Impacts of Covid-19 on Mathematics and Reading in Massachusetts Schools

Purpose of the project: Schools and districts are wrestling with how to best continue successfully educating students during a pandemic and economic crisis, with many large districts opting for distance learning in remote or hybrid settings. In addition to extended periods of time outside of the school building, students and families are experiencing significant health and economic hardships that can amplify existing social inequities. The challenges brought on by health and economic crises compounded with education losses over time are an enormous detriment to student achievement and notably contribute to the widening of achievement gaps. Thus, Curriculum Associates (CA), in partnership with researchers from Lesley University, will analyze *i-Ready® Diagnostic Assessment* data and other data generated from participating districts to better understand the overall impact of COVID-19 and school closures on student learning. The data to be used for this project are outlined in Table 1 below. The requested data are the same that are reported by MA DESE for accountability purposes and should not create additional burdens for participating districts.

The *i-Ready Diagnostic Assessment* is an adaptive assessment dynamically adjusting to a student's response patterns. This allows a large amount of accurate information about the student to be captured in a relatively short assessment session. In addition, the adaptive nature of the assessment and depth of the item bank allows for pinpointing an individual student's strengths and challenges within numerous domains in Reading and Math.

However, having access to these data is only part of the process. Through an easy-to-navigate data dashboard, teachers can dig into each student's results and gain access to additional tools and resources to take action. As shown in the *i-Ready Diagnostic* Theory of Action (located at the end of this document), data from the *i-Ready Diagnostic* can be used by students to become more active in their own learning, by teachers to address knowledge gaps and plan more efficiently and more easily differentiate instruction, and by school or district leaders to have a common language with which to discuss student learning and progress.

Thus, the research study aims to not just examine "if" there was an impact on student performance across different student groups and different outcomes (Research Questions 1, 2, and 3 below) but what conditions exist at the school level to support or hinder success.

Research Questions:

1. What impact did different approaches to blended learning (e.g. in-person, online only, hybrid) have on student academic performance?
    a. What was the impact on students based on various student demographic characteristics?
2. Which schools "Beat the Odds" in relation to their student's academic performance compared to other schools that have similar characteristics?
3. How were non-cognitive outcomes impacted by different strategies related to blended learning?
4. What were school level supports (or barriers) to the use of diagnostic data to inform and guide support for addressing learning gaps?

Scope of the project: It is assumed that participating districts will begin using the *i-Ready Diagnostic* Assessment beginning in the Fall of 2020. Curriculum Associates will provide guidance related to the best assessment plan for Back to School 2020, including a tool to help determine how/when/where to

test students. Participating districts will be asked to follow the recommended three-times per academic year testing schedule (e.g. Fall, Winter, and Spring) for all students, with a minimum of 12 weeks of instruction between administrations, depending on circumstances on the ground. Districts will also be asked to submit the data outlined in Table 1 below, and teachers and administrators will be asked to compete a short survey in the Fall and Spring about their current practices and opinions related to teaching and learning.

Reporting: CA and its research partner will provide a final research report to participating districts. Additional reports may be available based on the final research questions.

Duration of the project: September 2020 – August 2021.

The information to be disclosed by the District and a description of any necessary data handling activities/conditions prior to the release of Confidential Data by the District:

To complete this project, data from the *i-Ready Diagnostic Assessment*, stored by CA, will be used. In addition, participating Districts will be asked to provide the following data to CA (Table 1):

Table 1: Data to be provided by participating Districts

Data Element
Student Characteristics
Unique Student Identifier (Match to i-Ready Data)
Student Demographic Information
Race
Ethnicity
Gender
High Needs Status Indicator
Poverty Status Indicator
Special Education Status
English Proficiency Indicator
Title I Status Indicator
Migrant Status Indicator
Disabled-Status Indicator
Foster Care Status Indicator
Homeless Status Indicator
Military Status Indicator
School Identifier
School Name
Student Performance Data
Unique Student Identifier
Next Generation MCAS 2020-21 ELA Scale Score
Next Generation MCAS 2020-21 ELA Performance Level
Next Generation MCAS 2020-21 Mathematics Scale Score
Next Generation MCAS 2020-21 Mathematics Performance Level
Next Generation MCAS 2020-21 Not Reported Indicator (as needed)
Next Generation MCAS 2018-19 ELA Scale Score
Next Generation MCAS 2018-19 ELA Performance Level
Next Generation MCAS 2018-19 Mathematics Scale Score
Next Generation MCAS 2018-19 Mathematics Performance Level

