Exploratory Analysis

Move On When Reading

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How School Literacy Plans Connect to Third-Grade Reading Achievement

By Robert Vagi, PhD

Read On ARIZONA

When Arizona Reads, Arizona Thrives

Arizona Department of Education

State Board of Education Arizona

Introduction

To ensure all children are reading by third grade, the Arizona legislature passed a series of laws collectively known as "Move On When Reading." Arizona's Move On When Reading policy is designed to provide kindergarten through third grade students high-quality, evidence-based reading instruction. As part of this effort, schools are required to report literacy plans to the Arizona Department of Education. School literacy plans include a variety of information including a school's core literacy programs, programs used to identify struggling readers, benchmark assessment data, and programs used to support students who have been retained.

Read On Arizona and the Arizona Department of Education have partnered to better understand how the programs and interventions reported in the school literacy plans are related to third grade reading achievement. This study is meant to take an initial look at the data that focuses on schools' core reading programs and universal screeners. Future studies, dependent on available quality data, will examine additional aspects of the school-level literacy plans including professional development, time spent on reading instruction, and support programs for retained students. With that in mind, through this study, we sought to answer the following questions:

1. **Are specific core literacy programs associated with higher rates of third grade reading achievement?**
2. **Are specific universal screening tools associated with higher rates of third grade reading achievement?**
3. **To what extent are school and district characteristics (i.e. poverty, enrollment, etc.) associated with different rates of third grade reading achievement?**

The following sections briefly summarize the data and methods used in this study, the findings, and potential implications for policy and practice.

About the Author

Robert Vagi is a research associate at the Center for Applied Research and Educational Improvement at the University of Minnesota. Prior to that, he was a senior policy analyst at Morrison Institute for Public Policy at Arizona State University. Robert has a PhD in Educational Policy and Evaluation from the Mary Lou Fulton Teachers College at Arizona State University. His research has been featured in several academic and media outlets including Arizona PBS's *Arizona Horizon*, *The Arizona Republic* and the Brookings Institution's Brown Center Chalkboard. Before beginning a career in education research, he was a public school teacher in Phoenix, Arizona for six years.

Acknowledgement

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Data

The data used in these analyses came from several sources. The primary sources of data were the school-level third-grade literacy plans submitted to the Arizona Department of Education during the 2015-2016 school year.[1] Specifically, the analyses focused on two aspects of these plans: schools' core reading programs and their universal screening tools.

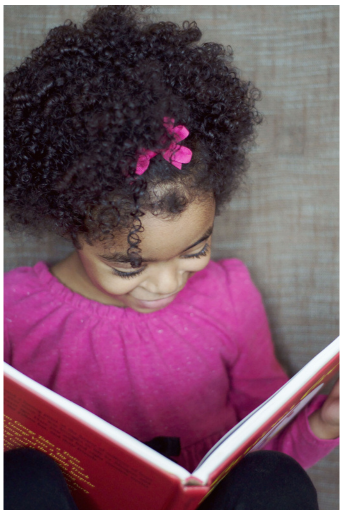
A core reading program is the primary tool used for reading instruction at the elementary level. Core reading programs integrate all of the key components of literacy for each grade level in a strategic sequence of increasing complexity. Core reading programs are intended to be used in multiple grade levels to take advantage of the incorporation of various skills into one coherent program that builds on student knowledge and previously taught skills from year to year. These programs provide an organized scope and sequence which emphasizes mastery of component reading skills necessary for later reading success. Effective core reading programs share four important features: a clearly articulated statement of strong evidence of effectiveness, explicit instructional strategies, consistent organizational and instructional routines, and a focus on key pillars of early literacy.

Universal screener assessments consist of brief tests focused on targeted skills that are highly predictive of the likelihood of success on meeting or exceeding curricular benchmarks. These assessments are used to identify students who may be at risk, monitor student progress, and/or screen for special program placement or intervention.

