Technical Report

Alignment Study for North Carolina NCEXTEND1, Mathematics and Reading Grades 3-8 and High School, Science Grades 5, 8, and High School

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Executive Summary

The North Carolina Department of Public Instruction (NCDPI) annually administers the North Carolina EXTEND1 (NCEXTEND1) in mathematics and reading to students with significant cognitive disabilities in grades 3 through 8, English II and NC Math 1, and in science in 5, 8, and Biology. The purpose of the assessment program is to measure students' progress toward mastery of the North Carolina Extended Content Standards in mathematics, reading, and science (NCDPI, 2011, 2017). The NCDPI contracted an independent alignment study that examined the degree of alignment between the NCEXTEND1 and the North Carolina Extended Content Standards. EdMetric LLC (EdMetric) served as the independent evaluator.

The purpose of the study was to investigate the alignment of the NCEXTEND1 assessments to the breadth and depth of the North Carolina Extended Content Standards as operationalized by the test blueprint.

Approach. The assessment domain was evaluated using a modified Webb (1997, 1999) methodology. The Links for Academic Learning (LAL; Flowers, Wakeman, Browder, & Karvonen, 2007) was used as a scale of cognitive complexity which is appropriate to the target population. In the alignment study, panelists first evaluated the content match and strength of each item to the North Carolina extended standards. Then they rated the LAL level (1-6) and, if appropriate, assigned any secondary extended standard alignments. Results of the study contribute to the validity evidence being gathered by the NCDPI to support or adjust the NCEXTEND1 as a measurement of the state's extended standards.

Method. In this modified Webb (1997, 1999) using elements of Flowers and colleagues (2007) approach, alignment was examined at each grade level for each content area examined. Each level provides a different piece of information in terms of alignment. For each grade-level form, EdMetric examined the proportion of items that align to the North Carolina Extended Content Standards as intended by the state assessment blueprint. EdMetric also examined the cognitive complexity as depth of knowledge (i.e., LAL), range of knowledge (ROK), and balance of representation (BOR). At the classroom level, EdMetric examined ROK and BOR. At the student level, EdMetric examined the fidelity between the enacted and intended blueprints through Webb's categorical concurrence indicator. EdMetric established an overall degree of alignment based on criteria that best reflect the study questions and purposes based on concepts from Webb.

Workshop. EdMetric, in consultation with NCDPI and NCSU-TOPS, worked together to prepare for the educator workshop. The alignment study collected data through a two-day workshop conducted February 1-2, 2023. The workshop was hosted by EdMetric and held in Raleigh, North Carolina. EdMetric developed training materials specific to the study goals.

Results. Analyses were conducted to evaluate overall alignment, across categorical concurrence, LAL, ROK, and BOR. Table 1 summarizes the findings of the alignment evaluation by domain for mathematics, reading, and science for grades 3-8 and high school, as appropriate. Alignment was evaluated with specific criteria (see Section 2), and an overall alignment was provided.

Tables 1, 2, and 3 show that there was mostly moderate to strong alignment for all domain between the NCEXTEND1 and the North Carolina Extended Content Standards for mathematics, reading, and science as defined by the four areas studied. However, there were exceptions of *Language* in grades 3 and 4 reading, where there was no alignment.

Discussion. Overall, the alignment evaluation found evidence to support a claim of alignment of the NCEXTEND1 to the North Carolina Extended Content Standards in all grade levels and across criteria. Even though the NCEXTEND1 item pools appear to be well

aligned in all grades and across criteria, some suggestions for future improvement are provided.

Best Practices. The alignment method was implemented for the study in accordance with best practices and industry standards, using processes and procedures that adhered to the American Education Research Association, American Psychological Association, and National Council on Measurement in Education *Standards for Educational and Psychological Testing* (2014). The study was also conducted with attention to the federal peer review requirements.

