# MAP<sup>®</sup> Skills™ Technical Manual

# MOPSKILLS™

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# Introduction

To furnish educators with a high level of information about student learning, NWEA developed MAP<sup>®</sup> Skills<sup>™</sup> (formerly Skills Navigator<sup>®</sup>), a suite of assessments that are web-based and can quickly and easily measure students' K – 8 essential building block skills leading to college and career readiness. MAP Skills measures K – 8 skills in Mathematics, Language Usage, and Vocabulary. In Reading, MAP Skills measures reading comprehension at 8 levels of text complexity as well as skills in grades 1 – 8 that are associated with comprehension. MAP Skills does not address K – 2 emergent literacy skills, such as fluency, decoding, phonics, etc. The intended test population for MAP Skills is students who can read the items (grade 2 or 3) up through high school students with missing skills in the K – 8 range or reading comprehension levels below grade-level.

MAP Skills is designed for the following purposes:

#### • Identifying missing foundational skills and/or instructional reading level

MAP Skills locator tests indicate what skills students know and are ready to learn and provide a learning path for moving forward. The skills are organized into skills frameworks for each subject, mathematics, language usage, and reading. Within each subject, skills are sorted into hierarchies of conceptually related skills. The hierarchies are called strands.

#### • Assigning open educational resources to support instruction

To help teachers differentiate instruction for students achieving on, above, and below grade level, MAP Skills links directly to high-quality, curated online instructional resources and provides actionable data for informing classroom instruction.

#### • Checking for skill mastery or independent reading level

MAP Skills offers mastery checks for each for each skill in the mathematics, language usage, and reading vocabulary strand. For reading comprehension, the mastery checks indicate reading level. Mastery checks can be used for a variety of instructional purposes, including checking particular skills before instruction to target instruction to the real needs of the class. Likewise, Mastery Checks could be given at the end of an instructional unit, so that teachers can assess for evidence of learning the skills that were just taught. This information will help inform whether re-teaching is required, if the class as a whole is ready to move on, or if there are particular students still struggling who require additional instruction. MAP Skills can also point to the foundational skills that may be holding a student back from progressing in a content area.

#### • Monitoring progress using a mastery model of progress monitoring

MAP Skills can be used as a tool to monitor progress in Response to Intervention (RTI) programs or other programs in which progress monitoring is desired. MAP Skills relies on a mastery model of progress monitoring and was designed to meet all criteria of NCRTI and NCII.

# **Purpose of MAP Skills**

MAP Skills is a classroom-based skills mastery assessment system designed to provide information about student status on granular skills foundational to meeting college and career readiness standards. The skills are organized into strands, which are instructionally logical hierarchies of conceptually related skills in mathematics, language usage, and reading vocabulary called strands. Together these strands make up the skills frameworks.

Progress in reading comprehension, both reading level and discrete skills, is measured in the context of five genre-based strands that have eight levels of text complexity.

MAP Skills offers assessments that can be administered to meet a variety of classroom needs. It is webbased and accessible on most devices. MAP Skills has been designed to meet the requirements of a mastery model of progress monitoring in an intervention system such as RTI.

#### Theory of Action

At a high level, the purpose of MAP Skills is captured in its theory of action:

If teachers can locate a student's Zone of Proximal Development (ZPD)—defined as the level at which the student can learn new material with normal instructional supports—within an instructional domain, they can focus instruction. If teachers can identify specific skills within the ZPD on which students need more instruction, then they can provide targeted instruction to accelerate learning. If teachers can effectively target instruction to meet specific student needs, student outcomes will improve in the areas of focus within the domain.

#### **Three Components**

This theory of action is supported by three distinct aspects of MAP Skills:

- MAP Skills is designed to find the specific skills within any student's ZPD that need instruction. MAP Skills finds needs-work skills through the Skills Locator, which surveys skills within a strand. For reading comprehension, the Skills Locator first determines the student's instructional reading level then identifies skills that may need work.
- Once skills have been identified, MAP Skills provides links to open educational resources aligned to the skills. The resources are curated by Knovation<sup>®</sup> which has a 127-part curation process to assure resources are appropriate.
- MAP Skills offers Mastery Checks, short criterion-referenced tests, for each skill that allow teachers to evaluate the effectiveness of instruction and plan for moving instruction forward. For reading comprehension, no Mastery Checks are offered at the skill level since skills are only mastered in the context of a given level of text complexity. For reading comprehension, progress is tracked by reading levels being designated as "independent."

#### Student Use Cases

MAP Skills was designed for readers, students who are "reading to learn", with these intended uses:

**Remediation:** Students in grades 3-12 who have skill deficits in the K-8 range. Reading comprehension passages at lower reading levels were selected to be age appropriate for a grade 3+ audience.

**On level:** Students in grades 3-8. Mastery checks can be used prior to instruction as a pre-assessment of skills, as part of a summative assessment, or to check for retention of skills. Skills locator tests can be given beginning at grade level as appropriate.

**Enrichment:** Students who can read up through grade 7. Teachers can find appropriate above grade level skills that build logically on skills students already know.

Note: With the addition of optional audio for skills aligned to grade K-2 additional use cases for students in lower grades are now available. No audio is available for reading comprehension strands.

#### Flexible Use

MAP Skills is designed to provide information to make instructional decisions. It is designed to give teachers the flexibility to tailor its use to gain information about one student

or an entire class. Skills Locators and Mastery Checks are designed to be short and given in un-proctored settings. Teachers may assess students when, where, and as often as they want with both Skills Locator and Mastery Check assessments.

MAP Skills has been designed to allow teachers to track student progress within strands without total reliance on the Mastery Check. Teachers have the flexibility to use their professional judgment to change the status of skills within MAP Skills without giving a Mastery Check.

Teachers also may exclude skills in the individual strands when setting progress goals in order to reflect that classroom instruction will not address those skills.

#### **Optional Audio K-2**

The k-2 skills in all strands except reading comprehension have audio support as an option. Audio helps teachers accurately assess the math, vocabulary and language usage skill statuses of students who have reading weaknesses that may distort their performance. The default setting is no audio. Teachers select audio when assigning a test.

#### **Student Interface**

The student interface for MAP Skills has been designed to make it engaging for student users and to downplay the assessment aspect of the product. This is accomplished by "gamifying" the student experience. The Skills Locator and Mastery Check are referred to as missions rather than tests. Interaction with assigned instructional resources are also missions. Upon completion of any mission after reporting a self-assessment of success and mood, students receive rewards. Students may also choose an avatar. Student accomplishments are presented in game language as well with *passed* and *mastered* skills shown as "unlocked" and *needs work* skills as "locked." Student achievement is also reported in levels, and students may "level-up." The use of levels replaces the problematic use of grade designations particularly for students working below grade-level.

# Assessment Design Supports Mastery Measure Progress Monitoring for Mathematics, Language Usage, and Reading Vocabulary

The National Center on Response to Intervention (NCRTI) defines Mastery Measurement (MM) as "index[ing] a student's successive mastery of a hierarchy of objectives." Instead of measuring incremental increases on a single measure over a longer period, MMs gauge which (and how many) skills a student has mastered (Shapiro, 2004). The particular skills assessed will change over time: once a student has mastered a skill, he or she will "pass" that skill and it will no longer be assessed. Since students keep learning new skills, it is inappropriate to plot the scores as time series data and look at the slope. Instead, the student will essentially be moving from perhaps 0% correct up to a mastery level—perhaps 90%—over and over again, on new skills. The gauge of how well a student is responding to intervention is in the increasing number of skills mastered (Shapiro, 2004; NCRTI, 2011).

