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The Development of the easyCBM Reading Assessments:

Grade 4

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Abstract

In this technical report, we document the development and piloting of easyCBM reading measures aligned to the Common Core State Standards, designed for use in screening students at risk for reading difficulty and monitoring their progress as they develop reading skills. The measures, which assess students' ability to respond to multiple-choice reading comprehension questions, were designed with the specific needs of students classified as "persistently low-performing". Sub-tests include *Read to Perform a Task*, *Informational Text*, and *Short Literary Text*, organized together into a comprehensive Common Core Reading Assessment. We begin this report by introducing the student population for which these measures were originally developed. Then, we describe the two main approaches used in the development of the measures, with a focus first on content validity and then on the psychometric properties underlying the creation of comparable alternate forms. We include the results of our Item Response Theory (IRT) modeling used during test development. For ease of reference, we present the results for each grade level's analyses in its own technical report yet repeat the introductory sections across all technical reports in this series, as the development process and the research base on which these assessments were developed does not vary by grade.

The Development of the easyCBM CCSS Reading Assessments: Grade 4
(Technical Report No. 1222)

As data-based decision making and Response to Intervention (RTI) gain popularity, the need increases for reliable measures of reading proficiency appropriate for use with students who struggle in that construct. Although fluency-based measures have a long-standing tradition of successful application in school settings, few would argue that it is enough to be a *fluent* reader; to be a competent reader, one must also be able to comprehend the material one is reading. Thus, there is an increasing call for direct measures of comprehension, particularly measures that assess students' ability to understand and interpret a variety of texts (including non-fiction and graphics-based text display). The call for states to move toward adopting the Common Core State Standards (CCSS) in literacy—standards which specify that students demonstrate facility with a variety of text types—prompted us to develop these measures with two goals in mind. First, we the assessments must reflect the type of reading called for in the CCSS. Second, the measures must be appropriate for use with a wide range of students, with a particular emphasis on students who struggle in the area of reading. Our focus with the measures discussed in this technical report was on creating measures appropriate for use with students who are significantly under-performing in the area of reading when compared to their same-grade peers.

Persistent Low-Performers

The *Improving the Academic Achievement of the Disadvantaged; Individuals With Disabilities Education Act* (IDEA) specifies that approximately 20% of students with disabilities might most appropriately be assessed based on grade-level content standards but modified academic achievement standards. This subgroup of students with disabilities, sometimes referred to as the 2% student population in acknowledgment that they would make up roughly 2% of the

student population as a whole, are most likely students with disability categories that are not listed in the IDEA. Students in the 2% population are generally found to not respond to interventions persistently (McMaster, Fuchs, Fuchs, & Compton, 2005, Torgensen, Alexander, Wagner, Rashotee, Voeller, & Conway, 2001). Providing persistently low-performing students with appropriate assessments is important because assessments that are too challenging may demonstrate a floor effect, simultaneously reducing students' motivation to continue to try on future assessments, whereas assessments that are not sufficiently challenging may not provide information useful to educators when making instructional decisions for these students.

The easyCBM CCSS reading assessments are intended to provide educators with accessible measures to assess students' reading comprehension. As part of the suite of reading assessments available on the online easyCBM learning system (Alonzo, Ulmer, Tindal, & Glasgow, 2006), the easyCBM CCSS reading measures are designed to provide a bridge between the easyCBM Passage Reading Fluency (PRF) measures and the lengthier and more cognitively challenging easyCBM Multiple Choice Reading Comprehension (MCRC) measures. They were developed to include both benchmark / screening and progress monitoring assessments.

Universal Design for Assessments

Assessments that are universally designed encourage testing conditions that are accessible and fair to a wide range of students. Some considerations taken into account when designing assessments that are universally designed include: (a) measuring true constructs while eliminating irrelevant ones, (b) recognizing the diversity of the test-taker population, (c) providing texts that are concise and clear, (d) having clear format and visual information, and (e) the ability to change formatting without compromising the meaning or difficulty of the assessment. Universally Designed assessments aim to provide valid interpretation of all test-

takers' abilities and skills, including those with disabilities (Johnstone, Altman, & Thurlow, 2006).