Table 1: Overall Alignment Results, Mathematics

Grade/ Course	Domain	Categorical Concurrence	LAL	ROK	BOR	Overall
3	Measurement & Data, Geometry	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
3	Numbers & Operations - Fractions	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
3	Numbers & Operations in Base Ten	Strongly Aligned	Strongly Aligned	Strongly Aligned	Weakly Aligned	Strongly Aligned
3	Operations & Algebraic Thinking	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
4	Geometry	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
4	Measurement & Data	Strongly Aligned	Weakly Aligned	Strongly Aligned	Moderately Aligned	Moderately Aligned
4	Numbers & Operations - Fractions	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
4	Numbers & Operations in Base Ten	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
4	Operations & Algebraic Thinking	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Geometry	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Measurement & Data	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Numbers & Operations - Fractions	Strongly Aligned	Not Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned
5	Numbers & Operations in Base Ten	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Operations & Algebraic Thinking	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
6	Expressions & Equations	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
6	Geometry	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned

Grade/ Course	Domain	Categorical Concurrence	LAL	ROK	BOR	Overall
6	Ratios & Proportional Relationships	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
6	Statistics & Probability	Strongly Aligned	Not Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned
6	The Number System	Strongly Aligned	Weakly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
7	Expressions & Equations	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
7	Geometry	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
7	Ratios & Proportional Relationships	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
7	Statistics & Probability	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
7	The Number System	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Expressions & Equations	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Functions	Strongly Aligned	Weakly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Geometry	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Statistics & Probability	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	The Number System	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
NC Math 1	Functions	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
NC Math1	Geometry	Strongly Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned	Strongly Aligned
NC Math 1	Statistics & Probability	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
NC Math 1	The Real Number System & Algebra	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned

Table 2: Overall Alignment Results, Reading

Grade/ Course	Domain	Categorical Concurrence	LAL	ROK	BOR	Overall
3	Language	Not Aligned	Not Aligned	Not Aligned	Cannot be calculated	Not Aligned
3	Reading for Informational Text	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
3	Reading for Literature	Moderately Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
4	Language	Not Aligned	Not Aligned	Not Aligned	Cannot be calculated	Not Aligned
4	Reading for Informational Text	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
4	Reading for Literature	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Language	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Reading for Informational Text	Strongly Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned	Strongly Aligned
5	Reading for Literature	Strongly Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned	Strongly Aligned
6	Language	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
6	Reading for Informational Text	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
6	Reading for Literature	Strongly Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned	Strongly Aligned
7	Language	Not Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned	Moderately Aligned
7	Reading for Informational Text	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
7	Reading for Literature	Not Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned
8	Language	Moderately Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Reading for Informational Text	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Reading for Literature	Moderately Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
English II	Language	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
English II	Reading for Informational Text	Strongly Aligned	Strongly Aligned	Strongly Aligned	Weakly Aligned	Strongly Aligned

Grade/ Course	Domain	Categorical Concurrence	LAL	ROK	BOR	Overall
English II	Reading for Literature	Strongly Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned	Strongly Aligned

Table 3: Overall Alignment Results, Science

Grade/ Course	Domain	Categorical Concurrence	LAL	ROK	BOR	Overall
5	Earth & Environmental Science	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Life Science: Ecosystems	Strongly Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned	Strongly Aligned
5	Life Science: Structures & Functions of Living Organisms	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Physical Science: Force & Motion	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Physical Science: Matter, Properties & Change	Strongly Aligned	Strongly Aligned	Strongly Aligned	Weakly Aligned	Strongly Aligned
8	Earth & Environmental Science	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Life Science: Ecosystems	Strongly Aligned	Moderately Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Life Science: Structures & Functions of Living Organisms	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Physical Science: Force & Motion	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Physical Science: Matter, Properties & Change	Strongly Aligned	Not Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned
Biology	Life Science: Ecosystems	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
Biology	Life Science: Structures & Functions of Living Organisms	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned

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Section 1. Overview

The North Carolina Department of Public Instruction (NCDPI) annually administers the NCEXTEND1 in mathematics and reading to students with significant cognitive disabilities in grades 3-8, English II, and NC Math 1, and in science to students in grades 5, 8, and Biology. The purpose of the assessment program is to measure students' progress toward mastery of the North Carolina Extended Content Standards and Performance Standards (extended content standards; NCDPI, 2011, 2017). The NCDPI conducted an independent alignment study that examined the degree of alignment between the NCEXTEND1 and the North Carolina Extended Content Standards. EdMetric LLC (EdMetric) served as the external evaluator.

