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K-2 Assessments and Later Student Outcomes

Sarah C. McKenzie
University of Arkansas, Fayetteville

Joshua McGee
University of Arkansas, Fayetteville

Summary Points

- The three K-2 assessments were relatively equally selected by districts throughout the state.

- The demographic characteristics of the districts that selected each assessment are similar.

- Academic proficiency in 3rd grade is similar among the districts that selected different K-2 assessments.

- There is no statistically significant difference in ACT Aspire 3rd grade growth scores among districts that selected different K-2 assessments.

- Schools using NWEA: MAP evidenced significantly greater growth scores in ELA, although the effect was not present in the district-level analyses.

- There are very high growth schools and districts using each of the K-2 assessments.

Office for Education Policy

K-2 Assessments and Later Student Outcomes

In this brief we examine the characteristics of the districts that selected the various assessments and consider student outcomes both before and after the K-2 vendor selection to see what relationship, if any, exists between which assessment vendor was selected and students academic proficiency and growth.

Introduction

In 2015-16, Arkansas districts were given the opportunity to select one of three assessments to administer to their students in kindergarten through second grade. Districts administered the assessments for 2016-17 through 2019-20. This spring, districts are again being given the opportunity to choose a K-2 assessment that they will administer for the next four years. In this brief we examine the characteristics of the districts that have selected the various assessments and consider 3rd grade student outcomes before and after the K-2 vendor selection.

Study Description

Third Grade Sample

Due to the variation in K-2 assessment, Arkansas students first complete a common statewide assessment (ACT Aspire) at the end of 3rd grade. We use the 3rd grade ACT Aspire results to examine differences in student outcomes by K-2 assessment. Third grade data include two years of Pre- K-2 assessment and two years of Post-K-2 assessment. We use the terms "Pre" and "Post" terms relative to 3rd graders' experience. Students who were 3rd graders in

2015-16 and 2016-17 were not exposed to the selected K-2 vendor. In 2015-16 the vendor had not been selected, and in 2016-17, the assessments were implemented in K-2 but the 3rd grade students had not used the assessment in 2nd grade the prior year. Students who were in 3rd grade in 2017-18, however, had participated in the K-2 vendor assessment when they were in 2nd grade, and 3rd graders in 2018-19 had participated in both first and second grades.

Outcome Measures

Academic achievement in 3rd grade is the percentage of students who met or exceeded expectations on the ACT Aspire. Academic growth is the amount 3rd grade students scored on the ACT aspire based on what they were predicted to score based on their prior assessment history. This prior history was based on ITBS for Pre- K-2 assessment cohorts, and selected K-2 assessment and ITBS for the first Post-K-2 assessment cohort, and only the selected K-2 assessment results for the final cohort of their graders examined. We think growth is the best available indicator of the impact that schools are having on students' academic learning and is correlated with improvements in proficiency. See Table 1 for a timeline of K-2 implementation and outcome calculations for 3rd grade students.

It is important to remember that this is not a causal analysis, as we are not able to attribute any differences that we may find in student outcomes to the K-2 assessment select-

Table 1. K-2 Assessment Implementation and Outcome Calculations, 2015 through 2019.

	2015-16	2016-17	2017-18	2018-19
K-2 Assessment Implementation	K-2 assessment selected (spring)	Assessment implemented grades K-2	Assessment implemented grades K-2	Assessment implemented grades K-2
Grade 3 ACT Aspire Proficiency	ACT Aspire	ACT Aspire	ACT Aspire	ACT Aspire
Grade 3 ACT Aspire Growth	Calculated using historical performance on ITBS	Calculated using historical performance on ITBS	Calculated using historical performance on selected K-2 assessment (grade 2) and ITBS (grade 1)	Calculated using historical performance on selected K-2 assessment

ed. Districts had self-selected an assessment, and the selection may represent a variety of unmeasured characteristics of the district, staff, and students. These characteristics may include school culture, staff assessment literacy, staff learning philosophy, staff familiarity with technology, school curriculum, perception of student ability, etc. which may be the underlying reason for any perceived differences in student outcomes. In addition, some districts may have been voluntarily implementing one of the K-2 assessments prior to the 2016-17 school year. Caution must be used in interpreting the results.