MMs are often used to monitor progress beginning at Tier 2, included as part of tailoring the instructional intervention to the student. They are also used at Tier 3, where individualization is most feasible. The emphasis in progress monitoring with mastery measures is more skills diagnostic than with General Outcome Measures (GOMs) (Ysseldyke, Burns, Scholin, & Parker, 2010). Monitoring over time with MMs addresses the question, "Is the instruction we are offering resulting in mastery of more discrete skills?"

A Mastery Model of Progress Monitoring requires three conditions, all of which are strongly supported by the MAP Skills system:

- a hierarchy of skills that can be mastered one after the other
- a way to track the adequacy of student progress over time
- a way to track the changes and/or adjustments to the intervention

#### **Progressive Skill Mastery**

The skills in the MAP Skills Framework are organized within the context of particular strands of conceptually related skills as they develop across grades K - 8. In each strand skills are ordered and grouped based on a logical instructional sequence or learning progression. In Mathematics there are thirteen distinct strands, in Language Usage four, and in Reading Vocabulary one. The strands are fully described in the Framework section of this manual. This framework structure is well-suited for making decisions about where to go next with instruction. Students can take Mastery Checks on skills (or teachers can designate the skills as *mastered* based on other data), and MAP Skills can track the progressive mastery of skills within a strand.

#### Adequate Progress over Time

MAP Skills shows whether the progress is adequate to meeting a goal within a strand. MAP Skills will offer a default progress monitoring graph as well as the flexibility to customize the graph to meet specific needs. As a default, MAP Skills will count the number of skills that could be mastered from the lowest ranked *needs work* skill in a strand – as determined by a Skills Locator – to the highest ranked skill in the student's rostered grade. Once a Skills Locator has identified a *needs work* skill, MAP Skills will present a graph that tracks the progress toward mastering all the skills between the lowest *needs work* skill (lowest position in strand hierarchy) and the end point skill using the end of the school year as a default time to achieve mastery. The default ending skill is the highest ranking skill in the student's current grade placement. This graph will display a theoretical trend line that will allow teachers to quickly determine if progress is on pace to meet the goal. Teachers may modify either the time frame or the targeted last skill.

Because teachers may prefer to work on one strand – or one goal area and its associated strands – at a time, teachers may alter the end date for the progress monitoring graph to account for a shorter instructional period. Also, grade-level mastery may not be an appropriate end point for all students.

Teachers can choose a different endpoint for instruction and the number of skills needed to be mastered to reach the goal will be adjusted accordingly on the graph. Further, teachers can exclude certain skills in the progression if they are not part of the district's curriculum. Basically, for any strand the teacher can use the default setting for the progress monitoring graph or modify the number of skills needed, which skills are needed, and the time frame for the goal to be achieved.

Though a progress monitoring graph will rarely be required for a student performing above grade level, MAP Skills will still produce a graph with the default endpoint the highest ranked skill in the grade at which the student has a *needs work* skill.

#### Tailoring the Intervention

Another aspect of progress monitoring in an RTI system is the ability to tailor or change interventions if progress is not adequate. MAP Skills allows the teacher to document the initial intervention plan and then to add an intervention line to the progress monitoring graph at any point in time the intervention changes. Teachers can then document the new intervention. The intervention line allows teachers to quickly compare the slope of the line for each intervention in order to make comparisons of effectiveness.

#### Progress Monitoring for Reading Comprehension

Since reading skills are not hierarchical and generally only mastered in the context of a given level of text complexity, the requirements for a mastery model of progress monitoring cannot be strictly met. MAP Skills does provide the reporting features described for skill-based strands for reading comprehension. Progress is tracked at the strand level in terms of movement between levels of text complexity and within a text complexity level between classification statuses (*below instructional, instructional, and independent*).

#### **Relationship to MAP**

MAP Skills and MAP reside on the same assessment platform and use the same roster file. Though each test has a separate item pool, the look and feel of the items are the same. Some accessibility features of MAP items are not yet available for MAP Skills items

MAP Skills is designed to move from the MAP information about the zone of proximal development provided about all students with a similar RIT score to specific information about the knowledge profile of the individual student within that zone. MAP Skills strands are linked to MAP instructional areas, goal areas. MAP scores are automatically imported into MAP Skills to inform starting points for locator assessments.

### **Assessment System Design**

The system has three main components: identification of skills and/or reading levels (Skills Locator); assignment of instructional resources; and assessment of individual skill or reading level status (Mastery Check). The last component allows MAP Skills to meet the requirements of a mastery measure for the purpose of progress monitoring in an RTI implementation.

#### Skills Locator for Mathematics, Language Usage, and Reading Vocabulary

The Skills Locator is designed to identify *needs-work* skills that a student is ready to learn. These skills are identified within the context of particular strands of conceptually related skills as they develop across grades K - 8. In each strand skills are ordered and grouped based on a logical instructional sequence or learning progression. A further association of skills with grades is based on the grade in which skills are commonly taught. In Mathematics there are thirteen distinct strands, four in Language Usage, and one in Reading Vocabulary. The strands and how they were developed are fully described in a separate section of this manual. Teachers have the ability to control test length by the number of needs-work skills sought (1-5).

#### Initial Locator Test, Part 1, Survey Down

The survey-down portion of the test finds the student's baseline grade within the strand being assessed. The baseline grade is the grade at which the student seems to have at least some knowledge of every skill in that grade. MAP Skills operates on the premise that all or almost all needs-work skills will be found at or above the baseline grade. The test begins by presenting the student with one item aligned to each skill in the identified starting grade. As soon as the student gets an item incorrect, the test immediately drops to the next lower grade, and begins the process again without assessing the other skills in the grade. When the student answers one item correctly for each skill in a given grade, that grade becomes the baseline. Beginning with this baseline grade, the test begins to survey up for needswork skills.

#### Initial Skills Locator, Part 2, Survey Up

Beginning with the baseline grade, the student is presented with two additional questions for each skill. If the student gets the two additional questions correct, the student has answered three items correctly for this skill without any incorrect responses. The test passes over this skill without identifying it as *needs work*. Such skills are reported to the teacher as *passed*. The Skills Locator does not label these skills as *mastered* because correctly answering three items is not enough for a mastery inference (see *Mastery Check* section). If the student responds incorrectly to an item, the skill to which the item is aligned is identified as *needs work*. If the test reaches a skill where an item was answered incorrectly during the survey down, the skill is automatically identified as *needs work*. The test continues to survey up until the requested number of needs-work skills are identified. At this point the Skills Locator terminates.

When the student returns to this strand for the purpose of locating additional skills, the test will begin with the next skill that has no status.

#### Mastery Check for Mathematics, Language Usage, and Reading Vocabulary

The MAP Skills Mastery Check is designed to determine if a student has a firm understanding of a particular skill. A MAP Skills Mastery Check requires a student to answer five of six items correctly (83%) to achieve a *mastery* designation. Teachers may want to give Mastery Checks to confirm that students have learned skills previously designated as *needs work* or *passed*. In this scenario, the teacher can use MAP Skills to track and document progress in skill acquisition as part of an RTI plan. Using a mastery model of progress monitoring is discussed in a separate section of this manual.