Alignment

The term alignment is often used in education with various definitions. In this study, we examine assessment alignment. This use refers specifically to the connection between the assessment and the extended content standards as operationalized through the test blueprint. We expect that students taking well-aligned assessments are measured on the content standards with the breadth and depth expected by the test blueprints. Provided test blueprints require the exact same range and breadth of content sampling of all test takers, then traditional alignment methodologies work well. The blueprint expectations for the NCEXTEND1 are the same for all students who take the assessment.

Study Purpose

The purpose of the study was to investigate the alignment of the NCEXTEND1 assessments to the breadth and depth of the North Carolina Extended Content Standards and Performance Standards as operationalized by the test blueprint in mathematics, reading, and science.

Document Purpose

The purpose of this document is to provide technical documentation for the alignment study, which included a workshop on February 1-2, 2023. Section 2 describes the methodology and alignment criteria. Section 3 describes the study participants and facilitators, and Section 4 describes the workshop implementation, including a description of the materials and process. Section 5 presents the workshop evaluations. Section 6 presents the results of the workshop. Section 7 discusses the findings and provides recommendations. Section 8 provides evidence from the study that is relevant to the overall NCEXTEND1 validity argument.

Appendices are included to provide supporting documentation for the alignment study. Appendix A provides the design document used to set a course for the study. Appendix B presents the letter used to recruit qualified panelists. The workshop agenda is included as Appendix C. Appendix D provides the training overview matrix and slides. Readiness and process evaluation surveys are provided in Appendix E. Appendix F provides the final evaluation survey. Appendix G defines the levels of the LAL scale (Flowers, et al., 2007). Supporting materials used by workshop panelists are provided in Appendix H. Appendix I provides the detailed alignment results.

Section 2. Methodology Overview

The study examined the alignment of the NCEXTEND1 and the North Carolina extended content standards to evaluate the "appropriateness of test content, the procedures followed in specifying and generating test content ... with reference to ... the construct the test is intended to measure or the domain it is intended to represent" [American Educational Research Association (AERA), American Psychological Association (APA), National Council on Measurement in Education (NCME), 2014, p. 26]. This alignment evaluation of the NCEXTEND1 mathematics, reading, and science assessments used the procedures based on Webb (1997, 1999, 2007) and Flowers and colleagues (2007). Webb (1997) discussed the importance of studying the alignment of the knowledge structures, and even student dispositional expectations, as well as the articulation of content across grade levels and age groups. Webb (2007) prioritized these criteria, calling out (a) categorical concurrence (CC), (b) depth-of-knowledge (DOK) consistency, (c) range-of-knowledge (ROK) correspondence, and (d) balance of knowledge or balance of representation (BOR). In this study, the Links for Academic Learning (LAL) was used to measure DOK given characteristics of the target student population.

Standards

For the purposes of this study, the following nomenclature was applied to describe the levels of the standards used as the units of analysis:

- *Domain* (Level 1, highest level)
  - *Standard* (Level 2, lowest level)

Figure 1 shows a portion of the grade 3-5 science extended standards illustrating the way North Carolina labels the disaggregated extended content standards.

3rd Grade Physical Science Forces and Motion			
Essential Standard		**Essence**	**Extended Essential Standard**
3.P.1 Understand motion and factors that affect motion.		**Understand the factors that affect motion**	**EX.3.P.1 Understand the factors that affect motion.**
Clarifying Objectives	3.P.1.1 Infer changes in speed or direction resulting from forces acting on an object. 3.P.1.2 Compare the relative speeds (faster or slower) of objects that travel the same distance in different amounts of time. 3.P.1.3 Explain the effects of Earth's gravity on the motion of any object on or near the Earth.		**Clarifying Objectives** EX.3.P.1.1 Identify different ways objects move (to include falling to the ground when dropped): • Straight • Up and Down • Fast and slow EX.3.P.1.2 Describe the effect of a push or a pull on the motion of an object (e.g. how far, direction, magnitude). EX.3.P.1.3 Compare objects (e.g., ramps and barriers) that may change the direction or speed of things that are already in motion.

Figure 1. Illustration of the North Carolina Extended Content Standards – Science Grades 3-5, Forces and Motion

Selection of Content

The panel for each grade rated all items. To accomplish the thorough review of all items within the workshop, the items were distributed across sets by content area for the panel grade level(s).