The measurement development team followed guidelines for using Universal Design elements in assessments as recommended by the NCEO (Johnstone, Altman, & Thurlow, 2006). The team also utilized the Test Accessibility and Modification Inventory (TAMI) (Beddow, Kettler, & Elliott, 2008). These tools were used to enhance accessibility and fairness measuring reading skill of our target test-takers.

Common Core State Standards

These assessments are designed to address the Common Core State Standards for reading in Literature, Informational Text, and Literacy in Science and Technical Subjects (retrieved April 2, 2012 from <http://www.corestandards.org/>). The *Literary Text* sub-tests assess students' ability to understand key ideas and details and identify elements related to craft and structure that contribute to their ability to discern the meaning of a wide range of text types varying in complexity. The texts include stories, short dramas, and poetry. The *Informational Text* and *Read to Perform a Task* sub-tests present students with a wide range of non-fiction text, varying in complexity, and require students to demonstrate their ability to understand key ideas and details and identify elements of the writing craft and structure that contribute to the meaning of the text. Texts for these sub-tests are drawn from a variety of content areas, and include biographies and autobiographies, history, social studies, science, and the arts; as well as technical texts, including directions, forms, and information displayed in graphs, charts, or maps on a range of topics.

Methods

Instrument Development

The easyCBM CCSS Reading assessments were written by a team of educators with

experience teaching students in the grade levels for which the tests were intended to be used and particular expertise working with struggling readers. All item writers received training on Universal Design for Assessment, item development, and the content standards to which the assessments are aligned. After they had received their training, item writers worked independently, writing stories and informational text passages to be used for the *Literary* and *Informational Text* sub-tests and sketching out graphics to be used for the *Read to Perform a Task* sub-tests. A graphic artist was hired to render the graphics in a format that would enable them to be delivered by computer. Item writers also wrote five selected-response questions for each of the passages / graphics they created. Each question was targeted to address a specific content standard related to reading proficiently at the grade level for which the assessment was intended. Each question was followed by three possible answer choices. Item writers were instructed to create one correct answer and two plausible distractors for each item. Item writing took place during 2010 and 2011.

All passages / graphics files and selected-response questions and answer options were loaded to a secure database, where they then underwent a detailed review. Every item was reviewed by a group of 3 – 5 members of the research team with training in measurement and assessment development. During the review, the research team checked each item for potential bias, appropriateness for students in the intended grade level, and adherence to the principles of Universal Design for Assessment. Revisions were made directly to the database when needed, and the complete set of items, numbering 900 per grade, grades 3 – 8, were deemed ready for empirical testing in the fall of 2011.

Item Piloting

Items were piloted in November – December, 2011 in convenience samples of students

whose teachers signed up to participate in the item piloting via the easyCBM online assessment system. No financial incentives were provided for participating. Participants included students from the states of Oregon, Washington, Montana, Florida, Texas, Illinois, California, and Wisconsin. Teachers were asked to include the full range of students in their classes in the piloting, including students with disabilities and English language learners. To ensure anonymity of student and teacher participants, no demographic or other identifying information was collected from participants.

During item piloting, a specialized website was developed to provide easy access to the items for teachers and their students. Teachers were given a secure URL and were instructed to have their students log on to the website and select the grade level in which they were currently enrolled. Upon selecting their grade, students were presented with a series of 25 assessment items, clustered into five sub-tests, each with a prompt (text or graphic), followed by five multiple choice questions. Common items across all test takers at a given grade level enabled us to scale all 900 grade-level items concurrently, although no student completed any more than 25 items during the item piloting. To ensure adequate numbers of students for scaling each item and to reduce the potential for a “class effect” whereby students in a given class might all be presented with particularly easy or difficult item sets, the computer system randomly assigned students to subtests.

