0.21	[1.41, 5.99]	1.57e-03
Equality	11.58	16.11	4.53	0.17	[1.13, 7.93]	9.04e-03
Grouping by an Attribute	11.37	17.78	6.41	0.18	[1.86, 10.96]	5.85e-03
Location words	34.53	44.00	9.47	0.24	[4.45, 14.49]	2.25e-04
Ordering by an Attribute	15.44	27.33	11.89	0.45	[8.45, 15.34]	2.43e-11
Patterns	12.42	27.26	14.84	0.50	[11.00, 18.67]	8.32e-14
Similarity and Difference	24.32	50.22	25.91	0.76	[21.44, 30.37]	5.86e-28
Size	30.86	44.10	13.24	0.54	[10.07, 16.41]	8.71e-16

Conclusions

Students who used Blueprint as supplementary mathematics instruction performed better on the Blueprint assessment than students who did not use the program. Program users outperformed non-users overall and on skills assessed in the Blueprint assessment. This study demonstrates that Blueprint may be effective supplemental instruction for students who use the program.

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