(1) Training Set: Panelists studied 10 items together to practice the concepts introduced in the alignment study (e.g., aligning to a standard).
(2) ELA Set: All remaining Reading items in the panel's grade level(s) were rated individually before the panel discussed their areas of disagreement.
(3) Mathematics Set: All Math items in the panel's grade level(s) were rated individually before the panel discussed their areas of disagreement.
(4) Science Set: All Science items in the panel's grade level(s) were rated individually before the panel discussed their areas of disagreement.

Process and Procedures

The study process and procedures were organized into three steps which covered item identification and item review, and resolution by both EdMetric content experts and North Carolina educators.

Step 1. Identify Items and Determine Initial Codes for Assessment Items and Standards

NCDPI provided one test form for the NCEXTEND1 for all grades and content areas via Sync. EdMetric content experts reviewed all items in the test forms. Specifically, EdMetric content experts:

- Aligned items to North Carolina Extended Content Standards
- Rated the strength of the alignment to the assigned extended content standard
- Assigned secondary alignment when applicable
- Assigned items to an LAL
- Assigned items to an NCEXTEND1 achievement level descriptor (ALD)
- Assigned minimum, maximum, and target LALs to extended content standards

Step 2. Review by North Carolina Stakeholders

Panels of North Carolina educators participated in the in-person workshop and reviewed the alignments made by the EdMetric content experts. The educators participated in group training throughout the workshop. Using EdMetric's Alignment Tool, North Carolina educators:

- Reviewed each item's assigned extended content standard alignment.
- Reviewed the strength of the item's alignment.
- Reviewed each item for secondary alignment.
- Reviewed each item's assigned LAL.
- Reviewed the assigned ALD.

Educators could choose to accept or make changes to all preliminary alignment ratings. At the start of the workshop, EdMetric facilitators provided training on the concepts of alignment. Panelists practiced these concepts with the training items. Panelists then aligned calibration items, followed by an in-depth discussion of those items for which panelists' alignment ratings disagreed. This process was repeated with validation items. Panelists then individually rated the remaining items.

Grade-level Assignments. Items were divided by grade level. Reviewers were instructed to align items at the item's intended grade level (i.e., matched their instructional assignment). If this was not possible, reviewers were allowed to align items at the most appropriate grade level, given their experience and instructional assignments.

Step 3. Review of Ratings with Disagreement

When the majority of panelists disagreed with the initial assignment made by the content expert, the item was further reviewed by the entire panel. In subsequent rounds, panelists discussed all items for which there was significant disagreement. The grade-level facilitator recorded the group's final content standard, LAL, and/or ALD ratings.

Item Set

Once the final alignment was determined by the North Carolina educators, the item set was limited to those items found to be aligned to on-grade standards. (See Tables 24, 33, and 42 in Section 6 for item counts.)

Evaluation Criteria

Evaluation criteria addresses agreement rates, categorical concurrence, LAL, ROK, and BOR in order to more fully evaluate the adequacy of alignment between the NCEXTEND1 assessments and the North Carolina Extended Content Standards, as operationalized by the test blueprints. In this section, we review categorical concurrence, LAL, ROK, and BOR, providing the evaluation criteria that was used for judging relative alignments. Analyses were conducted on each test form.

Agreement Rates

The agreement rate refers to the similarity of ratings between two groups. In this study, we are particularly interested in the agreement rates between the North Carolina educators' final alignment ratings and the items' metadata. Following guidance from Graham, Milanowski, and Miller (2012), we used 75% as the cut off for acceptable agreement.

Categorical Concurrence

Categorical concurrence refers to how similar and consistent content is between the extended content standards and the assessment. Reviewers' alignment judgments were used to establish the number of items assigned to a domain. To analyze this, the assessment was evaluated for alignment in terms of its blueprint. To do so, the percentage of items assigned to each domain was compared to the assessment blueprint, as described in Table 4 (which shows the evaluation rules for categorical concurrence).

Table 4: Categorical Concurrence Evaluation Rules

Difference between expected (blueprint) percent of items aligned to blueprint domain and actual percent aligned to a blueprint domain	Evaluation
within 5% of minimum or maximum percentage expected by blueprint	Strongly Aligned
>5% and ≤10% of minimum or maximum percentage expected by blueprint of blueprint expectations	Moderately Aligned
>10% and ≤15% of minimum or maximum percentage expected by blueprint of blueprint expectations	Weakly Aligned
>15% of minimum or maximum percentage expected by blueprint of blueprint expectations	Minimal to no Alignment

Links for Academic Learning

With the LAL assignment, the reviewers investigated the complexity of the items. The items on the assessment should have the same cognitive rigor as that expected by the standards. For this evaluation, criteria recommended by Flower and colleagues (2007) were employed (see Table 5).