Item piloting took place entirely online, with students reading the passages / graphics and selecting the answer they thought was most correct directly on the computer. Data were captured automatically each time a student responded to a question. Students had the option to go back and change an answer on a particular sub-test, but were unable to do so once they had moved on to the next sub-test, with its set of five questions.

Data Analysis

Data from the item piloting were analyzed using Item Response Theory, where each passage / graphic and its accompanying five questions was treated as a testlet, in recognition of the nested nature of the data. Based on results of this piloting, passages / graphics and their accompanying questions were organized into assessments consisting of two *Literary Text* sub-tests, two *Informational Text* sub-tests and one *Read to Perform a Task* sub-test. In all, ten such tests were created to be used for progress monitoring and three to be used for benchmark / screening (fall, winter, and spring).

Results

Tables 1-10 indicate the specific items included on each progress monitoring form of the assessment, along with the standards addressed by those items and results of the IRT analysis. IRT information provided includes: the IRT *Measure* (a rough indication of the “difficulty” of the items: zero indicates an item with estimated *average* difficulty, a measure less than zero indicates *below average* difficulty, while a measure greater than zero indicates *above average* difficulty); *Count* (number of students whose responses were included in the analysis); *Error* (Standard Error); *Mean Square Outfit*, and *Discrimination*. Tables 11 – 13 present this same information, but for the Benchmark assessments. Table 14 presents this information for the items not currently placed into any of the test forms.

Table 1
Results of IRT Analysis, Mean Measure of Progress Monitoring Measure 4_1 = 0.52

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
1	1	Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45716 to 45720	-2.66	58	0.49	9.90	0.71
1	2	Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45846 to 45850	1.28	61	0.41	0.41	1.56
1	3	Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words. Draw inferences or conclusions about an author's meaning supported by facts and events from the text.	45071 to 45075	-0.52	60	0.29	0.93	0.58

Table 1 (Continued)
Results of IRT Analysis

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
1	4	Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Draw inferences or conclusions about an author's meaning supported by facts and events from the text. Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45576 to 45580	3.00	61	0.32	1.32	0.73
1	5	Read to Perform a Task	Use structural features found in informational text (e.g., headings and subheadings) to strengthen comprehension.	45516 to 45520	1.15	62	0.24	0.98	0.91

Table 2
Results of IRT Analysis, Mean Measure of Progress Monitoring Measure 4_2 = 0.77

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
2	1	Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45891 to 45895	-2.52	61	0.65	1.58	0.46
2	2	Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45801 to 45805	3.07	59	0.62	2.39	0.21
2	3	Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words. Draw inferences or conclusions about an author's meaning supported by facts and events from the text.	45521 to 45525	-0.61	64	0.38	0.95	1.01

Table 2 (Continued)
Results of IRT Analysis

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
2	4	Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45211 to 45215	2.83	62	0.24	0.52	1.38
2	5	Read to Perform a Task	Use structural features found in informational text (e.g., headings and subheadings) to strengthen comprehension.	45381 to 45385	1.09	60	0.28	1.10	0.79

Table 3
Results of IRT Analysis, Mean Measure of Progress Monitoring Measure 4_3 = 0.79

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
3	1	Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45536 to 45540	-2.42	62	0.36	0.51	1.38
3	2	Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45311 to 45315	3.54	61	0.27	0.40	1.41
3	3	Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45526 to 45530	-0.71	59	0.36	0.74	1.18

Table 3 (Continued)
Results of IRT Analysis

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
3	4	Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Draw inferences or conclusions about an author's meaning supported by facts and events from the text. Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45886 to 45890	2.60	63	0.67	0.32	1.17
3	5	Read to Perform a Task	Find information in specialized materials (e.g., atlas, magazine, catalog).	45201 to 45205	0.94	62	0.26	1.68	0.35

Table 4
Results of IRT Analysis, Mean Measure of Progress Monitoring Measure 4_4 = 0.58