Patterns in Assessment Selection

We begin by examining the demographic characteristics of the districts that selected different assessments. Examining the simple descriptives of the districts by K-2 assessment helps us to identify any systemic differences between the districts that selected each assessment. Table 2 shows the number of districts that selected each assessment by geographic region of the state.

As presented in Table 2:

- Statewide, a slight majority of districts are selected NWEA, but assessments are relatively evenly distributed throughout the state overall.
- Istation is the most popular assessment in Northwest and Southeast regions.
- NWEA was selected by over 60% of the districts in Central Arkansas.
- Renaissance was the most often selected assessment by districts in Northeast and Southwest Arkansas

We are also interested in demographic differences between the students enrolled in the districts that selected each assessment. Table 3 presents the simple district-level average of the percentage of students that qualify for Free/Reduced Lunch (a proxy for student poverty), and the percentage of enrolled students that identify as white by selected K-2 assessment.

Table 2. Number of Districts Selecting Each Assessment by Geographic Region (2018-19)

Region/ Assessment	NW	NE	Central	SW	SE	State wide
Istation	33	19	7	10	10	79
NWEA	28	19	29	8	6	90
Renaissance	15	29	12	19	8	83
Total	76	67	48	37	24	252

Table 3. District Student Demographics by K-2 Assessment Selected (2018-19)

Assessment	% FRL	% White
Istation	66	76
NWEA	63	66
Renaissance	67	69
Total	65	70

Figure 1. Third Grade Math Proficiency Rate, by Selected Assessment, 2015-2019.
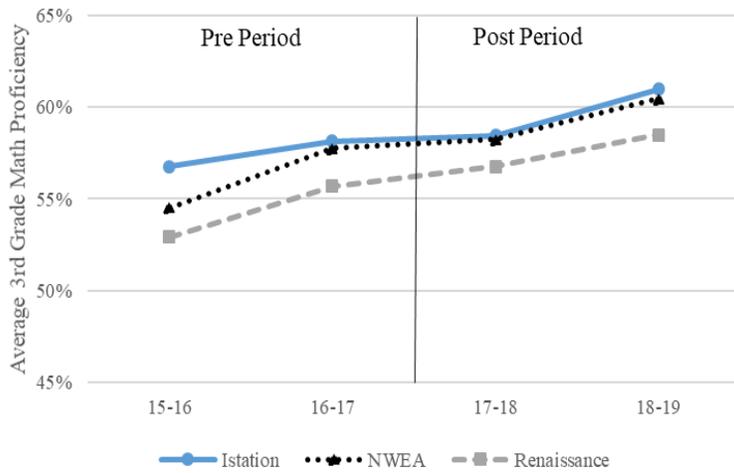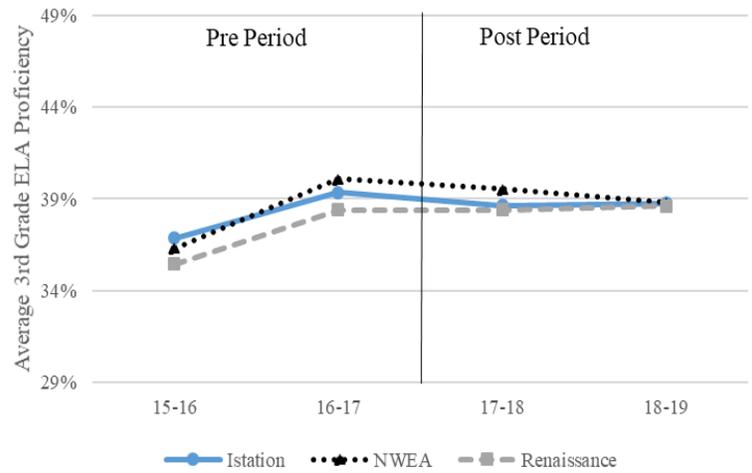

Figure 2. Third Grade ELA Proficiency Rate, by Selected Assessment, 2015-2019.

As presented in Table 3:

- District % FRL is very similar across selected assessment, although districts that selected NWEA serve a slightly less economically disadvantaged population.
- District % White is similar across selected assessment, although districts that selected Istation serve a somewhat more diverse population.