For this evaluation, criteria established the percentage of items at or above the expected complexity level (Flowers, et al., 2007) and then applied modified Webb's (1997, 1999) approach for the alignment evaluation. This approach ensures that alignment reflects the need for the student population to have opportunity to engage in terms of cognitive demands of items within the pool. In addition, we examined results in terms of percentage at or above to ensure that items represent cognitive rigor expected by grade-level content standards.

Each standard was assigned an LAL level by content experts. Each item was assigned to both a standard and an LAL. (Note that the LAL-to-item assignment is independent of the LAL of the standard.) Once data were collected, EdMetric examined the LAL consistency of the items to the standards within each domain.

Table 5: LAL Evaluation Rules

Percentage of items corresponding to a Standard at or below the target level the complexity level (e.g., LAL) of the Standard	Evaluation
≥50% of the items correspond to a Standard at or below the target level of complexity	Strongly Aligned
≥40% and <50% of the items correspond to a Standard at or below the target level of complexity	Moderately Aligned
≥30% and <40% of the items correspond to a Standard at or below the target level of complexity	Weakly Aligned

Percentage of items corresponding to a Standard at or below the target level the complexity level (e.g., LAL) of the Standard	Evaluation
<30% of the items correspond to a Standard at or below the target level of complexity	No Alignment

Note that we also report the percent of items at or above the target level of complexity to describe the rigor of the assessment; however, these results are not used to evaluate alignment, given the characteristics of the target student population.

Range of Knowledge

The range of knowledge (ROK) examines the extent to which the items cover the standards (Webb, 1997). This serves as a measure of the enacted blueprint relative to the intended blueprint. Table 6 summarizes the rules used to evaluate ROK alignment.

Table 6: ROK Evaluation Rules

Percentage of Standards for a given Domain that have an associated item	Evaluation
≥50% of the Domain's Standards have an associated item	Strongly Aligned
≥40% and <50% of the Domain's Standards have an associated item	Moderately Aligned
≥30% and <40% of the Domain's Standards have an associated item	Weakly Aligned
<30% of the Domain's Standards have an associated item	No Alignment

Balance of Representation

Balance of representation (BOR) is a measure of how items are distributed across the standards. This alignment criterion examines whether the number of test items matched to a domain is proportional to the number of standards within that domain. For this, an index score was computed for each domain (Webb, 1999). The BOR was computed as:

$$BoR = 1 - \left(\frac{\left(\sum \left| \frac{1}{B} - \frac{I_K}{H} \right| \right)}{2} \right)$$

where B is the total number of standards within the reporting category, I_K is the number of items aligned to each extended standard (K) within a reporting category, and H is the total number of items aligned to the reporting category. Table 7 shows the rules used to evaluate BOR.

Table 7: BOR Evaluation Rules

BOR Index	Evaluation
≥0.70	Strongly Aligned

BOR Index	Evaluation
≥0.60 and <0.70	Moderately Aligned
≥0.50 and <0.60	Weakly Aligned
<0.50	No Alignment

Overall Alignment

To find the overall alignment, the reported alignment strength for each criterion was summarized to provide meaningful, relative interpretive guidance: strong alignment was assigned a score of 4, moderate alignment a score of 3, weak alignment a score of 1, and no alignment a score of 0. Once averaged across evaluation categories (categorical concurrence, LAL, ROK, and BOR), the scores were rounded to the nearest whole number.

Section 3. Roles and Responsibilities

The two-day alignment workshop required North Carolina stakeholders to align NCEXTEND1 items to the North Carolina Extended Content Standards. The stakeholders were divided into grade-band groups panels (grades 3-4, 5-6, 7-8 and high school). Each panel was composed of five panelists, except for high school where four panelists had committed and one panelist dropped out on the first day of the workshop, leaving three panelists for the high school panel. A total of 18 panelists attended the workshop. Each panel evaluated all items from their grade band.