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
4	1	Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45261 to 45265	-2.40	61	0.34	0.84	1.07
4	2	Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45171 to 45175	3.63	63	0.57	2.09	0.50
4	3	Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words. Draw inferences or conclusions about an author's meaning supported by facts and events from the text.	45476 to 45480	-0.83	63	0.27	0.93	1.04
4	4	Informational Text: Develop an Interpretation	Recall major points in the text and make predictions about forthcoming information. Distinguish cause-and-effect and fact and opinion.	45751 to 45755	1.97	62	0.29	1.83	1.01

Table 4 (Continued)
Results of IRT Analysis

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
4	5	Read to Perform a Task	Locate information in titles, tables of contents, chapter headings, illustrations, captions, glossaries, indexes, graphs, charts, diagrams, and tables to aid understanding of grade-level text.	45426 to 45430	0.55	62	0.29	1.63	0.50

Table 5
Results of IRT Analysis, Mean Measure of Progress Monitoring Measure 4_5 = 0.46

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
5	1	Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45806 to 45810	-2.06	62	0.37	0.22	1.72
5	2	Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45581 to 45585	3.70	62	0.61	1.13	0.96
5	3	Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Draw inferences or conclusions about an author's meaning supported by facts and events from the text.	45706 to 45710	-1.23	65	0.24	0.97	1.07

Table 5 (Continued)
Results of IRT Analysis

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
5	4	Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text.	45666 to 45670	1.91	59	0.37	0.96	0.96
5	5	Read to Perform a Task	Locate information in titles, tables of contents, chapter headings, illustrations, captions, glossaries, indexes, graphs, charts, diagrams, and tables to aid understanding of grade-level text.	45021 to 45025	0.00	64	0.19	1.34	0.80

Table 6
Results of IRT Analysis, Mean Measure of Progress Monitoring Measure 4_6 = 0.67

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
6	1	Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45266 to 45270	-0.71	60	0.45	1.20	0.27
6	2	Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45176 to 45180	4.08	58	0.40	1.17	0.67

Table 6 (Continued)
Results of IRT Analysis

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
6	3	Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Draw inferences or conclusions about an author's meaning supported by facts and events from the text. Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45301 to 45305	-1.24	60	0.39	1.64	0.84
6	4	Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words. Draw inferences or conclusions about an author's meaning supported by facts and events from the text.	45116 to 45120	1.71	60	0.49	0.83	1.14
6	5	Read to Perform a Task	Use structural features found in informational text (e.g., headings and subheadings) to strengthen comprehension.	45111 to 45115	-0.49	61	0.30	1.25	0.66

Table 7
Results of IRT Analysis, Mean Measure of Progress Monitoring Measure 4_7 = 1.04

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
7	1	Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45446 to 45450	-0.70	62	0.55	1.01	0.96
7	2	Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45086 to 45090	4.27	61	0.36	0.74	1.11

Table 7 (Continued)
Results of IRT Analysis

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
7	3	Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45796 to 45800	-1.60	65	0.37	1.38	0.84
7	4	Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Draw inferences or conclusions about an author's meaning supported by facts and events from the text. Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45166 to 45170	1.28	60	0.31	0.83	0.90
7	5	Read to Perform a Task	Locate information in titles, tables of contents, chapter headings, illustrations, captions, glossaries, indexes, graphs, charts, diagrams, and tables to aid understanding of grade-level text.	45156 to 45160	1.97	65	0.25	1.51	0.40

Table 8
Results of IRT Analysis, Mean Measure of Progress Monitoring Measure 4_8 = 0.52

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
8	1	Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45131 to 45135	-0.65	61	0.45	2.73	-0.24
8	2	Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45221 to 45225	1.20	62	0.40	0.55	1.17
8	3	Informational Text: Demonstrate General Understanding	Demonstrate comprehension by identifying answers to questions about the text. Distinguish the main idea and supporting details in informational text. Determine significant information from the text, including problems and solutions.	45746 to 45750	-1.64	61	0.52	0.99	0.95