In addition to the literacy plan data, we drew from data made publicly available by the Arizona Department of Education and the U.S. Department of Education. These data included information about a variety of school and district characteristics including school- and district-level poverty, school and district size, the percentage of minority students (i.e. students who did not identify as "white") at the school- and district-levels, charter school status, and whether a school was in a rural area.

The main outcome in these analyses was school-level achievement on the third grade AzMERIT English Language Arts (ELA) test. AzMERIT is Arizona's statewide learning assessment. AzMERIT replaced the Arizona Instrument to Measure Standards (AIMS) in 2015 and measures student learning based on Arizona's English Language Arts Standards. Students' scores on AzMERIT place them into one of four performance levels with performance level 1 indicating minimal proficiency and performance level 4 indicating a high level of proficiency. Students at performance levels 3 and 4 are considered "passing." In our analyses, we focused specifically on the percentages of students passing and at the lowest achievement level (performance level 1) at the school-level.

In each analysis, schools were only included if complete data were provided for all the variables of interest. This resulted in a final sample of 953 schools. Compared to the state, smaller percentages of these schools were charter schools (18% vs. 24%) and rural schools (11% vs. 15%). Additionally, schools in the final sample, on average, enrolled more students (586 vs. 533), were in larger districts (10,366 vs. 8,986), and enrolled greater percentages of minority students (64% vs. 61%).



Effective core reading programs share four important features: a clearly articulated statement of strong evidence of effectiveness, explicit instructional strategies, consistent organizational and instructional routines, and a focus on key pillars of early literacy.

TABLE 1. Descriptive statistics for complete and final samples

	All Schools		Schools in Final Sample	
Variable	Mean	Standard Deviation	Mean	Standard Deviation
SCHOOL CHARACTERISTICS				
Charter School (Percent)	24%***		18%***	
School Enrollment	533***	294	586***	278
School Percent Poverty (FRL)	58%	32%	57%	32%
School Percent Minority	61%*	28%	64%*	27%
Rural (Percent)	15%**		11%**	
Percent Passing third Grade AzMERIT ELA	41%	20%	39%	18%
Percent at Performance Level 1 third Grade AzMERIT ELA	45%	19%	46%	19%
DISTRICT CHARACTERISTICS				
District Total	8,986**	10,311	10,366**	10,640
District Percent Poverty (FRL)	55%	30%	56%	28%
District Percent Minority	61%**	25%	64%**	24%
	n = 1,196		n = 953	

** indicates $p < .05$, ** indicates $p < .01$, and *** indicates $p < .001$.*
Note: The final sample reflects cases where complete data were available for all predictors. The number of observations in some analyses differ slightly due to missing values on the outcome variables.

We conducted a series of analyses that examined differences in AzMERIT achievement between schools that used each of several core reading programs and those that did not.

Methods and Findings

Question 1: *Are specific core literacy programs associated with higher rates of third-grade literacy?*

To answer this question, we conducted a series of analyses that examined differences in AzMERIT achievement between schools that used each of several core reading programs and those that did not. Because schools can choose any program so long as it is "evidence-based" there were more programs reported than could be meaningfully analyzed. Therefore, we chose to limit our analyses to programs that were used by more than 5% of schools. These programs included Houghton Mifflin Reading, Journeys, MacMillian/McGraw-Hill Reading, Reading Street, Storytown, Treasures, and Trophies.

While differences in achievement based on schools' core reading programs may be informative, a variety of factors can influence student achievement. Further, these factors might also be related to the core programs that schools use. For instance, rural schools may choose curricula that emphasize different skills and knowledge than schools in urban areas. The same might be true for schools that serve large numbers of students affected by poverty. To address this, we ran an additional set of analyses examining differences in achievement while controlling for several school and district characteristics. These included whether a school was a charter school, school and district enrollment, the percentage of students who qualified for free- and reduced-price lunch (FRL) at the school- and district-levels, the percentage of minority students at the school- and district-levels, and whether a school was located in a rural area.

