# *i-Ready Diagnostic*: How It Works

This document provides information on how the *i-Ready Diagnostic* works and how it assesses students.

i-Ready Diagnostic: Computer-Adaptive Assessment

The *i-Ready Diagnostic* for Reading and for Mathematics is an effective, research-based assessment for students in Grades K–12. The adaptive assessment leverages advanced technology to provide a deep, customized evaluation of every student and track student growth consistently and continuously over the student's entire Grades K–12 career.
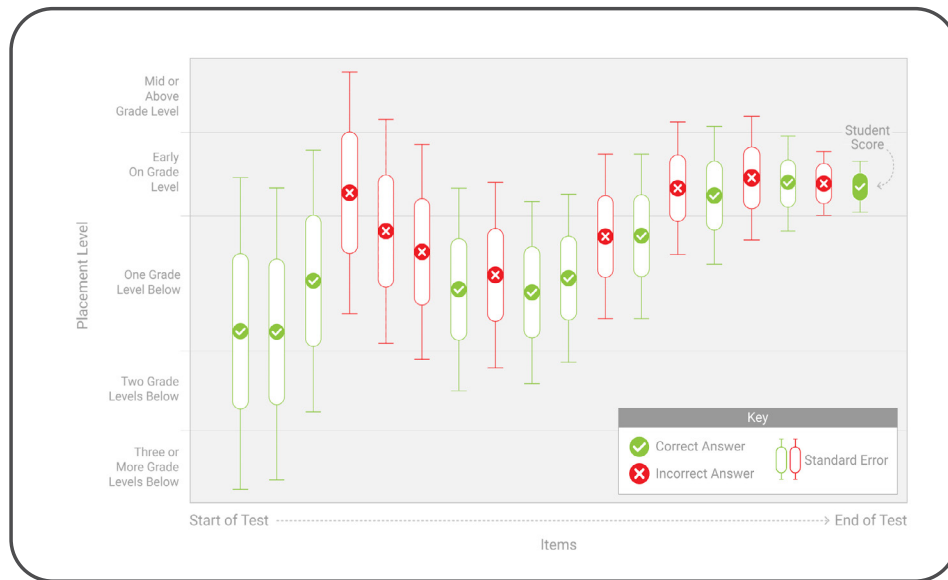
The online Diagnostic assesses down to the subskill level in Reading and Mathematics. *i-Ready*'s sophisticated, computer-adaptive algorithms ensure learners are assessed efficiently across a number of content domains. As students answer questions correctly or incorrectly, the Diagnostic responds, adjusting the difficulty of future questions to match the student's current performance level. This means that students see an assessment that is most appropriate for their individual performance. While fixed-form tests with static sets of questions are useful tools for assessing material with a defined performance level (e.g., grade-level assessments), adaptive tests can effectively cover a broad range of student performance levels.

By using patterns in student responses, adaptive assessments are able to provide more precise information from a limited number of test items. In a computer-adaptive test design, each item is selected to match the student's estimated performance and provide the most information about the student's current level of proficiency on academic content. As students continue through the test, the algorithm collects more information about student proficiency. This allows a greater level of precision as students answer more items. What does this mean for educators? The design of the *i-Ready Diagnostic* allows a greater level of confidence in students' scores and corresponding interpretations.

Well-designed adaptive assessments have high precision and efficiency, allowing them to pinpoint student needs more accurately and in less time than with traditional fixed-form assessments. This real-time visibility enables immediate, effective course corrections. This means educators can spend more time providing instruction and less time assessing students.

The *i-Ready Diagnostic* is aligned to state content standards in reading and mathematics across the nation. Additionally, research studies have shown that *i-Ready* has a strong correlation to different state summative assessments and can be used to accurately project proficiency of students on these assessments.

Administrators using *i-Ready* receive real-time, comprehensive insight into:

- Percentage of students performing on, below, and above grade level
- Percentage of students on track to meet annual growth expectations
- Details by school, grade level, class, and student

At Curriculum Associates, we believe the primary purpose of assessments is to drive instruction. In today's assessment landscape, districts are trying to avoid over-assessing by using assessment data for multiple purposes such as screening and monitoring, placing students into courses, and informing day-to-day instruction. Given the strong relationship between *i-Ready* and student performance on state assessments, educators can be confident that *i-Ready* measures the skills and standards their students need to know and be able to do in order to meet state requirements.