Table 8 (Continued)
Results of IRT Analysis

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
8	4	Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Draw inferences or conclusions about an author's meaning supported by facts and events from the text. Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text.	45841 to 45845	1.24	63	0.34	0.86	1.02
8	5	Read to Perform a Task	Locate information in titles, tables of contents, chapter headings, illustrations, captions, glossaries, indexes, graphs, charts, diagrams, and tables to aid understanding of grade-level text.	45291 to 45295	2.44	62	0.25	1.65	0.41

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Table 9
Results of IRT Analysis, Mean Measure of Progress Monitoring Measure 4_9 = -0.25

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
9	1	Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45036 to 45040	-0.41	62	0.34	0.27	1.56
9	2	Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45896 to 45900	0.37	64	0.31	0.67	1.26
9	3	Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45391 to 45395	-1.87	61	0.34	0.58	1.22

Table 9 (Continued)
Results of IRT Analysis

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
9	4	Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words.	45341 to 45345	1.21	57	0.27	0.64	1.29
9	5	Read to Perform a Task	Find information in specialized materials (e.g., atlas, magazine, catalog).	45336 to 45340	-0.53	60	0.30	1.50	0.41

Table 10
Results of IRT Analysis, Mean Measure of Progress Monitoring Measure 4_10 = 0.91

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
10	1	Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45676 to 45680	-0.38	60	0.51	1.50	0.38
10	2	Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45486 to 45490	0.30	64	0.35	0.63	1.16
10	3	Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words.	45661 to 45665	-2.26	61	0.40	0.44	1.27

Table 10 (Continued)
Results of IRT Analysis

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
10	4	Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words. Draw inferences or conclusions about an author's meaning supported by facts and events from the text.	45791 to 45795	0.80	63	0.25	0.61	1.32
10	5	Read to Perform a Task	Follow simple multiple-step written instructions (e.g., how to assemble a product or play a board game).	45741 to 45745	1.58	63	0.24	1.14	0.64

Table 11
Results of IRT Analysis, Mean Measure of Benchmark Measure 4_Fall = 0.74

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
bm1	1	Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45351 to 45355	-2.97	61	0.33	1.12	0.72
bm1	2	Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45491 to 45495	2.63	59	0.39	1.12	0.68

Table 11 (Continued)
Results of IRT Analysis

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
bm1	3	Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words. Draw inferences or conclusions about an author's meaning supported by facts and events from the text.	45386 to 45390	-0.58	62	0.33	0.79	1.17
bm1	4	Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words.	45161 to 45165	3.12	63	0.33	0.68	1.20
bm1	5	Read to Perform a Task	Find information in specialized materials (e.g., atlas, magazine, catalog).	45471 to 45475	1.52	62	0.30	0.52	1.38

Table 12
Results of IRT Analysis, Mean Measure of Benchmark Measure 4_Winter = 0.76

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
bm2	1	Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45626 to 45630	-2.89	64	0.32	0.91	0.95
bm2	2	Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45126 to 45130	2.59	59	0.45	1.28	0.72
bm2	3	Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45121 to 45125	-0.57	62	0.40	0.82	1.15

Table 12 (Continued)
Results of IRT Analysis

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
bm2	4	Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words.	45616 to 45620	3.32	63	0.38	1.08	0.87
bm2	5	Read to Perform a Task	Use structural features found in informational text (e.g., headings and subheadings) to strengthen comprehension.	45246 to 45250	1.37	61	0.29	1.29	0.68

Table 13
Results of IRT Analysis, Mean Measure of Benchmark Measure 4_Spring = 0.76

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
bm3	1	Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45081 to 45085	-2.85	59	0.42	0.99	0.15
bm3	2	Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45306 to 45310	2.56	61	0.28	0.34	1.66
bm3	3	Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words. Draw inferences or conclusions about an author's meaning supported by facts and events from the text.	45251 to 45255	-0.53	63	0.31	2.10	0.60