Data Element
Next Generation MCAS 2018-19 Not Reported Indicator (as needed
Alternative Assessment 2020-21 ELA Scale Score*
Alternative Assessment 2020-21 ELA Performance Level*
Alternative Assessment 2020-21 Mathematics Scale Score*
Alternative Assessment 2020-21 Mathematics Performance Level*
School Characteristics (as of 2020-2021 School Year)
School Identifier
Enrollment by Grade
Enrollment by Race/Gender
Enrollment by Selected Populations
Mobility Rate
Student Attendance
Student Safety and Discipline
School # of Teachers
School Percent Licensed Teachers
School Student/Teacher Ratio
Percent Experienced Teachers
Percent of Teachers w/out Waiver or Provisional License
Percent Teaching In-Field
School Climate/Culture Survey Results*
School Student Engagement Survey Results*
School Social/Emotional Learning Outcomes*
School Parent Feedback Survey Results*
Teacher/Administrator Survey
Teacher Beliefs and Behaviors Survey (Fall and Spring)
Administrator Beliefs and Behaviors Survey (Fall and Spring)
District Pre-Screener Questionnaire

* If available

CA will comply with the Family Educational Rights and Privacy Act ("FERPA") and all other applicable state and local laws and regulations in connection with the research and sharing of data with Lesley University.

Roles being filled by support staff directly responsible for managing the data in question:

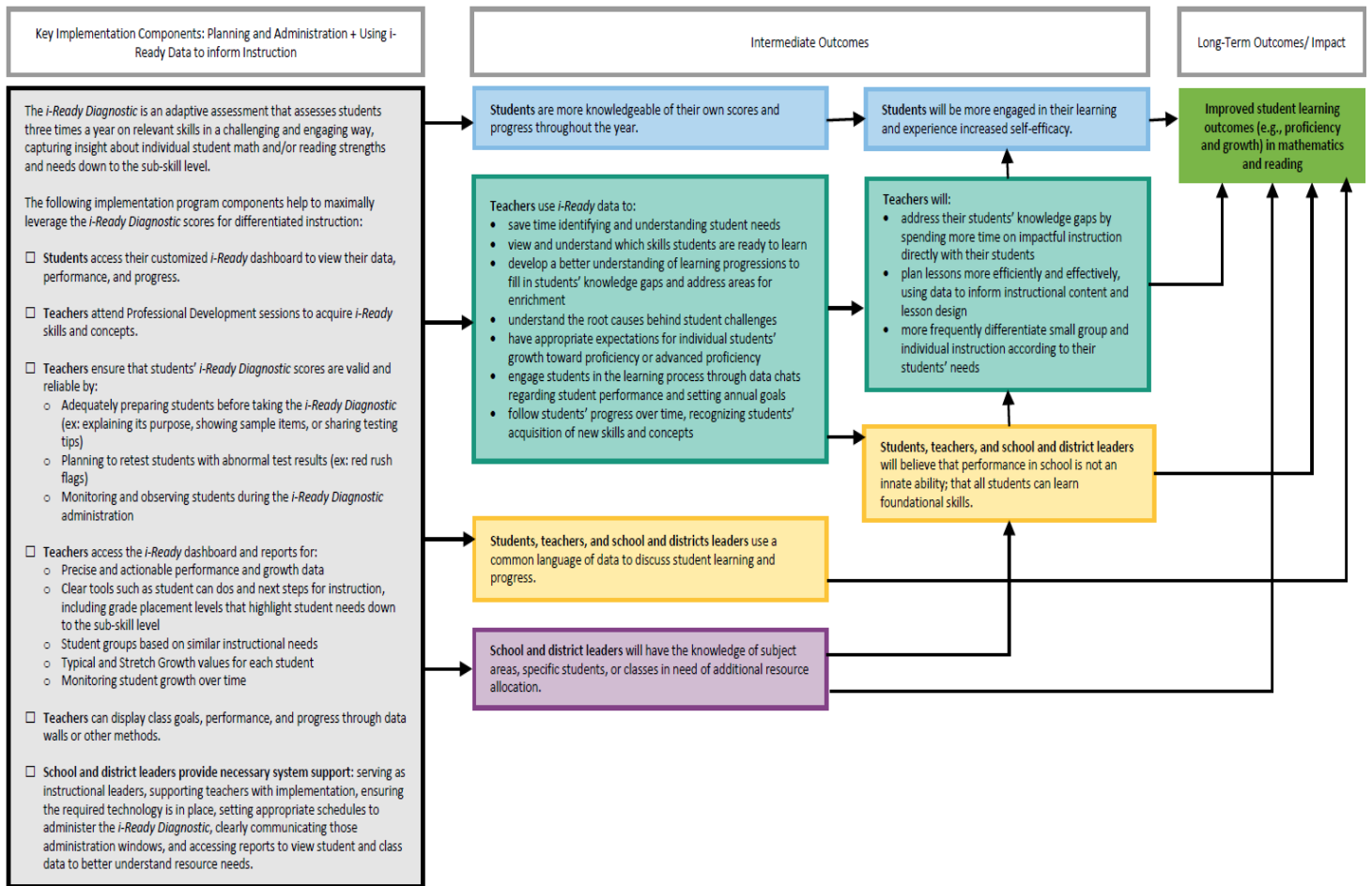**Principal Investigator:** Kristen Huff, PhD., Curriculum Associates