Overall, we find no significant geographic or demographic differences between the districts that selected the K-2 assessments developed by Istation, NWEA, or Renaissance.

Patterns in Student Outcomes

Third grade academic proficiency rates for districts, by K-2 assessment selected, are presented in Figures 1 and 2. In Figure 1, it can be seen that mathematics proficiency rates have increased over time, and are fairly consistent across the assessments. Districts that selected Istation reported the highest math proficiency rates in 2015-16, and remained the highest in 2018-19 by one percentage point. Districts that selected Renaissance reported the lowest proficiency rates, but demonstrated similar increases in achievement over the years examined.

Figure 2 presents the percentage of 3rd grade students that meet or exceed expectations on the ACT Aspire English Language Arts (ELA) assessment.

In Figure 2, it can be seen that 3rd grade ELA proficiency rates increased from 2016 to 2017, and have remained fairly consisted since then. The pattern is consistent across the assessments selected, and there are only minor differences in proficiency rates between the districts that selected various assessments. The ELA achievement trend in the post period (after students experienced the selected K-2 assessment) does not continue the positive trend present in the pre period, before students experienced the selected K-2 assessment.

We next examine trends in 3rd grade academic growth. As mentioned earlier, we think that growth is the best available indicator of the impact that schools are having on students' academic learning. Third grade academic growth rates for districts, by K-2 assessment selected, are presented in Figures 3 and 4.

In Figure 3, it can be seen that mathematics growth rates have remained fairly consistent over time, and are similar across the assessments. Districts that selected NWEA have, on average, improved growth relative to districts that selected the other assessments. Districts that selected Istation reported the highest math growth rates in 2015-16, although districts that selected NWEA matched their growth scores in 2018-19. Districts that selected Renaissance reported the lowest growth rates, but demonstrated similar growth patterns as districts that selected Istation. The math growth trend in the post period (after students experienced the selected K-2 assessment) does not seem to differ much from the trend present in the pre period, before students experienced the selected K-2 assessment.

In Figure 4, it can be seen that 3rd grade ELA growth rates across the selected K-2 assessments decreased from 2016 to 2017, and remained fairly consistent over time, and are similar across the assessments. Districts that selected Istation and NWEA and have similar academic growth in ELA, while districts that selected renaissance demonstrate lower growth in ELA. The ELA growth trend in the post period (after students experienced the selected K-2 assessment) does not seem to differ from

Figure 3. Third Grade Math Growth, by Selected Assessment, 2015-2019.
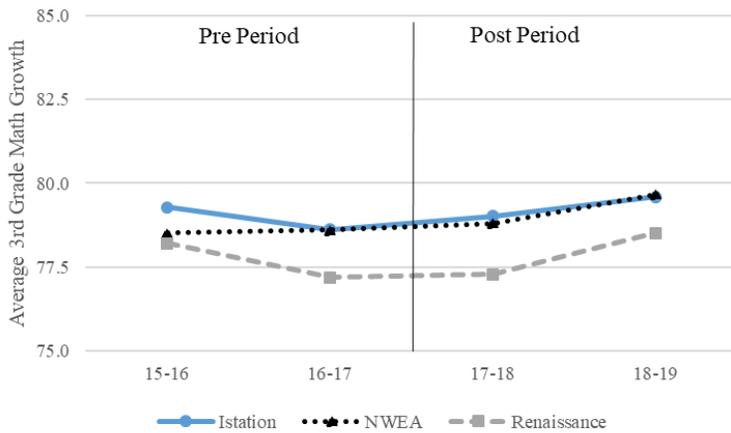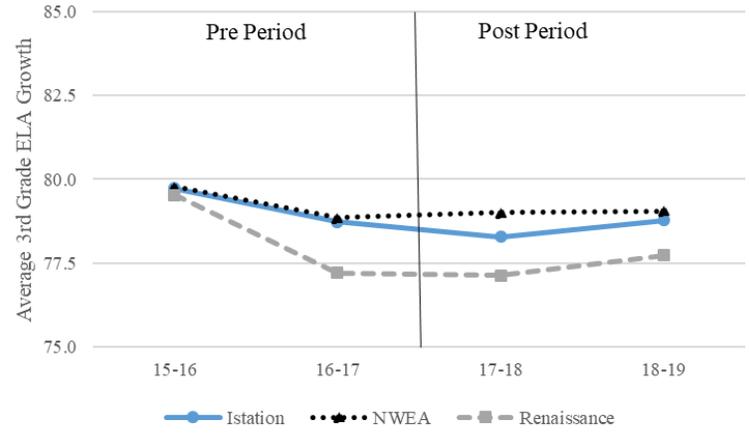