A Mastery Check may be given at any time to any student – whether a Skills Locator has been given or not. Since a Mastery Check provides teachers with information about students' knowledge of specific skills, there are many classroom purposes that a Mastery Check might serve. Since students may be retested on a skill previously designated as *mastered*, a Mastery Check may be used to assess skill retention over time or summer learning loss.

#### Mastery Check Functionality

Students will begin the test with the first skill assigned. Students will see items one skill at a time until they get five items correct or until they get two items incorrect. If the student gets the first five items correct, or five of six items correct, the skill is designated as *mastered*. As soon as the student gets two items incorrect on a skill, the skill is designated *needs work* and the test either terminates or moves on to the next skill to be tested. If a student has taken a Skills Locator or Mastery Check on a skill and it was designated *needs work*, the student will see the items that were answered incorrectly on the most recent assessment as part of the Mastery Check. Including items that were previously answered incorrectly helps support the inference of mastery.

#### Skills Locator and Mastery Check for Reading Comprehension

The Skills Locator for Reading Comprehension is designed to identify the student's *Instructional Reading Level* in a strand. The purpose of a Mastery Check is to determine if the *Instructional Reading Level* may be classified as *Independent Reading Level*.

MAP Skills defines *Instructional Reading Level* as the level of passage at which the student can answer between fifty and eighty percent of the items correct. A student who gets fewer than fifty percent of all items correct but answers at least five out of six of the basic comprehension questions correct will have that level of reading designated *Instructional*. A second purpose of the Skills Locator is to indicate *needs work* skills.

The assessment begins with the student reading the first of two passages aligned to the text complexity of the chosen grade-level. In a Mastery Check for a grade-level and strand that has been previously tested, the first passage presented will be the passage from the previous test on which the student answered fewer questions correctly. (in a case of equal numbers incorrect, the first passage is shown). The student answers seven to nine questions (depending on the grade and strand), each aligned to a different reading skill. The first three questions for the passage align to skills associated with basic text comprehension: explicit comprehension of text, main idea/summary, and details that support ideas. The student then reads a second passage at the same level of text complexity that has the same item distribution. Items for each passage are ordered in the sequence most appropriate for the passage.

If the student answers a total of three or fewer items incorrectly, MAP Skills labels that level as *Independent* for the student. The student may test at the next higher level to locate the *Instructional Reading Level*. A score falls below the criteria for *Instructional Reading Level* is classified as *Below Instructional Reading Level*.

Once MAP Skills determines the *Instructional Reading Level*, it provides the teacher with information about skills associated with the items missed. These will be designated as needs-work skills. Skills associated with items the student answered correctly are considered *passed* by MAP Skills and are not reported as needing attention.

#### Note on Length of Reading Comprehension Checks

In the first year of release, some students have struggled with the length of the reading comprehension test. Teachers should be aware that students may become disengaged and thus not demonstrate their actual reading level. Reading comprehension checks should not be used repeatedly or for practice. Teachers should make sure students clearly understand the purpose of the assessment and are well-motivated to do their best. Teachers should be aware that students can exit the comprehension test and resume later. Stopping the test after one passage may be an appropriate strategy for many students.

#### **Changing Skill Status**

#### Changing Skill Status after a Skills Locator

After a Skills Locator, teachers will see a number of *needs work* and *passed skills*. For skills designated *passed*, teachers may want to determine if the skill is really a *needs work* skill or a *mastered* skill. They can do this by administering a Mastery Check, or if they have good classroom information about a skill in question, teachers may simply want to change the designation of a skill. Teachers may change the status of *needs work* skills if they have information that overrides the result of the Skills Locator. MAP Skills will record whether a skill was designated as *mastered* by Mastery Check or by teacher action. However, this information is currently not reported.

#### Changing Reading Level Status after a Skills Locator for Reading Comprehension

After instruction, the student will likely take a Mastery Check, and if the result is Independent Reading Level, the next logical step is to instruct at the next higher level. The teacher may choose to simply designate the next higher level as Instructional or the teacher may choose to test the student at that level to gain information about skills that may need attention. In choosing the latter option, teachers should make sure students are prepared for another test. In either case, the next test at the higher level serves both Locator and Mastery purposes. After a period of classroom instruction at the Instructional Reading Level, a teacher may know a student's level is Independent and may change the June 2017 10 © 2016-2017 NWEA skill designation without administering a Mastery Check. In this way teachers can track student progress in a strand without completely relying on MAP Skills tests.

#### Student Feedback on Locator and Mastery Checks

Students have two opportunities to provide feedback. They may select a star rating in order to selfassess their performance and also select one of three emoji to indicate how they are feeling after completing the assessment. A text box is provided for additional optional feedback. Upon completion of the required feedback, the student earns a reward.

#### Using Instructional Resources for Needs-Work Skills

#### **Knovation Resources**

MAP Skills links needs-work skills to suggested digital content curated by <u>Knovation</u>. Over the last year, the metadata used to link to resources has been refined to return better aligned and grade appropriate results. Knovation uses a <u>127-point certification process</u> to ensure quality, safety, and currency of each open education resource (OER). Teachers and other professionals who assign instructional resources manage the suggested resources within MAP Skills, but the actual content resides at the site of the creator of the content. Students and teachers who engage with any of the digital content will be working outside the MAP Skills system, as with any OER found by a search engine.

Resources curated by Knovation span an array of formats including lesson plans, activities, learning games, videos, and primary source documents—the full gamut of OER. Many resources are suitable for classroom or small group instruction while others are suitable for assigning directly to students as independent practice. MAP Skills currently screens out all but resources designed for individual use. For each MAP Skills skill, teachers are able to read the title of the aligned resources or open the resources to preview them. Once teachers find resources they want to use, they can assign them to an individual student or a class. Though the coverage of the skills is extensive, it may be the case that teachers will not find a resource for every skill that matches well with their instructional purpose or with specific student needs. Teachers have the ability to assign custom resources within Skill Navigator if they have other resources they prefer to use.

# Assigning Instructional Resources to Skills in Mathematics, Language Usage, Reading Vocabulary, and Reading Comprehension at a Strand and Grade.

Teachers may assign instructional resources to student(s) for any skill in the framework from an tab called "Assignments" on the teacher dashboard. In the "Resources" tab, teachers may narrow the focus to see only needs work skills for the student or students of interest. Teachers also have a Custom Resource tab with a text box field available to provide directions and other information about custom resources that are not part of Knovation. The Resource tab also allows entering a URL so that students can access custom resources directly from their dashboard.

#### Managing Instructional Resources for all Strands

MAP Skills will indicate to teachers when students have opened instructional resources and when students indicate they have completed the resource. Because the instructional resources are on external websites, the websites of the OER creators, MAP Skills cannot collect any information about what a student actually does with the instructional resource except through student feedback.

#### **Students Using Instruction Resources**

When the student selects a subject to work on, they see a list of "missions" ordered by due date. These missions include Skills Locators, Mastery Checks and Instructional Resources. When the student selects a resource, a new browser tab opens and the student engages with the content outside of MAP Skills.