In addition to differences based on specific core reading programs, the number of core reading programs used by a school may also be of interest. For example, some schools may use multiple core reading programs to address the diverse needs and learning styles of their students. If this is the case, then we would expect more students to perform well in schools with multiple programs. Conversely, using multiple programs may result in a lack of instructional focus and could potentially lead to lower average achievement. To shed light on this issue, we examined the relationship between the number of core programs used by a school and third-grade AzMERIT achievement. Again, we conducted two sets of analyses: one that controlled for an array of school and district characteristics and one that did not.

With regard to the core reading programs, our analyses did not show any statistically significant differences (i.e. $p < .05$) in the percentage of students passing the third-grade AzMERIT English language arts test. Similarly, differences in the percentage of students at performance level 1 based on core reading programs were not statistically significant. This was true in models that accounted for school and district characteristics and those that did not. Finally, none of our analyses showed statistically significant relationships between the number of core reading programs at a school and the percentage of students passing or at performance level 1.

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TABLE 2. Percentage of schools with the most commonly used reading programs

Program	Percentage
Trophies	22%
Houghton Mifflin Reading	12%
Journeys	10%
Storytown	10%
Reading Street	8%
Treasures	6%
MacMillian/McGraw-Hill Reading	6%

n = 953

Note: Schools can use multiple core programs.

TABLE 3. Number of core reading programs used in third grade

Number of Core Reading Programs Used	Number of Schools	Percentage of Schools
1 Core Program	1,002	86.7%
2 Core Programs	130	11.3%
3 Core Programs	18	1.6%
4 Core Programs	2	.2%
5 Core Programs	1	.1%
More Than 5 Core Programs	3	.2%

n = 953

Question 2: *Are specific universal screening tools associated with higher rates of third-grade literacy?*

As with the previous analyses, we chose to examine differences in AzMERIT achievement based on whether a school used a specific universal screening tool. Again, we limited our analyses to screening tools that were used by more than five percent of schools. These included AIMS Web, DIBELS, DIBELS Next, and Galileo. Our analyses focused on differences between schools that used each of these screening tools and those that did not. In these analyses, we only examined differences in the percentage of students at performance level 1. This was done because universal screening tools are meant to identify students who are struggling readers. Therefore, we would expect effective screening tools to have the strongest relationship with the number of students at the lowest level of achievement. As with the previous analyses, we conducted two sets of analyses: one that accounted for school and district characteristics and one that did not.

In addition to differences based on specific universal screening tools, we also examined differences in student achievement based on the number of universal screening tools used by a school. Similar to core reading programs, it may be that schools with multiple screening tools are committed to identifying students with a variety of needs. Therefore, we would expect these schools to have higher levels of student achievement. Conversely, schools that use multiple screening tools may lack a focused intervention strategy. If this is the case, then these schools may have lower levels of achievement.

Our analyses did not show any statistically significant differences (i.e. $p < .05$) in the percentage of students at performance level 1 based on each of the universal screening tools described above. This was true in models that accounted for school and district characteristics and those that did not. Finally, none of our analyses showed statistically significant relationships between the number of universal screening programs used by a school and student achievement.

TABLE 5. Percentage of schools using universal screeners

Screener	Percentage
DIBELS Next	63.9%
Galileo	18.3%
AIMS Web	7.6%
DIBELS	6.4%

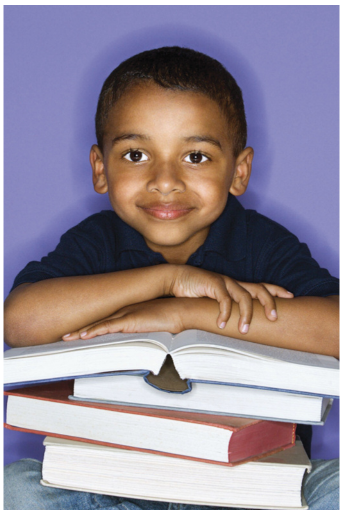
n = 955

Note: Two schools reported data for their universal screening programs but did not report data for their core reading programs. Additionally, schools can use more than one universal screener.