Table 13 (Continued)
Results of IRT Analysis

Test Form	Item #	Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
bm3	4	Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words.	45296 to 45300	3.33	62	0.37	0.99	0.92
bm3	5	Read to Perform a Task	Find information in specialized materials (e.g., atlas, magazine, catalog).	45701 to 45705	1.27	65	0.28	0.81	0.98

Table 14
Items Not Used

Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45441 to 45445	-5.71	64	0.33	0.61	1.28
Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45041 to 45045	-4.76	60	0.40	0.48	1.36
Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45531 to 45535	-4.71	60	0.42	0.48	1.26

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Table 14 (Continued)
Items Not Used

Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45216 to 45220	-3.94	59	0.49	0.30	1.51
Literary Text: Demonstrate General Understanding	Identify the speaker or narrator in a selection. Distinguish the order of events or a specific event from a sequence of events. Determine significant events from the story.	45756 to 45760	-3.58	60	0.44	0.87	1.02
Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45396 to 45400	-0.32	62	0.55	0.44	1.34
Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45356 to 45360	-0.26	59	0.32	0.46	1.42

Table 14 (Continued)
Items Not Used

Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45631 to 45635	-0.03	63	0.32	1.03	0.84
Literary Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, and supporting details in literary selections. Identify the main problem or conflict of the plot, and explain how it is resolved.	45671 to 45675	0.03	62	0.29	1.00	1.18
Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45586 to 45590	0.06	63	0.43	1.65	1.08

Table 14 (Continued)
Items Not Used

Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45851 to 45855	5.09	63	0.38	0.33	1.33
Literary Text: Develop an Interpretation	Make and confirm predictions about text using ideas presented in the text itself. Use knowledge of the situation and setting and of a character's traits and motivations to determine the causes for that character's actions. Identify the main idea of a passage when it is not explicitly stated. Draw inferences or conclusions about a text based on explicitly stated information.	45401 to 45405	7.12	60	0.62	0.53	1.05

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Table 14 (Continued)
Items Not Used

Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words.	45431 to 45435	-5.10	63	0.42	0.48	1.29
Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words.	45026 to 45030	-3.77	60	0.51	1.32	0.90

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Table 14 (Continued)
Items Not Used

Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45256 to 45260	-2.37	62	0.29	0.89	1.18
Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words.	45836 to 45840	-0.38	62	0.42	1.23	0.65

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Table 14 (Continued)
Items Not Used

Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Draw inferences or conclusions about an author's meaning supported by facts and events from the text. Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45621 to 45625	-0.30	57	0.40	1.22	0.95
Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45076 to 45080	0.06	61	0.39	0.51	1.15

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Table 14 (Continued)
Items Not Used

Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Draw inferences or conclusions about an author's meaning supported by facts and events from the text. Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45481 to 45485	0.09	65	0.34	1.38	0.87
Informational Text: Demonstrate General Understanding Informational Text: Develop an Interpretation	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words. Draw inferences or conclusions about an author's meaning supported by facts and events from the text.	45206 to 45210	0.25	64	0.42	0.66	1.00

Table 14 (Continued)
Items Not Used

Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
Informational Text: Demonstrate General Understanding	Identify and/or summarize sequence of events, main ideas, facts, supporting details, and opinions in informational and practical selections. Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, and important words.	45571 to 45575	0.38	63	0.33	0.87	1.05
Informational Text: Develop an Interpretation		45881 to 45885	0.51	64	0.48	9.90	-1.62

Table 14 (Continued)
Items Not Used

Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Draw inferences or conclusions about an author's meaning supported by facts and events from the text. Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45436 to 45440	0.56	63	0.31	0.93	1.03
Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Draw inferences or conclusions about an author's meaning supported by facts and events from the text. Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45346 to 45350	0.58	63	0.26	0.48	1.44