#### Student Feedback on Instructional Resources

Students have two opportunities to provide feedback on instructional resources. They may select a star rating in order to self-assess their performance and also select an emoji to indicate how they are feeling after completing it. A text box is provided for additional feedback which is optional. Upon completion of the required feedback, the student earns a reward.

# **Development of the Skills Frameworks**

#### **Criterion Referenced**

NWEA subject-matter experts identified skills in the Common Core State Standards for Math, Reading, Language Usage, and Vocabulary that were foundational to standards mastery and appropriate to assess with this instrument. Skills were identified because they were of the right granularity and could be assessed by multiple choice items. After the skills were identified, they were organized into categories. From these categories, the strands emerged. These skills are considered foundational skills. They do not cover the breadth or depth of the standards, nor are they intended to. The chosen skills represent core competencies a student needs in order to be successful with the deeper learning encouraged by the standards. These skills are common across standards since they are foundational, building block skills.

Due to the cohesive nature of Common Core State Standards, skills may appear in multiple strands. A skill was placed in a strand if it reflected knowledge that was necessary for the progression of the content within that strand. After the skills were sorted into strands, the skills in each strand were sequenced to reflect a progression of the content within that strand. The first level of sequencing was dictated by the grade level from which the skill was derived in the standards. Within each grade level, skills were then sequenced to reflect a logical instructional progression that progresses in difficulty and/or complexity, depending on the topics. Often within a grade the sequencing of the standard codes informed the sequencing of the skills.

#### **Balanced Test Design**

Each grade or band has at least three skills and no more than eight skills. This range supports a balanced test design which allows test takers to encounter an appropriate number of skills per grade or band, and not too many or too few. In standard sets, some topics are addressed heavily in certain grades and lightly in other grades. This means that for some strands, there could be grades where there are a large number of skills. When this occurred, the grade was separated into bands to ensure fidelity to the test design. Alternatively, there were cases where grades had too few skills in some strands. Too few was determined to be under three skills. In these cases, the one or two skills are banded together with the skills from the adjacent grade to which they are most closely linked.

#### Math Strands

MAP Skills contains thirteen math strands indicated in Table 1. Table 1.

#### Math Strands

Math Strands
Shapes, Attributes, Congruence, and Similarity
Length, Area, Volume, and Coordinate Geometry
Data and Statistics
Working with Units Including Degrees
Probability
Number Sense Base Ten
Computation Base Ten
Number Sense Fractions, Rational and Irrational
Computation Fractions and Rational Numbers
Problem Solving, Fractions and Ratios
Equivalence and Properties
Solving Problems, Equations, and Inequalities
Graphs and Functions

#### Language Usage Strands

MAP Skills contains four Language Usage strands indicated in Table 2. Table 2.

#### Language Usage Strands

#### Language Usage Strands

Spelling

Capitalization and Punctuation

#### Parts of Speech

Sentences, Phrases, Clauses, and Agreement

#### **Reading Strands**

MAP Skills contains six base Reading strands – five strands of text types and one vocabulary strand. A seventh Informational Text strand occurs only at grades 1 and 2. This strand combines the text types of the three informational text strands represented at grades 3 - 8.

The passage-based strands assess reading comprehension skills within the context of common stimulus informational and literary passages, targeting students who read independently. The vocabulary strand assesses fundamental vocabulary skills and strategies.

Reading Strands	Description
Realistic Fiction	Fictional narratives with contemporary settings that feature activities and situations that are likely familiar or relatable to many students
Creative Fiction	Historical narratives and genre texts such as fables, myths, or science fiction
Nonfiction/Literary Nonfiction	Expository and nonfiction narrative texts such as biographies or autobiographies as well as persuasive pieces such as letters to the editor, opinion pieces, and speeches
Scientific/Technical Text	Informational texts with a scientific focus as well as texts that describe processes or procedures
History/Humanities Text	Expository and persuasive texts with social studies or humanities content
Informational Grades 1-2 Only	Nonfiction/Literary Nonfiction, Science/Technical, and History/Humanities texts are not sorted at these reading levels. The texts at these levels do not sufficiently show genre specific characteristics.
Vocabulary	Fundamental vocabulary skills and strategies to determine word meaning such as use of context clues, dictionaries, word relationships, affixes, and roots

#### Table 3. Reading Strands

#### **Vocabulary Skills**

Vocabulary skills are assessed in two places: 1) in standalone items in the vocabulary strand, and 2) as "vocabulary in context" skills within the common stimulus reading passages. The vocabulary strand includes fundamental vocabulary skills and strategies to determine word meaning such as using dictionaries, word relationships, affixes, and roots. These skills are appropriately addressed in standalone items. *Vocabulary in context* items present vocabulary that is embedded in the passage, typically yielding items that rely on context or reading strategies for understanding word meaning and the effect of connotation and word choice.

#### **Reading Skills**

Reading passage strands contain a set of reading skills. The skills represent key aspects of reading comprehension. Each common stimulus set includes one item from each skill (subcategory) to allow for the collection of data about areas of reading comprehension where a student may need further instruction. Reading subcategories include:

- 1. Main Idea or Summary
- 2. Details That Support Ideas
- 3. Explicit Comprehension of Text
- 4. Inference (beginning at grade 4)
- 5. Interaction of Literary Elements
- 6. Text Structure
- 7. Style or Point of View
- 8. Vocabulary in Context

Where appropriate in the informational strands, there are also skills that cover Arguments, Claims, and Evidence and Purpose or Point of View.

The framework for the common stimulus-based items includes a set of discrete skill descriptions that describe the items for each grade-level skill, informed by the Common Core Reading for Literature and Reading for Informational Text standards for grades 1 - 8.

#### Three Levels of the Reading Framework

#### Table 4. Levels of the Reading Framework

Strand	Skill (subcategory)	Skill Description
Realistic Fiction	Explicit Comprehension of Text	Identify significant details in a passage.
	Details that Support Ideas	Identify details related to the main idea or to the theme of a passage.
	Main Idea or Summary	Understand the main idea of a passage. Understand the theme of a passage.

Most reading skills remain constant across the grades. For example, items testing *Main Idea or Summary* or *Interaction of Literary Elements* skills will be found at each grade. The progression of a skill is revealed within the expression of the skill description, as shown in the example below which shows how the skill *Interaction of Literary Elements* articulates across the grades.

#### Progression of a Reading Skill

Table 5 shows the progression of a reading skill through the framework.

#### Table 5. Progression of a Reading Skill

Grade Level	Strand	Skill	Skill Description
1	Creative Fiction	Interaction of Literary Elements	Identify details about characters.
2	Creative Fiction	Interaction of Literary Elements	Understand how characters respond to major events in a passage.
3	Creative Fiction	Interaction of Literary Elements	Describe reasons for characters' actions in a passage.
4	Creative Fiction	Interaction of Literary Elements	Use details from a passage to describe a character.
5	Creative Fiction	Interaction of Literary Elements	Use details to show similarities or differences between two characters in a passage.

6	Creative Fiction	Interaction of Literary Elements	Understand how characters develop over the course of the passage.
7	Creative Fiction	Interaction of Literary Elements	Understand how a setting affects characters.
8	Creative Fiction	Interaction of Literary Elements	Understand how dialogue helps reveal characters' traits.