Co-principal Investigator: TBD from Lesley University

Main Point of Contact for Research Study: Matt Dawson, PhD., Curriculum Associates

i-Ready Diagnostic Assessment Theory of Action

i-Ready Diagnostic

The *i-Ready Diagnostic* is an adaptive assessment that assesses students on relevant skills in a challenging and engaging way, capturing insight about student learning down to the subskill level. Teachers are provided with precise, actionable data and instructional recommendations to more seamlessly differentiate classroom instruction according to their students' needs, saving teachers valuable time. This allows teachers to deliver more impactful instruction to increase student growth and proficiency.

Key Implementation Components: Planning and Administration + Using i-Ready Data to inform Instruction	Intermediate Outcomes	Long-Term Outcomes/ Impact

The *i-Ready Diagnostic* is an adaptive assessment that assesses students three times a year on relevant skills in a challenging and engaging way, capturing insight about individual student math and/or reading strengths and needs down to the sub-skill level.

The following implementation program components help to maximally leverage the *i-Ready Diagnostic* scores for differentiated instruction:

☐ **Students** access their customized *i-Ready* dashboard to view their data, performance, and progress.

☐ **Teachers** attend Professional Development sessions to acquire *i-Ready* skills and concepts.

☐ **Teachers** ensure that students' *i-Ready Diagnostic* scores are valid and reliable by:
  - Adequately preparing students before taking the *i-Ready Diagnostic* (ex: explaining its purpose, showing sample items, or sharing testing tips)
  - Planning to retest students with abnormal test results (ex: red rush flags)
  - Monitoring and observing students during the *i-Ready Diagnostic* administration

☐ **Teachers** access the *i-Ready* dashboard and reports for:
  - Precise and actionable performance and growth data
  - Clear tools such as student can dos and next steps for instruction, including grade placement levels that highlight student needs down to the sub-skill level
  - Student groups based on similar instructional needs
  - Typical and Stretch Growth values for each student
  - Monitoring student growth over time

☐ **Teachers** can display class goals, performance, and progress through data walls or other methods.

☐ **School and district leaders** provide necessary system support: serving as instructional leaders, supporting teachers with implementation, ensuring the required technology is in place, setting appropriate schedules to administer the *i-Ready Diagnostic*, clearly communicating those administration windows, and accessing reports to view student and class data to better understand resource needs.

Students are more knowledgeable of their own scores and progress throughout the year.

Teachers use *i-Ready* data to:
- save time identifying and understanding student needs
- view and understand which skills students are ready to learn
- develop a better understanding of learning progressions to fill in students' knowledge gaps and address areas for enrichment
- understand the root causes behind student challenges
- have appropriate expectations for individual students' growth toward proficiency or advanced proficiency
- engage students in the learning process through data chats regarding student performance and setting annual goals
- follow students' progress over time, recognizing students' acquisition of new skills and concepts

Students, teachers, and school and districts leaders use a common language of data to discuss student learning and progress.

School and district leaders will have the knowledge of subject areas, specific students, or classes in need of additional resource allocation.

Students will be more engaged in their learning and experience increased self-efficacy.

Teachers will:
- address their students' knowledge gaps by spending more time on impactful instruction directly with their students
- plan lessons more efficiently and effectively, using data to inform instructional content and lesson design
- more frequently differentiate small group and individual instruction according to their students' needs

Students, teachers, and school and district leaders will believe that performance in school is not an innate ability; that all students can learn foundational skills.

Improved student learning outcomes (e.g., proficiency and growth) in mathematics and reading

Assumptions: These relationships are hypothesized to exist when *i-Ready* data and specific teaching practices are used with fidelity throughout the full academic year.

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