Table 14 (Continued)
Items Not Used

Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
Informational Text: Develop an Interpretation Informational Text: Examine Content and Structure	Draw inferences or conclusions about an author's meaning supported by facts and events from the text. Identify the main idea of a passage when it is not explicitly stated. Determine the author's purpose, and relate it to details in the text. Distinguish between cause-and-effect and between fact and opinion in expository text. Recognize text that is written primarily to persuade, and distinguish between informational and persuasive text.	45031 to 45035	4.30	46	0.42	0.68	1.19
Read to Perform a Task	Find information in specialized materials (e.g., atlas, magazine, catalog).	45066 to 45070	-3.80	3268	0.06	0.72	1.13
Read to Perform a Task	Find information in specialized materials (e.g., atlas, magazine, catalog).	45611 to 45615	-3.35	59	0.34	2.56	0.04
Read to Perform a Task	Locate information in titles, tables of contents, chapter headings, illustrations, captions, glossaries, indexes, graphs, charts, diagrams, and tables to aid understanding of grade-level text.	45561 to 45565	-2.94	65	0.33	1.67	0.01

Table 14 (Continued)
Items Not Used

Reading Type	Standard	Item Name	Measure	Count	Error	Mean Square Outfit	Discrimination
Read to Perform a Task	Locate information in titles, tables of contents, chapter headings, illustrations, captions, glossaries, indexes, graphs, charts, diagrams, and tables to aid understanding of grade-level text.	45656 to 45660	-2.26	64	0.46	0.39	1.36
Read to Perform a Task	Use structural features found in informational text (e.g., headings and subheadings) to strengthen comprehension.	45876 to 45880	-2.24	64	0.33	1.94	0.03
Read to Perform a Task	Locate information in titles, tables of contents, chapter headings, illustrations, captions, glossaries, indexes, graphs, charts, diagrams, and tables to aid understanding of grade-level text.	45786 to 45790	-1.71	62	0.53	1.67	0.54
Read to Perform a Task	Find information in specialized materials (e.g., atlas, magazine, catalog).	45831 to 45835	-0.89	61	0.39	0.97	0.94

Discussion

Overall, for Grade 4 our results indicate no clear pattern in terms of which of the three sub-tests students find most challenging. On the Benchmark test forms, for example, the mean difficulty for the items on the *Read to Perform a Task* sub-test of the Fall, Winter, and Spring measures, respectively, was 1.52, 1.37, and 1.27. The difficulty of the *Short Literary Text* and *Informational Text* sub-tests seems to vary greatly, depending on the specific passage and set of questions. Whereas the average *measure* for the Grade 4 Benchmark *Short Literary Text* sub-tests ranged from -0.15 to -0.17, the actual benchmark test forms ranged from a low of -2.97 to a high of 2.63. Likewise, the average *measure* for the Grade 4 Benchmark *Informational Text* sub-tests ranged from 1.27 – 1.64, while the actual test forms ranged from a low of -0.58 to a high of 3.33.

Similar patterns were found for the progress monitoring test forms as well. On the progress monitoring test forms, the mean difficulty for the items on the *Read to Perform a Task* sub-test ranged from -0.53 to 2.44. The average *measure* for the Grade 4 progress monitoring *Short Literary Text* sub-tests ranged from -0.69 to 1.79, while the actual test forms ranged from a low of -2.66 to a high of 4.27. Likewise, the average *measure* for the Grade 4 progress monitoring *Informational Text* sub-tests ranged from -0.33 – 1.53, while the actual test forms ranged from a low of -1.87 to a high of 3.00.

It is important to note that the sub-tests are not intended to be used to provide scores specific to the type of material with which students were presented (*Short Literary Text*, *Informational Text*, and *Read to Perform a Task*). With only five items per sub-test, such scores would not be a robust or reliable estimate of students' knowledge or skill in a particular area. Additional studies (see, for example, Alonzo, Park, & Tindal, 2012) present the results of

construct validity studies that add further evidence that although these sub-tests present students with different types of text with which to work, all three measure a single construct. Thus, although it might be tempting to report that a particular student has mastered (or is struggling with) a particular type of reading material, such claims would not be warranted or supported by the results of the easyCBM CCSS Reading Measures.

References

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