The readability level of the passages increases at each grade, as does the challenge of the items. The content of passages is appropriate for the designated grade level, so testing students well above their enrolled grade may expose them to curricular concepts not yet introduced, and to content above their maturity level.

#### Literary and Informational Skills

Table 6 shows the skills (subcategories) for the literary and informational strands.

Table 0. Skins for Ellerary and informational Strands
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Subcategories	
Literary Strands	Informational Strands
Explicit Comprehension of Text	Explicit Comprehension of Text
Main Idea or Summary	Main Idea or Summary
Details That Support Ideas	Details that Support Ideas
Inferences Supported by Text (grades 4-8)	Inferences Supported by Text (grades 4-8)
Interaction of Literary Elements	Development of Ideas in Text
Text Structure	Text Structure
Style or Point of View	Purpose or Point of View
Vocabulary in Context	Vocabulary in Context
	Arguments, Claims, and Evidence*

Nonfiction or informational reading text at grades 1 and 2 often lacks the strong markers of Scientific/Technical or History/Humanities genres. Therefore, separating informational texts by genre at these grades does not provide helpful differentiation. The lowest grades of informational texts and their questions will be represented as a combined "informational" strand. The three strand differentiations (Nonfiction/Literary Nonfiction, Scientific/Tech, History/Humanities) begin at grade 3.

## **Item Development**

#### **Item Specification Creation**

NWEA Content Specialists created item specifications to provide guidance to item writers regarding the content, context, cognitive complexity, item format, item asset (such as passage, graph, diagram), and any corollary skills or understandings needed to assess the topic or skill. Basic requirements that guide the development of item specifications are intended to ensure that items follow the best practices for item development and that items align well to the standards.

#### Item Writing and Review Process

Each MAP Skills item received multiple reviews. Item reviews are described below.

**Content Confirmation Review**: During this review, each item was evaluated to confirm its alignment and overall editorial and pedagogical integrity.

During the Content Confirmation review for all subject areas, the Acquisition Specialist evaluated each item to verify that it:

- Aligned with the skill description in the framework
- Aligned with the targeted DOK and Bloom's cognitive level
- Presented valid content
- Was free of fairness, sensitivity, or accessibility issues
- Demonstrated best item construction practices:
  - Each Stem should directly connect a student to the concept, idea, or skill that is being assessed and should have the following attributes:
    - ✓ Assesses one skill
    - ✓ Is specific, clear, and concise
    - ✓ Is at the appropriate reading level
    - ✓ Is worded positively
    - ✓ Is in the form of a question
    - ✓ Uses active voice
    - ✓ Uses simple verb tenses whenever possible
  - Each set of Answer Options should have:
    - ✓ Exactly one key
    - ✓ Plausible distractors based on typical student misconceptions when possible
    - ✓ Balance in length, complexity, and grammatical structure
    - ✓ Appropriate level of vocabulary and terminology (at, or below, targeted grade-level readability

✓ Independent options that do not overlap, nor are logical opposites that preclude the other options (whenever possible)

 ✓ Actual options (no null sets – "No changes needed" or "All of the above" are not viable answer options for NWEA products)

**Item Owner Review**: During this review, each item was evaluated to confirm that its content was aligned, it had clear face validity, it was free of sensitivity and fairness issues, it was grade appropriate, and it was sound in terms of item construction.

**Item Set Review**: After each item was reviewed individually, the set of items aligned to each skill were evaluated <u>as a set</u>. This review confirmed that the items were of similar difficulty and covered the range of content described in the skill.

**Permissions and Plagiarism Review**: An NWEA editorial associate verified that the item was an original work, and not plagiarized.

**Validation Review**: During the validation review, each item was evaluated to verify that it aligned with the skill, and was free of fairness, sensitivity, or accessibility issues.

#### Item and Passage Development and Alignment for the Reading Test

Passage reviewers applied both qualitative and quantitative criteria in selecting and placing a passage at a particular grade level. The acquisition effort focused on acquiring passages that covered a variety of topics and themes and that would be engaging for older students reading below grade level. All passages were required to adhere to the qualitative and quantitative criteria outlined below.

Informational passages were fact-checked and all passages received a plagiarism and permissions review.

#### Passage Selection Criteria

The following outlines the specific qualitative criteria used in the passage selection process:

- Passage is well written and engaging
- Passage is age appropriate for students in grades 3 8, even when students are reading below grade level (i.e., passage should avoid being too juvenile in tone, style, or content)
- Passage is free of bias, sensitivity, and fairness concerns
- Passages selected for the strand at each grade focus on a variety of topics
- Passage fits at selected grade level when qualitative measures are considered (Levels of Meaning or Purpose; Structure; Language Conventionality and Clarity; and Knowledge Demands)
- Passage fits at a selected grade level when quantitative measures are considered

#### Specific quantitative criteria are captured in Table 7.

#### Table 7. Readability and Word Count

Grade Level	Word Count Range for Texts in the Literary Strands*	Word Count Range for Texts in the Informational Strands*
1	200 - 300	100 – 200
2	250 – 500	200 – 300
3	400 - 600	250 – 500
4	450 – 650	400 – 600
5	500 – 700	450 – 700
6	600 - 800	450 – 750
7	700 – 950	500 – 800
8	800 – 1050	600 – 900
*Passage word counts may vary within 50 to 100 words of the range for any given grade.		

#### **Developing Items for Common Stimulus Passages**

To establish and maintain consistency in content development work, item writers were furnished with passages and detailed item writing instructions that included guidance on best practices for producing high-quality, well-aligned items, an explanation of the intended purpose of the Common Stimulus-based Reading Test, specifications derived from the skill descriptions in the framework, and item count and skill requirements for each passage.

Following a validation review, each common stimulus set received two reviews by English Language Arts content experts. Reviewers evaluated each item individually to ensure that it was of high quality and measured the intended skill.

Reviewers also designated an item sequence for each common stimulus set. As such, the first three items presented to a student in each set are always from the skills "Explicit Comprehension of Text," "Main Idea or Summary," and "Details that Support Ideas." The sequence for items from other skills was established based on whether the item targeted a single paragraph or the entire passage. The development and ordering of these literary comprehension items support a primary function of the reading algorithms.

#### **Item Writing Resources**

Item writers were supplied with the following documentation and expected to adhere to these various guidelines: the *NWEA Style and Formatting Guide*, the *NWEA Item Writing Guide for ELA*, the *NWEA Copyright and Permissions Guidelines*, the *NWEA Sensitivity, Fairness, and Accessibility Guidelines*. Item writers were also supplied with guidelines to ensure the quality assurance for the <u>item set</u> of each skill description.

#### **Item Samples**

A sample item for each skill has been attached to the framework and is available in the Help section under the "Skills Framework +Lexile" menu. The sample items have been removed from the item pool for each skill. For reading comprehension, a passage set for fiction and one for non-fiction at each of the eight text complexity levels has been provided. The passage sets come from across the genre.

#### New Item Development

MAP Skills will add 5 items per skill across Language Usage, Vocabulary and Math where the skill will support that many additional items. MAP Skills will add one passage per strand per grade for Reading Comprehension. The new items and passage sets will both add to pool depth and allow for the replacement of items that do not meet performance specifications.