Finally, none of our analyses showed statistically significant relationships between the number of universal screening programs used by a school and student achievement.

Question 3: *To what extent are school and district characteristics (i.e. poverty, enrollment, etc.) associated with different rates of third-grade literacy?*

A large body of research shows that factors beyond the classroom can impact student achievement. To better understand how these factors may be affecting literacy in Arizona, we ran a series of analyses that examined relationships between several school and district characteristics and student achievement. These included whether a school was a charter school, school and district enrollment, the percentage of students who qualified for free-and reduced-price lunch at the school- and district-levels, the percentage of minority students at the school- and district-levels, and whether a school was located in a rural area.



In other words, we sought to identify unique relationships between each characteristic and third-grade reading achievement after accounting for all other school and district characteristics included in the analysis.

In our analyses, we examined relationships between each of these characteristics and the percentages of students passing and at performance level 1 of AzMERIT. Because many of these characteristics occur together, it can be difficult to disentangle their unique relationships with student achievement. For instance, schools with large numbers of minority students are often more likely to enroll large numbers of students living in poverty. Therefore, if a relationship exists between student achievement and both characteristics, it is unclear which is related to student achievement independent of the other. To address this, our analyses examined relationships between third-grade reading achievement and each characteristic independent of the others. In other words, we sought to identify unique relationships between each characteristic and third-grade reading achievement after accounting for all other school and district characteristics included in the analysis.

Our analyses identified several statistically significant relationships. First, the school-level percentage of students who qualified for free- and reduced-price lunch was associated with both the percentage of students passing AzMERIT and at performance level 1. Specifically, a ten-percentage point increase in school-level poverty was associated with a two-percentage point decrease in the number of students passing AzMERIT and a two-percentage point increase in the number of students at performance level 1. Similarly, the percentage of minority students at a school was significantly related to both the percentages of students passing and at performance level 1. A ten-percentage point increase in the number of minority students at a school was associated with a four-percentage point decrease in the number of students passing AzMERIT and a four-percentage point increase of students at performance level 1. Interestingly, a ten-percentage point increase in the number of minority students at the district-level was associated with a two-percentage point increase in the number of students passing AzMERIT at the school-level. Finally, rural schools, on average, had three percent fewer students passing AzMERIT when compared with non-rural schools.

TABLE 8. Results from regression models with school and district characteristics as predictors

School/District Characteristic	Percent Passing as the Outcome	Percent at Performance Level 1 as the Outcome
Charter School	1.35	-2.90
	(1.59)	(1.67)
Rural School	-3.28*	2.02
	(1.47)	(1.48)
Enrollment	.00	.00
(School)	(.00)	(.00)
Percent FRL	-.21***	.23***
(School)	(.03)	(.03)
Percent Minority	-.43***	-.39***
(School)	(.04)	(.04)
Enrollment	.00	.00
(District)	(.00)	(.00)
Percent FRL	.02	-.06
(District)	(.05)	(.05)
Percent Minority	.16***	-.10
(District)	(.05)	(.05)
	n= 971	*n* = 956

** indicates p < .05, **indicates p < .01, *** indicates p < .001; These are coefficient estimates from multilevel models with schools nested in districts.*

Discussion

These analyses provide initial insight into factors related to third grade literacy in Arizona. However, it is important to note that this study does not allow us to definitively say that any program or factor is or is not causing differences in student achievement. In other words, these relationships are correlational, not causal. That said, identifying these relationships is an important first step towards improving childhood literacy in Arizona.

Our analyses of schools' core reading programs and universal screening tools did not show any significant differences based on specific programs or the number of programs used. However, this does not mean that these programs are not helping students. Rather, our analyses suggest that third-grade reading achievement at schools with the most frequently-used programs is not significantly different from schools that do not use these programs.