Workshop Panelists

The NCDPI recruited five educators per panel; however, 18 panelists attended the workshop (see Appendix B for the recruitment letter). Despite repeated efforts to recruit North Carolina educators, the final group sizes were not as large as originally intended. Considerations in the selection of panelists included grade-level teaching experience, content area experience, and experience with special populations. Additionally, panelists were chosen to be representative of the regions of North Carolina and the different types of school districts within the state. The panelists had a median of 11 years of experience and a median of 10 years of experience in North Carolina schools.

The following tables are based on information collected in the workshop's final evaluation. Not all panelists completed the final evaluation. Table 8 shows the distribution of panelists by district type. Table 9 shows the distribution of panelists by job title. Table 10 shows the distribution of panelists by types of experience they reported (panelists could choose more than one type of experience so the percentages will not total to 100). Table 11 shows the distribution of panelists by gender. Table 12 shows the distribution of panelists by race, and Table 13 shows the distribution of panelists self-reporting as Hispanic or not.

Table 8: Panelists' Self-Reported District Type

District Type (n-count = 18)	Percentage
Rural	33.33%
Suburban	27.78%

District Type (n-count = 18)	Percentage
Urban	33.33%
Town	5.56%

Table 9: Panelists' Self-Reported Job Title

Job Title (n-count = 18)	Percentage
General Education Classroom Teacher	22.22%
Special Education Classroom Teacher	44.44%
Building Administrator	11.11%
Curriculum Specialist	11.11%
Non-classroom Teacher	11.11%

Table 10: Panelists' Self-Reported Types of Teaching Experiences

Types of Experience (n-count = 18)	Percentage
ELA Instruction	61.11%
Mathematics Instruction	72.22%
Science Instruction	38.89%
Instruction of Students with Significant Cognitive Disabilities	55.56%
Instruction of English Learners	61.11%
Instruction of English Learners with Disabilities	44.44%
Reading or Literacy Intervention/Support	38.89%

Table 11: Panelists' Self-Reported Gender

Gender (n-count = 18)	Percentage
Female	88.89%
Male	11.11%

Table 12: Panelists' Self-Reported Race

Race (n-count = 18)	Percentage
American Indian or Alaska Native	5.56%
Asian	11.11%
Black or African-American	22.22%
Multiple Races	0.00%
White or Caucasian	61.11%

Table 13: Panelists' Self-Reported Ethnicity

Hispanic (n-count = 18)	Percentage
No	100.00%
Yes	0.00%

North Carolina Department of Public Instruction Staff

Elizabeth Nash from the NCDPI welcomed panelists during the opening session of the workshop. She introduced the NCDPI team and covered item development slides. Also representing NCDPI, Iris Irving and Stephanie Boyd observed the opening session, and Dan Auman and Michael Mahoney observed the full workshop. They were available throughout the workshop to answer policy-related questions. Finally, Dr. Kinge Mbella, Lead Psychometrician, and Dr. Thakur Karkee, Psychometrician attended the workshop.

Workshop Facilitators

The alignment workshop was facilitated by the EdMetric team. Table 14 provides the names and affiliations of the expert content reviewers and facilitators for the NCEXTEND1 alignment workshop.

Table 14: Facilitators for the North Carolina Alignment Workshop

Name	Role	Bio
Anne Davidson, Ed.D	Lead Facilitator	Anne Davidson, Ed.D., Senior Associate with EdMetric, has 26 years' experience in education, including more than 15 years of work in applied psychometrics and high-stakes assessment. She has spent the most recent years of her career providing technical leadership and support on diverse large-scale academic assessment projects, including alternate assessments of alternate achievement standards (AA-AAS), English language proficiency tests, preK-12 general education academic assessments, and licensure/certification programs.
Stanley Rabinowitz, Ph.D	Co-lead Facilitator	Dr. Rabinowitz, Senior Technical Advisor for EdMetric, has over three decades of experience successfully managing high profile, high stakes statewide assessment and accountability studies. He has consulted extensively on standards, assessment and school/educator accountability issues with researchers, policymakers and assessment staff at national, state and district levels in the USA and internationally. Dr. Rabinowitz has written and delivered