# **Test Administration**

#### Administering a Skills Locator

#### Initiating a Skills Locator for Mathematics, Language Usage, Reading Vocabulary

To initiate a Skills Locator, the teacher identifies the strand of interest and then identifies the number of needs-work skills (between one and five) the Skills Locator should find within that strand. The teacher then selects a starting point for the student in one of three ways:

- The teacher selects use RIT Score and the student's goal score associated with the selected strand is automatically imported into the system from the MAP system. Based on this RIT score, the Skills Locator selects the grade at which the student is most likely performing and begins the assessment there.
- 2. The teacher selects the grade level at which the assessment will begin.
- 3. The teacher selects "Remediation" which begins the Skills Locator two grade levels below the student's enrolled grade. This option designed for remediation purposes in the absence of solid information.

#### Subsequent Skills Locator

After the initial Skills Locator has been completed, the teacher may give subsequent Skills Locators at

any time. The purpose of each subsequent Skills Locator is to find additional skills in the strand that need work. This subsequent Skills Locators may be given after the student has shown mastery of the previously identified needs-work skills or may be given immediately after the initial Skills Locator to get a better sense of the scope of the student's needs within the strand of interest.

The teacher initiates the subsequent Skills Locator by again selecting the strand and the number of needs-work skills to be identified. The subsequent Skills Locator begins with the next skill in the strand that has not been designated already as *passed*, *needs work*, or *mastered*. Skills are designated as *needs work* or *passed* by a Skills Locator and are designated as *needs work* or *mastered* by a Mastery Check.

Teachers may change or designate a skill status based on other information from the classroom such as tests, quizzes, worksheets, or observation.

#### Initiating a Skills Locator for Passage-based Reading

To initiate a Skills Locator, the teacher identifies the strand of interest and then selects a starting point for the student in one of three ways:

- The teacher selects use RIT Score and the student's goal score associated with the selected strand is automatically imported into the system from the MAP system. Based on this RIT score, the Skills Locator selects the level of text complexity at which the student is most likely performing and begins the assessment there.
- 2. The teacher selects the reading grade-level at which the assessment will begin.
- 3. The teacher selects "Remediation" which begins the Skills Locator two reading grade-levels below the student's enrolled grade. This option designed for remediation purposes in the absence of solid information.

#### Subsequent Skills Locators for Reading Passages - not necessary

Once the teacher determines a student's *Instructional Level* in a strand, administering an additional Skills Locator is unnecessary.

#### Administering a Mastery Check

#### Mastery Check for Mathematics, Language Usage, and Reading Vocabulary

Mastery Checks may be given at any time to any student – whether a Skills Locator has been given or not. Since a Mastery Check provides teachers with information about students' knowledge of specific skills, there are many classroom purposes that a Mastery Check might serve. Among these purposes are pre-testing before instruction and post-testing after instruction. Since students may be re-tested on a skill previously designated as *mastered*, Mastery Checks may be used to assess skill retention or summer learning loss.

#### Initiating a Mastery Check for Mathematics, Language Usage, and Reading Vocabulary

To initiate a Mastery Check, the teacher identifies the strand and the skill or skills that will be assessed. Teachers may identify one to five skills for a Mastery Check. They should consider the ability of the student to engage with a longer test when opting to give a Mastery Check for several skills. Each skill may have as many as six items.

#### Subsequent Mastery Checks

Teachers may re-test a skill designated as *mastered* at any time and may mix previously tested skills with untested skills as long as the skills are in the same strand. Teachers may also retest skills that receive a *needs work* designation after a Mastery Check. Subsequent Mastery Checks will contain items that were answered incorrectly in a previous test.

#### Mastery Check for Reading Passages

Mastery Checks for Reading Passages may be given at any time to any student whether a Skills Locator has been given or not. Since a Mastery Check provides teachers with information about students' reading level and provides information about specific reading skills, there are many classroom purposes that a Mastery Check might serve. Among these purposes are pre-assessment before instruction and post-instruction assessment. Teachers may want to give a Mastery Check for reading passages to assess students' readiness for reading texts within a specific strand, or genre. Teachers should make sure that students are well prepared to take a Mastery Check due to their length.

#### Initiating a Mastery Check for Reading Passages

To initiate a Mastery Check for reading passages, the teacher needs to identify only the strand and the grade-level.

#### Subsequent Mastery Checks

When a student takes a Mastery Check in a strand and grade and does not test at the *Independent* level, a teacher may want to give another Mastery Check after a period of instruction. The test is initiated in the same way as the previous Mastery Check. The first passage the student will see on the subsequent Mastery Check is the passage from the previous test for which the student incorrectly answered the most items. Repeating a passage that was not well comprehended will help support the *Independent Reading Level* inference if that level is achieved.

Though individual skills may be forgotten and retesting skills is appropriate, once a student attains an *Independent Reading Level* in a grade and strand, it is highly unlikely the student's reading ability would regress. In the rare case where a teacher deems the student's reading level might have done so, the teacher would need to assign a subsequent Mastery Check in that grade and strand.

#### Batch Assignment of Skills Locator, Mastery Check

The Assignments tab presents a quick way to assign specific missions to groups or individual students. This tab contains mission assignment and tracking features. The mission tracker shows the last three missions assigned to each student in a class and allows the teacher to easily see the status of missions, edit or delete missions not yet started and assign more missions. Based on this information, the teacher can batch assign using "Action Cards," one each for Skills Locator and Mastery Check. The teacher will see all students who are ready for the assessment and can quickly batch assign. For example, students who have completed all of their assigned instructional resources for a particular skill will be listed on the "Ready for Mastery Check" card. From this card the teacher can quickly batch assign the relevant Mastery Checks to every skill for every student.

# **Scoring and Reporting**

#### Scoring for Mathematics, Language Usage, and Reading Vocabulary

MAP Skills does not produce numeric scores. Instead, it designates skill status for each tested skill. A skill may have one of four statuses:

- 1. **Unseen:** A skill is *unseen* if the assessment system has no information because the student has not answered any items aligned to the skill.
- 2. **Needs Work:** A skill is designated as *needs work* in one of three ways. During a Skills Locator, the skill is designated as *needs work* if student misses one item aligned to the skill (maximum of three possible). During a Mastery Check the skill is designated as *needs work* if the student misses two items aligned to the skill (maximum of six possible items). A teacher may choose to change a status to *needs work*.
- 3. **Passed:** A skill is designated as *passed* during a Skills Locator if the student correctly answers three items (3/3).
- 4. **Mastered:** A skill is designated as *mastered* if the student answers 5 of 6 items correctly during a Mastery Check.

Teachers have access to the current status of any skill. Students have access to skills they have *mastered* or *passed*—shown as unlocked skills-- and can see skills that *need work*—displayed as locked skills.

#### Scoring for Reading Comprehension

MAP Skills does not produce numeric scores. Instead, it designates a reading status for a grade level of text complexity within the context of a strand. For example, MAP Skills might designate a student's reading status for fourth grade level text complexity for realistic fiction.