Our analyses of school and district characteristics, on the other hand, showed that several characteristics are significantly related to third-grade literacy. Previous research has shown that poverty is a significant predictor of student achievement.[2] In our analyses, this amounted to a two-percentage point decrease of students passing the third-grade AzMERIT test for a ten-percentage point increase in school-level poverty.

Similarly, a ten-percentage point increase in school-level poverty was associated with a two-percentage point increase in the number of students in the lowest achievement category. It is important to note that these relationships are independent of several other factors that may be related to student achievement like minority enrollment, charter status, and geographic location. While it is difficult to determine the exact mechanism through which poverty may be affecting literacy in Arizona, these results suggest that policymakers may do well to focus efforts on assisting students and families who live in poverty.

In addition to poverty, the percentage of minority students at a school was significantly related to both the number of students passing and at the lowest achievement level of AzMERIT. Again, this relationship was independent of several other related factors. Given the diversity of Arizona's student population, it may be that this relationship is being driven by the unique cultural needs of our state's many racial/ethnic groups. Whatever the case, this relationship suggests that schools serving large numbers of minority students may benefit from specialized support.

Interestingly, our analyses also suggest that higher district-level minority enrollment is associated with slightly higher rates of school-level student achievement. It should be noted that this relationship was significant after accounting for things that are highly correlated with both district minority enrollment and student achievement (i.e. school-level minority enrollment, district-level poverty, etc.). Interpreting this relationship is difficult since it is in the opposite direction of what would be expected. That said, this relationship may be a promising area for future research.

Finally, our analyses suggest that rural schools, on average, have lower levels of third-grade reading achievement when compared to non-rural schools. Again, this is significant because this difference is independent from several related factors (i.e. poverty, minority enrollment, etc.). While this study does not provide definitive evidence as to the cause of these differences, previous research has shown that rural communities face many unique challenges.[3] Whatever the cause, these results suggest that targeted support may be needed to help increase literacy rates in rural communities.

The goal of this study was to provide insight into factors that may be influencing third-grade literacy in Arizona. While our findings identified several school and district characteristics that are associated with third-grade literacy, further research is needed to fully understand the complex systems that affect our students. However, our hope is that this study will be a starting point for conversations about improving childhood literacy in Arizona.

1. This was the most recent year in which all schools reported data.

2. Lacour, M., & Tissington, L. (2011). The effects of poverty on academic achievement. *Educational Research and Reviews* 6(7), 522-527.

3. Parsley, D., & Barton, R. (2015). The myth of the little red school house: Challenges and opportunities for rural school improvement. *Peabody Journal of Education*, 90,191-193.

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Appendix

TABLE 4A. Results from regression models with core reading programs as predictors and percent passing as the outcome

Core Program	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Houghton Mifflin Reading	-.89 (2.20)						
Journeys		-4.53 (3.29)					
MacMillian/ McGraw Hill Reading			-2.87 (2.90)				
Reading Street				2.89 (3.18)			
Storytown					-4.24 (3.26)		
Treasures						4.97 (3.32)	
Trophies							-1.91 (2.45)
n =953							

** indicates p < .05, **indicates p < .01, *** indicates p < .001; These are coefficient estimates from multilevel models with schools nested in districts.*

TABLE 4B. Results from regression models with core reading programs and school/district characteristics as predictors and percent passing as the outcome

