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Investigating Outcomes for English Language Learners in Arkansas Better Chance (ABC) Pre-K

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This Brief

Introduction **P.1**

Trends in ABC Enrollment **P.2**

ABC & Academic Outcomes **P.3**

ABC & ELL Designation **P.4**

Conclusions & Policy Implications **P.5**

Summary Points

- English Language Learners (ELL) face large achievement gaps and other academic challenges.
- Approximately **10%** of ABC pre-K enrollment is comprised of ELL students, making this student group over-enrolled relative to its 8% of K-12 enrollment.
- ELL students who attend ABC pre-K see **positive, statistically significant achievement gains** across 3rd to 5th grades.
- ELL students who attend ABC pre-K experience a **differentially positive benefit** in two of three cohorts analyzed.
- ELL students who attend ABC pre-K are **less likely to remain identified as ELL** in 3rd to 5th grades.

Investigating Outcomes for English Language Learners in Arkansas Better Chance (ABC) Pre-K

Students with limited English proficiency face a number of educational challenges, and there are dramatic achievement gaps between these students and their English-proficient peers. This brief describes the 3rd, 4th, and 5th grade outcomes of English Language Learner (ELL) students who attend Arkansas Better Chance (ABC) pre-Kindergarten, a state-funded program that is free to income-eligible families. Results indicate that ABC has the potential to improve academic outcomes for ELL students in Arkansas.

Introduction

Students who have a first language other than English, often referred to as English Language Learners (ELL), face a unique set of challenges as they progress through their educational journeys. Policymakers and district leaders are tasked with determining how to best serve this student population and help them achieve English proficiency as early as possible. According to the U.S. Department of Education (2020), the percentage of students in American public schools classified as ELL increased to 10.1% in 2017, an almost 25% increase from 2000. In Arkansas, 8.3% of public school students were ELL as of fall 2017, up from 2.6% in 2000, an even more dramatic increase than seen nationally. Programs that can effectively serve this growing ELL student population at-scale will be highly beneficial.

State supported pre-Kindergarten programs are growing in prevalence and political popularity, and they might be a promising intervention for this student group. The evidence of long-term pre-K outcomes is somewhat limited, and there is an indication that early benefits might fadeout in elementary school (Hill et al., 2015; Lipsey et al., 2018). However, pre-Kindergarten shows particular promise in its ability to serve vulnerable student populations, including ELL students (Gormley, 2008; Lipsey et al., 2018).

The Arkansas Better Chance (ABC) initiative launched in 1991 to fund various service providers for children birth to age 5, including pre-K programs housed in public schools that are tuition-free for eligible families. Teachers in ABC-funded classrooms are required to hold bachelor's degrees and current AR teacher licenses. Children ages 3 and 4 are eligible to enroll, and families with household incomes not exceeding 200% of the Federal Poverty Level qualify for free tuition. Families who do not meet the income threshold are eligible to enroll in programs where availability allows, paying tuition and fees on an income-based sliding scale (National Institute for Early Education Research, 2017).

In the current study, we examine outcomes for ELL students in Arkansas who participate in state-funded Arkansas Better Chance (ABC) pre-K programs. While our research design prevents us from making causal claims of the program's impact, we hope that our findings further our understanding of how well ELL students who attend ABC pre-K are performing relative to similar peers who do not attend.

Trends in ABC Enrollment

First, we examine the patterns of enrollment of each group of Kindergarten students examined. Our study included three cohorts of students: those who attended Kindergarten in 2011-12 (Cohort 1), 2012-13 (Cohort 2), and 2013-14 (Cohort 3). In each Kindergarten cohort, approximately 25% of students attended an ABC pre-K program housed in Arkansas public schools. In the following table, we note the proportion of ELL students who make up each Kindergarten cohort as well as of the sub-sample who attended ABC pre-K to see the rate at which this student population enrolled in ABC pre-K. About 30% of ELL Kindergarten students attended ABC pre-K programs.