Name	Role	Bio
		hundreds of articles and presentations for a variety of audiences including numerous State Boards of Education, legislatures, SEA and LEA staff, Technical Advisory Committees (TACS), parents, and state associations and stakeholders.
Susan Schepp	Facilitator	Susan Schepp received a M.S. degree in Elementary Education from Nazareth College and is a permanently certified teacher in the state of New York. She was a classroom teacher for 20 years teaching all subjects mainly at the fifth and six grade level. She also helped create science curriculum for grade 6-8 grade. Ms. Schepp worked in self-contained classrooms for children with cognitive and/or physical disabilities. She currently serves as a trainer and scorer of New State Exams. With EdMetric, Ms. Schepp routinely contributes to alignment studies, both in aligning items to state standards and evaluating the cognitive rigor of the items using the DOK and LAL scales for alternative assessments, as well as facilitating alignment study workshops with teachers from various states around the U.S.

Section 4. Workshop Implementation

This section details the implementation of the alignment workshop. See Appendix C for the workshop agenda, and Appendix D for a summary of the training materials and slides.

Moodle Site

EdMetric utilized a Moodle site for all workshop panelists that served as a centralized browser-based location for all workshop materials and tools. This site allowed EdMetric to confine logins to workshop hours. It also allowed each panelist to maintain a separate login.

Non-disclosure Forms

Panelists signed non-disclosure forms when they arrived at the workshop.

Panel Assignments

Panelists were assigned to grade spans appropriate to their expertise: grades 3 and 4, grades 5 and 6, grades 7 and 8, or high school. Each panel reviewed one NCEXTEND1 form per each of the three content areas, with the exception of the grades 3 and 4 group which did have science to review. All ELA forms were 24 items in length, mathematics forms were 27 or 28 items in length, and science forms were 25 items in length.

Workshop

The workshop began with a general opening session and training provided Dr. Anne Davidson with support from Dr. Stanley Rabinowitz and Ms. Susan Schepp.

Day 1: Opening Session and Training

During the 30-minute opening session, a member of the NCDPI staff welcomed panelists, thanked them for their time and participation, and provided an overview of the assessment. Dr. Davidson then provided an overview of what is meant by alignment and a preview of the work to come during the day and the week. Dr. Davidson provided in-depth training on how to align items to content standards, how to interpret LAL, and the decision rules that should guide their work. There were six decision rules that were set to guide panelist work:

1. Choose the standard first.
2. Full alignment means the item captures most of the meaning of the standard while partial alignment means the item captures a significant part but not all of the standard.
3. Start with on-grade standard alignments before moving to off-grade alignments. Only choose no alignment when no standard can be found that relates to the item.
4. Choose the highest LAL level demanded by the item.
5. Choose a secondary standard only if an alternative alignment can be made, an off-grade alignment has been made, or a secondary standard is necessary to cover a critical part of the standard.
6. Choose the ALD that best matches the student's proficiency of they answer the item correctly.

Day 1: Grade-Span Breakout Groups

Following training, panelists began with the training set of 10 items. Following the training set, EdMetric administered a readiness survey to ensure panelists were ready to begin the

work of the alignment study. The readiness survey is included in Appendix E. The results of the readiness survey are reported in Section 5.

Once the training sets were completed, panelists rated the remaining items for the first content area, ELA. The panelists discussed items for which fewer than 50% of panelists agreed with each other. Counts of items that were discussed are presented in Table 15, Table 16, and Table 17.

Panelists transitioned to independent item rating for the second content area, mathematics, before the end of Day 1.

Day 2: Grade-Span Breakout Groups

Day 2 began with a review of Day 1 and the agenda for the day. The groups completed their individual item rating for mathematics. Then they moved into the final item set for science, if applicable. All groups completed their work before 3:00 pm.

Rating Rounds

Tables 15, 16, and 17 shows the number of items at each grade that were flagged for discussion because of a disagreement between the initial ratings of the content experts and the ratings of the majority of the panelists for mathematics, reading, and science, respectively. Panelists continued to discuss items until the majority agreed on the rating.