Core Program	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Houghton Mifflin Reading	2.12 (1.61)						
Journeys		-1.68 (2.38)					
MacMillian/McGraw Hill Reading			-.88 (2.10)				
Reading Street				.50 (2.29)			
Storytown					-1.11 (2.36)		
Treasures						.25 (2.41)	
Trophies							-.89 (1.80)
SCHOOL/DISTRICT CHARACTERISTICS							
Charter School	1.97 (1.62)	1.67 (1.62)	1.59 (1.59)	1.57 (1.60)	1.55 (1.59)	1.60 (1.60)	1.48 (1.61)
Rural School	-3.52* (1.46)	-3.52* (1.60)	-3.57* (1.47)	-3.54* (1.47)	-3.58* (1.47)	-3.54* (1.47)	-3.52* (1.47)
Enrollment (School)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Percent FRL (School)	-.21*** (.03)	-.21*** (.03)	-.21*** (.03)	-.21*** (.03)	-.21*** (.03)	-.21*** (.03)	-.21*** (.03)
Percent Minority (School)	-.44*** (.04)	-.43*** (.04)	-.44*** (.04)	-.44*** (.04)	-.44*** (.04)	-.44*** (.04)	-.44*** (.04)
Enrollment (District)	.00 (.00)	.00 (.00)	.01 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Percent FRL (District)	.01 (.05)	.01 (.05)	.01 (.05)	.01 (.05)	.01 (.05)	.01 (.05)	.01 (.05)
Percent Minority (District)	.19*** (.05)	.20*** (.05)	.20*** (.05)	.19*** (.05)	.19*** (.05)	.20*** (.05)	.20*** (.05)
n =953							

** indicates p < .05, **indicates p < .01, *** indicates p < .001; These are coefficient estimates from multilevel models with schools nested in districts.*

TABLE 4C. Results from regression models with core reading programs as predictors and percent at performance level 1 as the outcome

Core Program	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Houghton Mifflin Reading	.16 (2.24)						
Journeys		6.03 (3.35)					
MacMillian/McGraw Hill Reading			1.52 (2.90)				
Reading Street				-2.60 (3.28)			
Storytown					3.69 (3.36)		
Treasures						-3.91 (3.33)	
Trophies							3.51 (2.50)
n =939							

** indicates p < .05, **indicates p < .01, *** indicates p < .001; These are coefficient estimates from multilevel models with schools nested in districts.*

TABLE 4D. Results from regression models with core reading programs and school/district characteristics as predictors and percent at performance level 1 as the outcome

Core Program	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Houghton Mifflin Reading	-2.78 (1.66)						
Journeys		3.26 (2.46)					
MacMillian/McGraw Hill Reading			-.70 (2.13)				
Reading Street				-.14 (2.40)			
Storytown					-.24 (2.36)		
Treasures						.62 (2.45)	
Trophies							1.94 (1.86)
SCHOOL/DISTRICT CHARACTERISTICS							
Charter School	-3.37* (1.69)	-3.06* (1.68)	-2.90 (1.68)	-2.90 (1.68)	-2.92 (1.68)	-2.87 (1.68)	-2.64 (1.69)
Rural School	2.31 (1.49)	2.23 (1.49)	2.32 (1.49)	2.34 (1.49)	2.34 (1.49)	2.36 (1.49)	2.30 (1.49)
Enrollment (School)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Percent FRL (School)	.22*** (.03)	.22*** (.03)	.22*** (.03)	.22*** (.03)	.22*** (.03)	.22*** (.03)	.22*** (.03)
Percent Minority (School)	.41*** (.04)	.41*** (.04)	.41*** (.04)	.41*** (.04)	.41*** (.04)	.41*** (.04)	.41*** (.04)
Enrollment (District)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Percent FRL (District)	.05 (.05)	.06 (.05)	.05 (.05)	.05 (.05)	.05 (.05)	.05 (.05)	.05 (.05)
Percent Minority (District)	-.13* (.05)	-.13* (.06)	-.13* (.06)	-.13* (.06)	-.13* (.06)	-.13* (.06)	-.13* (.06)
n =939							

** indicates p < .05, **indicates p < .01, *** indicates p < .001; These are coefficient estimates from multilevel models with schools nested in districts.*

TABLE 6A. Results from regression models with universal screening programs as predictors and percent at performance level 1 as the outcome

Universal Screening Program	Model 1	Model 2	Model 3	Model 4
AIMS Web	5.22			
	(3.93)			
DIBELS		-.93		
		(2.81)		
DIBELS Next			-.22	
			(1.78)	
Galileo				3.12
				(1.86)
n = 941				