Information on Item Selection

Understandably, not all students will answer the same items correctly. Even students in the same grade will vary in their abilities to answer the same set of questions. For example, some Grade 5 students are able to answer nearly all questions about Grade 5 content correctly. Yet, other Grade 5 students may answer only some of these items correctly. In order for the item selection algorithm to present content that is appropriate for the student, there are two item selection conditions that are applied in the *i-Ready Diagnostic*. These are grade-level caps and grade-level cap exceptions. These concepts ensure students do not see content that is too far beyond their current grade level.

Grade-Level Caps

Grade-level caps help provide a more accurate measure of students' performance. These caps do exactly what they imply—they cap the grade level of the items to ensure students can see only a limited scope of content that is above their current grade level. These caps prevent students from seeing items that are more than three grade levels above their current grade level for Reading and one grade level above their current grade level for Mathematics.

For example, a Grade 4 student who continues to answer questions correctly will only see certain items beyond these grades if they are performing at a sufficiently high level at this point during the test. This ensures students who have estimates above their current proficiency level are given very challenging items to better target their proficiency level, and high-performing students who need higher-level content are presented with relevant and appropriate content.

There is, however, no cap on how far below grade level the Diagnostic can adapt. All students who take the Diagnostic for either Reading or for Mathematics in Grades K–12 can have their assessments adapt downward to Grade K—with the exception of Grade K, which includes the Emerging K domain.

Grade-Level Cap Exceptions

In some instances, for students with very high interim proficiency estimates, it may be reasonable for the assessment to continue adapting upward.

Exceptions to the grade-level caps ensure students who are performing well above grade level will not be constrained to items that do not challenge their capabilities and thus provide educators with the best measure of what a student knows and is able to do. Ultimately, the goal of the adaptive nature of the test is to match the level of item difficulty to the students' proficiency level.

Test Level Starting Place

When a student begins the assessment, the program will first check if the student has previously taken a Diagnostic. If the student has previously taken a Diagnostic, the assessment will begin at the student's proficiency level based on the previous assessment. If a student has not yet completed an *i-Ready Diagnostic*, the assessment starts from an initial score that is considered one grade level below the student's chronological grade. The assessment will then adjust as the student responds to items.

Item Difficulty

The Diagnostic is designed such that students should answer roughly 50 percent of the questions correctly and 50 percent incorrectly. This helps enable a precise determination of student proficiency. Given this design, high-performing students who are accustomed to scoring well on tests will be particularly challenged. In order to understand specifically where these students are performing, they must get some items wrong to better pinpoint their proficiency.

When a student continues to answer questions correctly during the test, especially when the student is at the top range of the grade level, it is possible for students to be presented with content that is beyond what they have been taught in the classroom. These items may feel too hard to the student, but as an adaptive assessment, these items are necessary in order to give a precise score.

A student may also be presented with above-grade level questions if the student's initial performance on the assessment indicated they already mastered prerequisite skills for that grade level. For example, if a student can correctly solve a two-digit multiplication problem that requires regrouping, then there is no need to assess that student on single-digit addition, a skill that is necessary to solve the initial multiplication problem. Instead, an item more difficult than two-digit multiplication will be presented.

It is important to reiterate that students are not expected to get every question right. When they answer questions correctly, they will be presented with increasingly challenging questions in order to pinpoint which skill areas they have and have not mastered. If they get a more challenging question wrong, they are not penalized and are presented with a less challenging question until the assessment is able to match the item difficulty to the student's performance level.

Educators should inform students that they will not get every question right and that the test will continue to get more challenging as they get more questions right. It's important to schedule plenty of time for testing. Encourage students to take as much time as they need to complete the test, even if others are finishing. Furthermore, because the test is designed to measure students' strengths and weaknesses, it is best to allow students to try their best without help (outside of the accommodations that would normally be provided based on individual need).

How Domains Are Measured Using a Selection of Items

As with most other assessments, the *i-Ready Diagnostic* cannot reasonably test students on every piece of content within a domain. That would make for a very long test! Instead, students are presented with specifically curated items, from a pool of eligible items, based on the student's grade level and the domain being assessed. The items are chosen based on the student's estimated proficiency level. The eligible pool of items from which these items are drawn is representative of the domain in both content and difficulty.

Students are asked items that will give the most information about their proficiency level. For instance, a student who is showing proficiency in multidigit division will likely not see any items associated with single-digit subtraction, as we can infer that student likely can do that already. The sample of items allows inferences to be made about student performance in the domain without having to present the student hundreds of items. The adaptivity of the test, in conjunction with domain sampling, allows educators to receive a precise understanding of student performance within a domain without having to present students with a very long, redundant assessment.