Table 1: Proportion of Kindergarten Sample and Pre-K Sub-Sample as ELL, by Cohort

	Cohort 1	Cohort 2	Cohort 3
Kindergarten Year	2011-12 (N=37,257)	2012-13 (N=40,420)	2013-14 (N=39,844)
% Attended ABC Pre-K	26.2 (N = 9,761)	26.3 (N = 10,630)	25.7 (N = 10,239)
% ELL in K	9.3 (N = 3,464)	8.8 (N = 3,556)	8.7 (N = 3,466)
% ELL in Pre-K	11.0 (N = 1,077)	10.8 (N = 1,148)	10.4 (N = 1,068)

The cohort of students who began Kindergarten in 2011-12 (Cohort 1) included 37,257 unique observations, with 9.3% of students being designated ELL, 26.2% having attended ABC pre-K, and 11% of those pre-K attendees being ELL students. The cohort which entered Kindergarten in 2012-13 (Cohort 2) included 40,420 students. Of these, 8.8% were designated ELL, 26.3% attended ABC, and of those ABC attendees, 10.8% were ELL. For the cohort which began Kindergarten in 2013-14 (Cohort 3), 8.7% of students were ELL, 25.7% attended ABC, and 10.4% of those ABC attendees were ELL students. In each cohort, there is a higher proportion of ELL students enrolled in ABC than in Kindergarten, indicating that this student subgroup is over-enrolled in this program, relative to their enrollment in K-12 public schools.

As the program is targeted toward academically at-risk students, it makes sense that there would be higher enrollment of academically vulnerable students in ABC. This is a positive pattern, and as it becomes increasingly clear that this program has the potential for helping ELL students achieve long-term success, it might be worth considering how to increase enrollment even further than the current rate.

ABC & Academic Outcomes

The first research question of interest is whether ABC enrollment is associated with increased academic achievement for ELL students. We find that holding all else equal, ABC attendees tended to have higher math and reading achievement in grades 3 through 5 across every cohort. For Cohorts 2 and 3, students who were initially identified as English Language Learner (ELL) in Kindergarten had an additional benefit over and above that of the main group, indicating that the ABC program was more helpful long-term for them than for English-proficient students. We present the subgroup effects here, which describe the relationship between ABC participation and outcomes for ELL participants, relative to other students who enter Kindergarten as ELL but did not attend ABC prior to starting school. These coefficients are determined by summing the overall pre-K effect and the interaction of pre-K and ELL status. Joint coefficients are presented in Table 2.

Table 2: ELL Subgroup Analysis for Academic Outcomes, by Cohort and Subject Area

	Math			Reading		
	Cohort 1	Cohort 2	Cohort 3	Cohort 1	Cohort 2	Cohort 3
Grade 3	0.0873***	0.1605***	0.1822***	0.0546***	0.1913***	0.1330***
Grade 4	0.0565***	0.1231***	0.1105***	0.0581***	0.1446***	0.0618***
Grade 5	0.1077***	0.1019***	0.0690***	0.0803***	0.0956***	0.0868***

Note: Coefficients represent summation of Pre-K*ELL interaction and overall pre-K coefficient, providing a program effect estimate relative to other ELL students in sample. F-tests conducted for joint significance of these two coefficients.

*** p<0.01

Our analysis of student achievement outcomes begins in 3rd grade because that is the first year students take state achievement tests, and we continue through 5th grade in order to explore the lasting impact of the program on student outcomes. **These findings indicate positive, statistically significant relationships between ABC pre-K enrollment and math and reading achievement across all grades of analysis in all three cohorts.** The most positive findings occur in Cohorts 2 and 3, the two most recent cohorts of students.

In Cohort 2, ABC enrollment for ELL students was associated with a 0.1605 standard deviation increase in 3rd grade math and a 0.1913 standard deviation increase in 3rd grade reading achievement. In 5th grade, ABC enrollment was associated with a 0.1019 standard deviation increase in math and a 0.0956 standard deviation increase in reading achievement. All of these estimates are statistically significant at the 99% confidence level and indicate large gains in test score outcomes relative to other ELL students.

In Cohort 3, all else equal, ABC enrollment for ELL students was associated with a 0.1822 standard deviation increase in 3rd grade math and a 0.1330 standard deviation increase in 3rd grade reading

achievement, and a 0.0690 standard deviation increase in 5th grade math and 0.0868 standard deviation increase in 5th grade reading achievement. These estimates are also statistically significant with 99% confidence and represent large, meaningful gains.

In these two cohorts, initial gains decrease slightly from 3rd to 5th grade, indicating that the program impact might fade somewhat over time, but the relationships remain positive and significant. In Cohort 1, coefficients actually increase in magnitude over time, and the larger 5th grade outcomes in that group are driven by the differential benefit of ABC for ELL students.