A grade level of text complexity in any strand may have one of three statuses:

- 1. **Independent Reading Level:** A grade level of text complexity is designated as at a student's *Independent Reading Level* if the student responds incorrectly to three or fewer items for two passages. Depending on strand and grade level, this means the student responds correctly to at least 11 of 14 items, 13 of 16 items, or 15 of 18 items correct.
- 2. Instructional Reading Level: A grade level of text complexity within the context of a strand is designated as at a student's *Instructional Reading Level* in one of three ways. A grade level of text complexity is designated as at a student's *Instructional Reading Level* if the student responds incorrectly to more than three items but responds correctly to at least half the items for two passages. Depending on strand and grade level, this means the student responds correctly to 7-10 of 14 items, 8-12 of 16 items, or 9-14 of 18 items. Additionally, Skill Navigator designates a reading level as *Instructional* if the student answers at least five out of six basic comprehension items correctly, although the overall items correct is less than fifty percent. (Each passage set begins with three items that are designated as measuring basic comprehension of text.) A teacher may choose to change the status a grade level of text complexity to *Instructional Reading Level*.

3. **Below Instructional Reading Level:** A grade level of text complexity within the context of a strand is designated as at a student's *Below Instructional Reading Level* if the student fails to answer half the items correctly and fails to answer five out of six of the basic comprehension questions correctly.

In addition to designating reading level, MAP Skills also identifies *needs work* skills for tested reading levels.

**Needs Work:** A reading skill is designated as *needs work* if a student incorrectly responds to an item aligned to the skill (two possible items).

Since skills are only passed (2/2) in the context of a particular strand plus reading level, this status is reported within this context only. There are no Mastery Checks for reading skills for the same reason.

#### Reports

#### Assignments Tab

Though not a report, the Assignments Tab contains mission assignment and tracking features. The mission tracker shows the last three missions assigned to each student in a class and allows teachers to easily see the status of missions, edit or delete missions not yet started and also quickly assign more missions.

#### Heat Map

The Heat Map shows the complete picture of both class and individual student performance. It shows *mastered, passed, needs work,* and *unseen skills* or *Independent, Instructional Reading Level, Below Instructional Reading Level* for a given strand. From the reading comprehension strand Heat Maps, the teacher can choose a "Skill View" to see the status of each reading skill. These various skill statuses are color coded to give educators a "quick-read" and allow them to identify areas of strength and concern. The lowest *needs work* skill is flagged for each student. Skill names appear at the bottom of the Heat Map. The Heat Map provides educators the information they need to assign tests and instructional resources to a class or individual students.

#### **Student Progress Report**

The Student Progress Report tracks student achievement within a strand for the purpose of progress monitoring. In its default setting the graph shows the student's lowest *needs work* in a strand as a starting point and uses the highest skill in the student's current grade as its goal. The timeframe is from the date the lowest skill was identified to the end of the academic year. The Student Progress Report is customizable allowing educators to set a new student goal and a different timeframe for reaching mastery of the final skill and/or Independent Reading Level. Progressive skill mastery is then tracked on the graph from the lowest needs work skill in the strand to final skill that is designated as the goal in the given timeframe. Teachers may customize the skills tracked by removing any skill from the progression. For reading comprehension, reading progress is tracked from the initial instructional reading level to a goal of independent reading at a designated level. Progress is compared to a theoretic linear progress line to determine if at any point in time the student is theoretically "on track" to reach the goal by the given date. The theoretic trend line allows educators to quickly compare the proportion of skills mastered to the proportion of time that has passed.

Educators have the ability to enter notes about interventions within the report. When interventions or programs change, educators can indicate that change in the report and the date of change appears on the graph as vertical line. Thus, educators can easily see if the new intervention/program has impacted the rate of skill mastery.

When a new academic year begins, the Student Progress report is reset using the current lowest needs work skill, the new default goal (highest skill in new current rostered grade) and the end of the new academic year. The previous year's graph is archived.

#### **Teacher and Student Dashboards**

Educators and students have access to their own unique dashboards. Dashboards are the place users can take actions in the system. Teachers are able to see the classes and students they are associated with in the roster file. Teachers can see aggregate results and usage data; create, assign and manage tests; assign instructional resources; and change skill statuses all from their dashboards. On the student dashboard, students can see which tests and instructional resources they have assigned to them, start a test, work on an instructional resource, and see which skills they previously Mastered and/or the Independent Reading Levels they have achieved. Further, they can view their earned rewards. The information in the student dashboard is presented in context of missions rather than tests and instructional resources.

#### Administrator Access to Teacher Dashboard

Administrators, and anyone given administrator access, have the ability to access teacher dashboards. From that access they can perform all the functions that a teacher can perform. This access also allows administrators to support and train teachers in using MAP Skills.

#### **Administrator Report**

The Administrator Report is an "on track" report that can be customized to show a variety of levels. District administrator reports show high-level district summary data that can be drilled into for school, grade, class, teacher, and student data. The data may be displayed for individual strands as well. School administrator reports show high-level school summary data that can be drilled into for grade, class and student data. The report shows the percentage of students who are "on track" to reach their goals and also show the number of students who are included in the report compared to the number of students in the class reported on.

#### **Previous Year**

Educators have the ability to switch between academic years to see previous year's Progress Report and Administrator's "on track" reports.

# **Third-party Alignment Review**

Alignment examines the degree of match between an assessment and a set of content standards. It has long been recognized as an important evidence of the assessment's content validity. In Messick (1989), content validity is defined as, "... based on professional judgments about the relevance of the test content to the content of a particular behavioral domain of interest and about the representativeness with which item or task content covers that domain" (p. 17). The process of establishing the alignment between an assessment and content standards is a critical but ethical requirement for an assessment to be considered rigorous, valid, and high quality.

In May 2015, NWEA contracted Wisconsin Center for Education Products & Services (WCEPS) to conduct a third-party item review. The purpose of the study is to provide an external review of the degree of match between each item and the particular skills that the item was intended to target. The review included a total number of 514 English language arts (ELA) items (156 language arts items, 39 vocabulary items, and 319 reading items) and 400 mathematics items randomly selected from grades K – 8. These items were compared with skill frameworks provided by NWEA. Each item was intended to target a single skill only. The degree of match was evaluated according to the NWEA rating scale provided in Table 10.

Rating	Description
1	Item does not align with the identified skill
2	Item marginally aligns to the identified skill and other essential
	elements align to other skills
3	Item aligns to the identified skill, but there are other inessential
	elements present
4	Item only aligns to the identified skill

Table 10. NWEA Rating Scale

Each item was reviewed independently by five reviewers who worked remotely. The focus of the review was primarily on evaluating the content match between item and skill. Once an item was reviewed by a reviewer, it received a rating specified in Table 10. When the judgment from a reviewer was that an item did not relate to the assigned skill, then the reviewer made notes of the skill that would be a better match, when applicable, and of "source-of-challenge" which includes errors within an item and any other issues with an item that might cause a student who knows the subject knowledge to respond wrongly or enable a student who lacks knowledge being tested to answer the item correctly. All data were entered into the Web Alignment Tool version 2 (WATv2: watv2.wceruw.org). Reviewers adjudicated some of the coding upon which they disagreed after all data were entered. Discussion and adjudication among group members were conducted through conference calls.

All reviewers have extensive content-area expertise and extensive experience with item reviews. They either recently retired from or are currently working as classroom teachers, district coordinators, state consultants, academic, or education specialists. Dr. Norman Webb oversaw the project.

