I-Ready Impact Evaluation

January 2023

Background

The i-Ready program by Curriculum Associates has two components: i-Ready personalized instruction and the i-Ready diagnostic assessment. The personalized instruction component provides interactive lessons based on the skill levels of individual students. The diagnostic assessment is a nationally normed adaptive formative assessment that can determine initial skill levels for personalized instruction and provides a general assessment of student achievement levels and growth. I-Ready has universal screening assessments that collect information to determine a student's overall academic performance level and identify students who may benefit from additional services or supports to meet their learning needs. The i-Ready diagnostic has been used as a universal screening assessment in FCS.

FCS has used i-Ready personalized instruction in varying subjects and grade levels since the 2017–18 school year (SY). The i-Ready diagnostic assessment was also administered in conjunction with personalized instruction in selected grades and subjects as far back as SY 2017–18, but it was not used as a universal screener until SY 2019–20. Even when used as a universal screener, its administration was limited to fall and winter. A relatively small number of students took the diagnostic assessment in the spring, but they were primarily students scoring in the bottom 30th percentile on the winter diagnostic and were being considered for summer programming or grade retention.

The Department of Program Evaluation (DPE) contracted with Georgia State University's Metro Atlanta Policy Lab for Education (MAPLE) to conduct this impact evaluation. The findings in this brief are abbreviated from their evaluation report.

Evaluation Questions

- What percentage of FCS students use i-Ready for the recommended time and amount?
- How does growth vary for students who use only i-Ready adaptive lessons compared to teacher-assigned lessons?
- Is there a correlation between a student's fall i-Ready scale score and the student's end-of-year state standardized test score?
- What are the characteristics of FCS students who meet stretch growth and make gains?

Methodology and Data

The MAPLE research team used i-Ready personalized instruction usage data, scores from the i-Ready diagnostic assessment, information on individual student characteristics based on student records, and school characteristics to determine the intensity of use and the relationship between usage and student achievement.

To analyze student use of i-Ready personalized instruction, MAPLE determined the proportions of lessons by time spent on the lesson and summary statistics on average lesson length. To gauge the extent to which higher scores on the i-Ready diagnostic translate into improvements on end-of-year state summative assessments, simple pairwise correlations were computed between i-Ready scale scores and normalized scores on end-of-grade and end-of-course Milestones exams. Multivariate regression models of Milestones scores as a function of both fall and winter i-Ready diagnostic scale scores were used to determine the predictive power of using multiple i-Ready assessment scores, rather than a single score, to predict performance on end-of-year assessments. Finally, probit regression estimations were used to determine how the likelihood of reaching stretch growth benchmarks varies by student characteristics.

Results

Time Spent on i-Ready Lessons

For most math lessons, students spent 10–35 minutes; for most reading lessons, students spent 10–25 minutes. The average time per lesson varies across both grades and domains (see Table 1). It is important to recognize that time spent on i-Ready lessons is determined by multiple factors, many of which result from student performance on their adaptive path and teacher-assigned lessons. In addition to grade level and lesson domain, time spent on a lesson has varied by the lesson's difficulty (relative to a student's achievement level).

Table 1. Average Minutes per Lesson in SY 2021–22 by Subject, Domain, and Grade

Reading Domain	K	1st	2nd	3rd	4th	5th	6th	7th	8th
Comprehension	18	20	21	26	29	29	29	30	29
Comprehension: Close Reading	60	46	49	59	63	67	65	55	62
High-Frequency Words	15	14	15	18	18	17	18	16	17
Phonics	8	8	8	10	10	10	10	10	10
Phonological Awareness	14	14	15	15	14	15	14	15	16
Vocabulary	27	30	29	25	21	20	24	29	31

Math Domain	K	1st	2nd	3rd	4th	5th	6th	7th	8th
Algebra and Algebraic Thinking	22	20	21	26	30	34	38	41	43
Geometry	10	12	14	20	27	31	34	42	45
Measurement and Data	11	13	19	29	29	32	36	39	38
Number and Operations	19	19	22	29	33	36	37	38	42

Table 1 Note: Blue cells are domain/grade combinations that are not typically assigned. Some advanced students take lessons in above-grade-level domains (Comprehension: Close Reading in Kindergarten and Grade 1), while some struggling students take lessons in below-grade-level domains.

Relationship Between Additional Time, Lessons, and Test/Quiz Scores

Additional time spent on lessons had little effect on i-Ready scale scores except for the phonics domain. This means that encouraging students to spend more time on a lesson beyond recommended time has little impact on scale scores.