Unfortunately, by comparing these effects to the relationships between ELL status and achievement, we find that in most cases, the program impact is too limited to outweigh the negative association of ELL status with achievement outcomes. This means that ELL students that participate in ABC still experience achievement gaps in elementary school relative to their English-proficient peers. However, the gains demonstrated are encouraging, and observing such results in 3rd through 5th grade, years after the intervention, potentially demonstrates the ability of ABC to set children up for lasting success.

ABC and ELL Designation

Another outcome of interest is the incidence of students exiting the ELL program. The exact process for this switch is complicated, and it involves students demonstrating English proficiency on a variety of measures, which potentially tests academic reading skills on top of language proficiency. Still, it would be encouraging to see more ELL students exit the program in elementary school after attending ABC pre-K. For this analysis, the sample is restricted to only students who were designated ELL in Kindergarten, and the relationship between ABC enrollment and likelihood of being designated ELL in grades 3-5 is presented in Table 3.

Here, negative coefficients indicate positive outcomes, as they imply a lesser incidence of being designated as ELL and thus a higher incidence of exiting the ELL program. For initially-ELL students in Cohort 1, none of the estimates are statistically significant, meaning we cannot distinguish them from random chance. In this cohort, ABC attendance was associated with a 1.35 percentage point decrease in likelihood of being classified as ELL in 3rd grade, a 0.09 percentage point increase in likelihood of being ELL in 4th grade, and a 1.58 percentage point decrease in likelihood of being ELL in 5th grade

Cohorts 2 and 3 demonstrate more positive results. For initially ELL students in Cohort 2, ABC enrollment was associated with a 5.81 percentage point decrease in likelihood of being classified as ELL in 3rd grade, a 9.01 percentage point decrease in likelihood of being ELL in 4th grade, and a 9.20 percentage point decrease in likelihood of being ELL in 5th grade. Each of these estimates was statistically significant with 99% confidence. For Cohort 3, ABC attendance was associated with a 6.16 percentage point decrease in likelihood of being classified as ELL in 3rd grade, a 5.74 percentage point decrease in likelihood of being ELL in 4th grade, and a 4.00 percentage point decrease in likelihood of being ELL in 5th grade, and these estimates were also statistically significant at the 99% confidence level.

Higher likelihood of exiting the ELL program in the two later cohorts could indicate that ABC programs are improving in their ability to serve students with limited English proficiency, which is plausible given the larger results from these two cohorts on academic measures. It could also indicate a change in the process of reclassification of ELL students. Thus, the mechanism for these findings is a little more unclear, but the results are still encouraging and align with our findings that ELL students who attend ABC have, on average, improved academic reading skills in these grades.

Table 3: Likelihood of ELL Designation for Initially-ELL Students, by Cohort

	Cohort 1	Cohort 2	Cohort 3
Grade 3	-0.0135 (-0.0145)	-0.0581*** (-0.0149)	-0.0616*** (-0.0172)
Grade 4	0.0010 (-0.0148)	-0.0901*** (-0.0179)	-0.0574*** (-0.0187)
Grade 5	-0.0158 (-0.019)	-0.0920*** (-0.0193)	-0.0400** (-0.0200)

Note: Regression models additionally control for student race and school district fixed effects.

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

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Conclusions & Policy Implications

We follow three cohorts of students with limited English proficiency through 5th grade and find that Arkansas Better Chance (ABC) pre-K participants generally have higher standardized test scores, relative to demographically similar peers who did not enroll in an ABC pre-K program. These relationships are particularly pronounced for ELL students in Cohorts 2 and 3 of the analysis, representing ABC participation in the academic years of 2011-12 and 2012-13.

In each cohort, ABC participants see statistically and practically significant increases in math and reading achievement, relative to other ELL students, that persist through 5th grade. Students who are initially designated ELL are also more likely to exit the ELL program by 5th grade if they attended ABC pre-K. Importantly, while we find that ELL students who participate in this program demonstrate increased school success by several measures, we do not find that the benefits associated with the program are large enough to close the achievement gap between ELL and non-ELL students.

Based on the findings presented here, policymakers and community leaders should consider efforts to increase ABC pre-K enrollment of ELL students, as this subpopulation seems to differentially benefit from the program. The current strategy for advertising this program is through public schools, churches, and other community spaces. Additional efforts could include outreach in organizations that include many linguistic-minority community members. Also, program organizers in school districts across the state should ensure that there are applications and program information available in all non-English languages represented in their districts, including Spanish and Marshallese. Education leaders should also brainstorm ways to provide sustained support to this student subgroup, as ABC pre-K participation alone does not seem to be sufficient for closing the ELL/non-ELL achievement gap.

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