** indicates p < .05, **indicates p < .01, *** indicates p < .001; These are coefficient estimates from multilevel models with schools nested in districts.*

TABLE 6B. Results from regression models with universal screening programs and school/district characteristics as predictors and percent at performance level 1 as the outcome

Core Program	Model 1	Model 2	Model 3	Model 4
AIMS Web	.96			
	(2.84)			
DIBELS		-1.03		
		(2.07)		
DIBELS Next			.13	
			(1.35)	
Galileo				1.01
				(1.40)
SCHOOL/DISTRICT CHARACTERISTICS				
Charter School	-3.01	-3.00	-3.02	-3.26
	(1.69)	(1.68)	(1.71)	(1.70)
Rural School	2.65	2.71	2.65	2.68
	(1.49)	1.49)	(1.49)	(1.49)
Enrollment	.00	.00	.00	.00
(School)	(.00)	(.00)	(.00)	(.00)
Percent FRL	.22***	.22***	.22***	.22***
(School)	(.03)	(.03)	(.03)	(.03)
Percent Minority	.41***	.41***	.41***	.41***
(School)	(.04)	(.04)	(.04)	(.04)
Enrollment	.00	.00	.00	.00
(District)	(.00)	(.00)	(.00)	(.00)
Percent FRL	.05	.05	.05	.05
(District)	(.05)	(.05)	(.05)	(.05)
Percent Minority	-.13*	-.13*	-.13*	-.13*
(District)	(.05)	(.05)	(.06)	(.06)
n = 941				

** indicates p < .05, **indicates p < .01, *** indicates p < .001; These are estimates from multilevel models with schools nested in districts.*

TABLE 7A. Results from regression models with number of core reading programs and school/district characteristics as predictors and percent passing as the outcome

	Model 1	Model 2
Number of Core Programs	.36 (1.26)	-.72 (.92)
SCHOOL/DISTRICT CHARACTERISTICS		
Charter School		1.58
		(1.59)
Rural School		-3.57*
		(1.46)
Enrollment (School)		.00
		(.00)
Percent FRL (School)		-.21***
		(.03)
Percent Minority (School)		-.43***
		(.04)
Enrollment (District)		.00
		(.00)
Percent FRL (District)		.01
		(.05)
Percent Minority (District)	.19***	
		(.05)
n = 953		

** indicates p < .05, **indicates p < .01, *** indicates p < .001; These are coefficient estimates from multilevel models with schools nested in districts.*

TABLE 7B. Results from regression models with universal screening programs and school/district characteristics as predictors and percent at performance level 1 as the outcome

	Model 1	Model 2	Model 3	Model 4
Number of Core	-.64	.62		
Programs	(1.26)	(.94)		
Number of			-.99	-1.34
Universal Screeners			(1.00)	(.74)
SCHOOL/DISTRICT CHARACTERISTICS				
Charter School		-2.89		-3.07
		(1.67)		(1.66)
Rural School		2.37		2.69
		(1.49)		(1.48)
Enrollment		.00		.00
(School)		(.00)		(.00)
Percent FRL		.22***		.22***
(School)		(.03)		(.03)
Percent Minority		.41***		.41***
(School)		(.04)		(.04)
Enrollment		.00		.00
(District)		(.00)		(.00)
Percent FRL		-.05		-.05
(District)		(.05)		(.05)
Percent Minority		.13*		-.13*
(District)		(.06)		(.06)
	n=939	*n* =939	*n* = 941	*n* = 941

** indicates p < .05, **indicates p < .01, *** indicates p < .001; These are coefficient estimates from multilevel models with schools nested in districts. Differences in n are due to missing values on the outcome.*

Working Together—Making an Impact

Founding Partners & Advisory Board

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Arizona Department of Education

First Things First

Head Start State Collaboration Office

Helios Education Foundation

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