Phonics is the only domain in which increases in time spent on a lesson substantially affects achievement growth. Phonics lessons are typically assigned in Grades K–3, so it is appropriate to consider typical growth within those grade levels. A five-minute increase in average lesson length in phonics is expected to boost achievement by 0.15 x 5 or 0.75 scale score points. This is equivalent to 1.5% of typical growth between Grade 1 and Grade 2.

Likewise, increasing the time spent on a lesson does not increase the likelihood of passing on the first try.

Increasing the number of lessons substantially affects i-Ready scale scores in geometry and high-frequency words. One additional lesson in geometry boosted scale scores by 0.78 points or 4% of yearly on-grade-level growth between Grade 5 and Grade 6 in geometry. For high-frequency words, one additional lesson increases the scale score by 0.42 points, 2% of the difference between mid-on-grade placement in Grade 1 and Grade 2.

Variation in the Effects of Teacher-Assigned and Adaptive Lessons

In i-Ready, there are two types of lesson options. The first type is adaptive, which is the path assigned by the program using students' diagnostic placement and continued use. The other kind of lesson is teacher-assigned, which further personalizes student instruction. The impact of an additional lesson in the domain of measurement & data on math scores is higher when students have a mix of adaptive and teacher-assigned lessons (rather than only adaptive lessons). However, additional teacher-assigned lessons are not beneficial in the other domains. The impact of an additional teacher-assigned lesson on reading scores is only beneficial in the domain of high-frequency words.

Correlation Between i-Ready Diagnostic Scores and Scores on End-of-Year Milestones Assessments

i-Ready diagnostic assessments are useful for tracking student progress during the school year. State, school, and district accountability standards are based (partly) on student performance on end-of-year summative assessments, known as the Georgia Milestones Assessment System (GMAS). Both fall and winter i-Ready diagnostic scores are strongly correlated with spring end-of-grade Milestones scores and spring end-of-course Algebra I Milestones scores. Using both fall and winter i-Ready scores to predict end-of-grade or end-of-course Milestones scores is better than using the fall score alone.

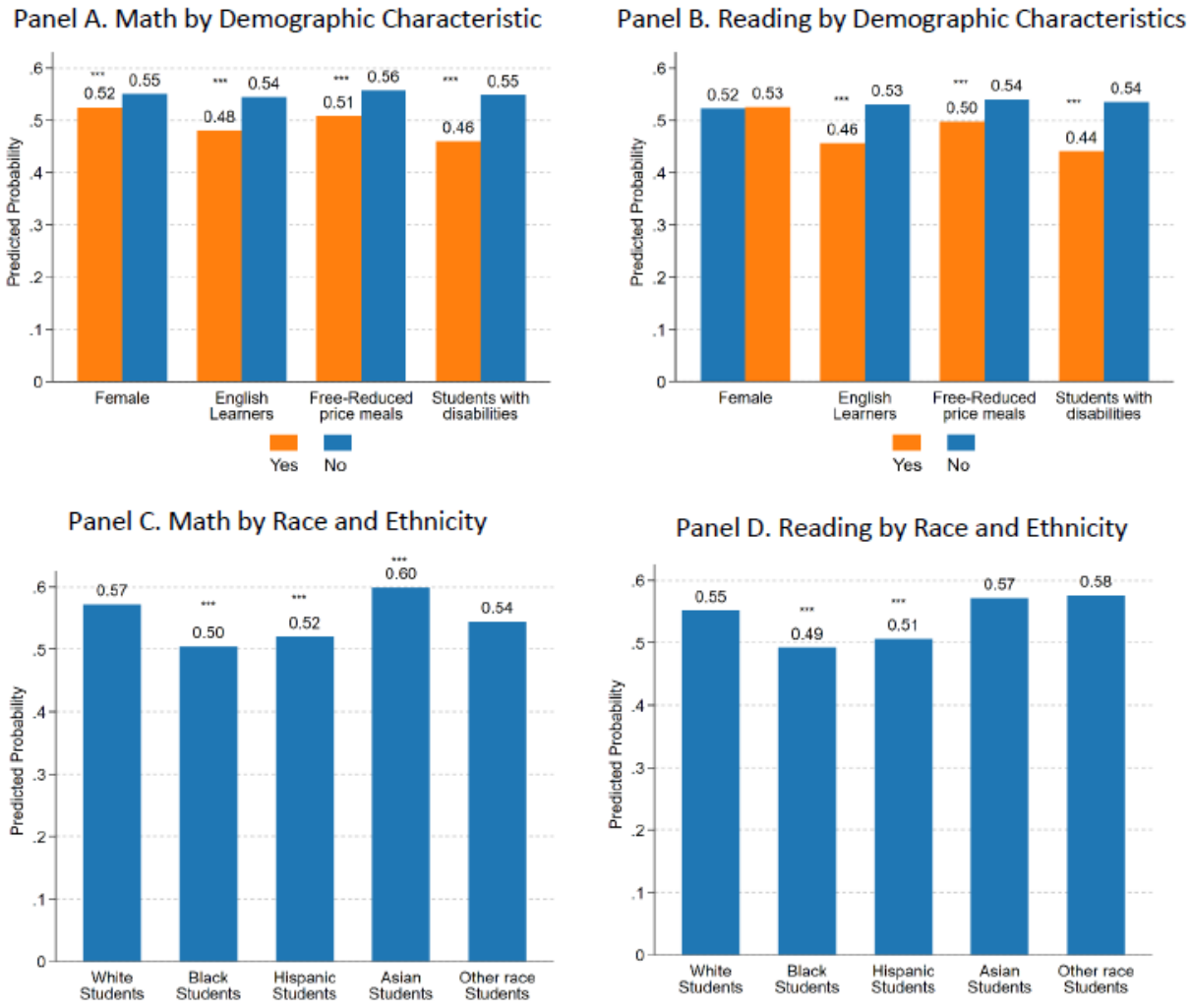
Table 2. Pairwise Correlations Between Fall i-Ready Scale Scores, Winter i-Ready Scale Scores and Normalized (by Grade and Year) Milestones End-of-Grade Scores