Overall, the third-party review results strongly suggest the excellent match with intended skills for all items.

For all 514 ELA items (156 language arts items, 39 vocabulary items, and 319 reading items), the results indicate that WCEPS reviewers' ratings confirmed the assignment of the vast majority of ELA items to the assigned skills. 94% of the Language Arts items, 85% of the Vocabulary items, and 97% of the Reading items have received a rating of 4, i.e., Item only aligns to the identified skill, from a majority of reviewers. In particular, reviewers responded very positively to the reading items, noting that

"[t]he variety of passages provides interest and contrast, as well as opportunity to assess diverse skills. Most of the items are well focused on the skill being assessed." (Christopherson & Webb, 2015, p. 8).

For all 400 mathematics items, the results indicate that WCEPS reviewers' ratings confirmed the assignment of the vast majority of math items to the assigned skills. 97% of these items have received a rating of 4.

# **The Validation Argument**

As an assessment, MAP Skills is in its infancy in terms of data. Throughout the development, great care and professional judgment have been taken in carrying out each stage of the process. From decomposing Common Core State Standards into relevant skills that represent standards, to developing items that assess those skills at the appropriate level of the skill for a grade level and granularity, to assembling homogeneously clustered item sets for each skill, to developing intuitive and plausible item selection and scoring routines, to developing engaging computer interfaces and reports of student performance, adding value to help guide and inform instructional decisions has been the fundamental focus.

Providing such value at a high and consistent level, however, cannot be merely a declaration by NWEA in the absence of evidence supporting such a declaration. Since the first operational implementation of MAP Skills will only begin after July, 2015, the first opportunities to gather such evidence will be in the 2015-2016 academic year, and we expect the evidence collection process to span multiple years.

At this point, it is only possible to share the approach that will be taken to building a validity argument for MAP Skills. The approach is based largely on the work of Kane (1992, 2002, 2006, 2013) which was influenced by Cronbach (1982, 1988) and Cronbach and Meehl (1955). It calls for the validity argument to provide an overall evaluation of the intended interpretations and uses of test scores (Kane, 2013). As such, it is the interpretation and uses argument (IUA) that occupies the central focus of this approach. The IUA must specify the claims that are key to test score use and interpretation, and make explicit the reasoning inherent in making those claims. *Claims* about test scores (their interpretations and uses) are made based on *inferences* which rely on *warrants*—a law, general rule or principle, or established procedure (Chapelle, Enright & Jamieson, 2010; Kane 2013). The warrants commonly require *backing* and such backing often comes in the form evidence used to test the *assumptions* underlying the warrant.

As a starting point for MAP Skills, two claims emerge as key to its interpretation and use. The first of these can be considered as the essential claim; namely, MAP Skills determines if a student can be considered to have a firm understanding of a skill and may, therefore, be considered to be a "master" of the skill. Since many potential actions can be based on this determination, this claim occupies a central role in the interpretations and uses of MAP Skills. The second claim is that MAP Skills identifies the foundational building block skill(s) within a cross-grade level content strand that a student needs to work on in order to master. This claim focuses in the Skills Locator. While the Skills Locator portion of MAP Skills can be considered as an optional tool, its use would be important in situations where a teacher has very limited knowledge of a student's "skills neighborhood." For some users and uses, this constitutes a critical focus. Therefore, this claim also merits attention in an initial validity argument.

Consistent with Kane's (2013) approach, the validation argument will depend on the coherence and completeness of the IUA, the reasonableness of its inferences, and the plausibility of the warrants and/or the adequacy of the evidence supporting the inferences. The basic structure of the initial IUA is laid out in the table below. Each assumption stated, will be tested in whole or in part in an empirical study. The data requirements for these studies will largely be met through the routine use of MAP Skills. Occasionally, the active, direct participation of teachers will be requested. As MAP Skills matures and interpretations and uses broaden and become more nuanced, the structure of the IUA will change accordingly and the requirement to test new additional assumptions will likely emerge. In short, the initial structure in Table 11 will not be the final structure or the final version of the IUA.

Table 11. Proposed Initial Structure of the Foundational Interpretation/Use Argument for MAP Skills

Claim 1: MAP Skills determines if a student can be considered to have a firm understanding of a skill and

may, therefore, be considered to be a "master" of the skill.			
Claim 2: MAP Skills identifies the foundational building block skill(s) within a grade level content strand that a student needs to work on in order to master.			
Inference	Warrant	Assumptions to be Tested	
Content domain/ sufficiency	Performance on MAP Skills items reveals skills considered to be important to master within a particular content area and strand.	<ol> <li>The skill(s) required to correctly answer items in the same set has been accurately identified.</li> <li>Items require only understanding of a single skill that would be part of the content of an instructional sequence.</li> <li>Independent item reviewers assign the same skill demands for items as originally assigned by NWEA specialists.</li> </ol>	
Content structure	Decomposition of Common Core State Standards suggests hierarchies of skills.	<ol> <li>The concept of skill hierarchies (strands), as operationalized in Skills Navigator, is consistent with cross- grade performance.</li> <li>Skill clusters within grade level portions of strands are hierarchically consistent with performance.</li> </ol>	
Skill-test assignment (Skills Locator)	Observed performance on the Skills Locator test is used to identify "needs work" skills or skills considered "passed."	<ol> <li>A skill's grade level designation coupled with one incorrect answer to an item for that skill in the designated grade, is a sufficient indicator that the skill "needs work."</li> <li>A skill's grade level designation coupled with one correct answer for each to an item in the designated grade, is a sufficient indicator to declare a baseline grade.</li> </ol>	
Scoring (Mastery Check)	Observed performance on items comprising a <i>Mastery Check</i> test is scored to determine if it represents a firm understanding of a particular skill.	<ol> <li>Test administration conditions are appropriate: distraction-free, unrushed, singular focus.</li> <li>Items demonstrating inconsistent responses, relative to other items assessing the same skill are not present in the test.</li> <li>Only items requiring a single target skill are present on the test.</li> <li>A defensible threshold for <i>mastery</i> performance has been established for the skill.</li> <li>Scores (number correct or proportion correct) have been shown to temporally stable.</li> <li>Scores (number correct or proportion correct) can be appropriately qualified.</li> </ol>	
Generalization 1	Observed scores are estimates	1. There are sufficient numbers of items requiring	

Claim 1: MAP Skills determines if a student can be considered to have a firm understanding of a skill and may, therefore, be considered to be a "master" of the skill.

# Claim 2: MAP Skills identifies the foundational building block skill(s) within a grade level content strand that a student needs to work on in order to master.

Inference	Warrant	Assumptions to be Tested
(Occasions)	of expected performance over relevant parallel tests requiring the same skills.	<ul> <li>the target skill on the parallel test to provide stable estimates of the test takers' performance with respect to that skill.</li> <li>2. Follow-up assessments of previously master skills, maintain their mastery status.</li> <li>3. Targeted skill-related instruction between test occasions for the same skill can be accounted for in a standardized manner.</li> </ul>
Generalization 2 (Contexts)	Observed scores are estimates of expected performance on relevant instructional tasks that demand mastery of the target skill.	<ol> <li>Once a skill is mastered, academic, non- assessment, tasks requiring the skills will be completed successfully.</li> </ol>

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