Figure 4. Third Grade ELA Growth, by Selected Assessment, 2015-2019.

the trend present in the pre period, before students experienced the selected K-2 assessment.

ELA growth rates decreased from 2016 to 2017, and have remained fairly consisted since then. The pattern is consistent across the assessments selected, and there are only minor differences in proficiency rates between the districts that selected various assessments. The ELA achievement trend in the post period (after students experienced the selected K-2 assessment) does not continue the positive trend present in the pre period, before students experienced the selected K-2 assessment.

The simple district average makes it appear that 3rd grade growth in math and ELA is below the average

growth score of 80. However, , there are districts with very high growth scores in both the pre-period and the post-period. The districts with highest 3rd grade math growth scores are presented in Table 4.

Regression Results

In order to determine any possible relationship between the K-2 assessment selected and student outcomes, we conducted district-level regressions where we controlled for the academic growth of 3rd graders during the pre period. We selected district-level regressions because the K-2 assessment is selected at the district level. We found no statistically significant difference in the math or ELA growth scores in the Post Period by K-2 assessment selected, when controlling for growth in the pre-period. Note: Researchers included the school % FRL in a sec-

Table 4. Districts with Highest 3rd Grade Growth by Assessment Selected, 2015 through 2019.

		2015-16 (Pre-Period)	2016-17 (Pre-Period)	2017-18 (Post-Period)	2018-19 (Post-Period)
Math Growth	Istation	Imboden Charter: 87.93	Norfork: 89.08	Fordyce: 89.28	Imboden Charter: 96.73
	NWEA	Lead Hill: 91.42	Pottsville: 93.42	Pottsville: 88.58	Pottsville: 90.92
	Renaissance	Salem: 90.45	Salem: 90.47	Genoa Central: 87.63	Riverview: 86.76
ELA Growth	Istation	Izard County: 81.77	Green Forest: 88.71	Green Forest: 89.15	Ozark Montessori: 88.29
	NWEA	Scranton: 83.44	Greenbrier: 91.58	Greenbrier: 89.11	Scranton: 90.40
	Renaissance	Salem: 84.1	Marked Tree: 95.42	County Line: 90.08	Lamar: 88.50

ond round of district level regressions. The results were not different in magnitude or direction.

School-Level: Although the K-2 assessment is selected at the district level, we were interested to see if the results would be different if we examined student outcomes at the schools level. We found no statistically significant difference between the math growth scores in schools by K-2 assessment selected, when controlling for math growth in the pre-period. In ELA, however, when controlling for pre-period growth we did find statistically significantly higher 3rd grade ELA growth values in schools that selected NWEA as the K-2 assessment growth compared to 3rd graders in schools who selected either Istation or Renaissance. This result is statistically significant at the 99% confidence level.

Conclusions and Implications

Although this is not a causal analysis, we can detect <u>no relationship</u> between district-level academic growth of 3rd grade students in Math and ELA, and the K-2 assessment selected by the districts. Interestingly, we do find a positive relationship at the school level between ELA growth and districts that selected NWEA: MAP. This is likely due to the fact that large districts with multiple elementary schools all use the same assessment that but some schools have more positive growth and others. The difference in growth may be capturing the fact that schools which are more effective at ELA instruction are choosing to use NWEA, or that school implementation of NWEA is positively benefitting students in some ELA classes.

Given the variation in growth scores among districts and schools that selected the same assessment, it is important to point out that WHICH assessment that is selected does not seem to be related to student outcomes. Likely it is how students and teachers act on the information gathered from the assessments, and what learning opportunities are present in the classroom daily, that results in better learning outcomes for students.