Math End of Grade		**ELA End of Grade**	
Fall i-Ready Scale Score	Moderately Correlated (0.66)	**Fall i-Ready Scale Score**	Strongly Correlated (.73)
Winter i-Ready Scale Score	Strongly Correlated (.71)	**Winter i-Ready Scale Score**	Strongly Correlated (.75)
Both Fall and Winter Scale Scores	Strongly Correlated (.95)	**Both Fall and Winter Scale Scores**	Strongly Correlated (.95)

Characteristics of Students who Meet i-Ready "Stretch Growth"

"Stretch growth" refers to the growth recommended to put below-grade level students on a path to proficiency and on-grade level students on a path to advanced proficiency levels. Historically, Fulton has not administered a spring i-Ready diagnostic to all students. Therefore, we calculated the probability of students reaching stretch growth by extrapolating their fall to winter growth rates. In 2019, i-Ready reported that in typical districts, 25%–35% of students will reach these aspirational targets. Overall, FCS students are surpassing typical stretch growth, as reported by i-Ready. However, the probability of meeting the stretch growth target in math or reading is lowest for students with disabilities, English learners, students eligible for free and reduced-price meals, Hispanic students, and Black students. There is no consistent geographic pattern in the likelihood that a student will meet stretch growth targets when controlling for demographic characteristics.

Figure 1: Differences in the Predicted Probability of Meeting Stretch Growth Targets by Student Characteristics



Limitations

i-Ready calculates stretch growth based on fall to spring growth. FCS does not universally test students with the i-Ready diagnostic in the spring. To determine if students were likely to meet spring stretch growth, MAPLE calculated the probability of students reaching stretch growth by extrapolating their fall to winter growth rates. This calculation assumes the growth rate from the fall semester remained consistent throughout the spring semester.

Due to the rollout of i-Ready district-wide, there are no viable control groups that would allow a comparison of i-Ready to another computer-based learning program or no intervention. As a result, this study and associated research questions were not designed to determine if the i-Ready system is superior to other computer-based learning and assessment systems.

Considerations

There is little to be gained by trying to get students to spend more time on i-Ready lessons, though there could be some improvement from assigning more lessons in geometry and high-frequency words. There are also potential gains from having more teachers incorporate teacher-assigned lessons in their students' personalized plans in the measurement & data and high-frequency word domains.

Scale scores on i-Ready exams can also be a valuable predictor of student performance on end-of-year exams. It is best to use both their fall and winter formative assessment scores to predict how well a student will do on their end-of-year Milestones tests.

The lower probabilities of meeting stretch growth targets for historically disadvantaged groups suggest that more needs to be done to increase achievement for these students. The strategy with the strongest evidence base is "high-dosage" tutoring.

If FCS desires evidence on the performance of the i-Ready system compared to other computer-based learning systems, it would be necessary to pilot an alternative learning system to evaluate performance rigorously (e.g., a staggered rollout or randomized controlled trial).