Table 15: Number of Items Flagged for Discussion by Grade, Mathematics

Grade/Course	Number of Items Discussed
3	10
4	11
5	10
6	9
7	7
8	7
NC Math 1	7

Table 16: Number of Items Flagged for Discussion by Grade, Reading

Grade/Course	Number of Items Discussed
3	10
4	7
5	14
6	6

Grade/Course	Number of Items Discussed
7	3
8	5
English II	12

Table 17: Number of Items Flagged for Discussion by Grade, Science

Grade/Course	Number of Items Discussed
5	14
8	9
Biology	14

Table 18 reports the agreement rates between final panelist alignments and the NCDPI metadata. We examined exact agreement rates and agreement rates at the domain level. In this table, we show the percentage of exact agreement between the raters and the metadata. We also looked at the agreement at the domain level. In mathematics and science, the exact agreement exceeded the 75% cut off. In reading, grades 3 and 6 exceeded the 75% cut off. In reading, all grades exceeded the 75% cut off when we examined the data at the domain level, except for grade 5. For reading, NCDPI may want to examine the panelists' recommendations with the original metadata to see if any changes are needed.

Table 18: Agreement Rates between Final Panelist Ratings and Vendor Metadata

Content Area	Grade/Course	Number of Items	Exact Match	Standard Match
Mathematics	3	27	88.89%	100.00%
	4	27	85.19%	96.30%
	5	27	96.30%	96.30%
	6	27	96.30%	100.00%
	7	27	92.59%	96.30%
	8	27	100.00%	100.00%
	NC Math 1	28	82.14%	82.14%
Reading	3	24	75.00%	91.67%
	4	24	66.67%	91.67%
	5	24	62.50%	70.83%
	6	24	75.00%	95.83%

Content Area	Grade/Course	Number of Items	Exact Match	Standard Match
	7	24	50.00%	83.33%
	8	24	70.83%	79.17%
	English II	24	58.33%	79.17%
Science	5	25	76.00%	96.00%
	8	25	84.00%	100.00%
	Biology	25	96.00%	100.00%

Table 19 reports the agreement rate between the panelists and the EdMetric experts. Panelists were asked if there was any portion of the alignment that they would change. The initial agreement rate reflects the percentage of times the panelists agreed with all of the EdMetric content expert's alignments (i.e., content standard, LAL, secondary standard, alignment strength, and ALD). These agreement rates are based on all panelists in the group, prior to any discussion about items. There were no expectations regarding agreement between the panelists and the EdMetric experts. The percentages in Table 19 are based on all panelists within a grade group. The initial agreements ranged from almost 42% in grade 5 reading to nearly 76% in grade 7 reading.

Table 19: Initial Agreement Rate with Content Experts

Content Area	Grade/Course	Number of Items	Initial Agreement
Mathematics	3	27	65.19%
	4	27	52.59%
	5	27	60.00%
	6	27	62.22%
	7	27	66.67%
	8	27	68.89%
	NC Math 1	28	70.24%
Reading	3	24	49.17%
	4	24	66.67%
	5	24	41.67%
	6	24	70.83%
	7	24	75.83%
	8	24	65.83%
	English II	24	45.83%

Content Area	Grade/Course	Number of Items	Initial Agreement
Science	5	25	43.20%
	8	25	59.20%
	Biology	25	49.33%

The agreement rates between the final alignments of North Carolina educators and the EdMetric content experts are reported in Table 20. These agreement rates are based only on the final assigned alignments, so this looks at the agreement rates of item-level assignments. These are the agreement rates for all items, including those used in the training, calibration, validation, and individual item sets. After training, calibration, validation, and discussion, the final panelist alignments tended to agree with the EdMetric content experts on the primary and secondary aligned standard, alignment strength, LAL, and ALD.

Table 20: Final Agreement Rates by Grade Level and Content Area

Content Area	Grade/ Course	N Items	Std. Grade	Standard	Alignment Strength	LAL	Second Standard	ALD	Overall
Mathematics	3	27	100.00%	100.00%	100.00%	88.89%	100.00%	66.67%	92.59%
	4	27	100.00%	100.00%	92.59%	81.48%	100.00%	59.26%	88.89%
	5	27	96.30%	96.30%	88.89%	77.78%	100.00%	77.78%	89.51%
	6	27	100.00%	100.00%	96.30%	85.19%	100.00%	74.07%	92.59%
	7	27	100.00%	96.30%	96.30%	88.89%	100.00%	88.89%	95.06%
	8	27	100.00%	100.00%	100.00%	81.48%	100.00%	77.78%	93.21%
	NC Math 1	28	100.00%	100.00%	100.00%	82.14%	92.86%	60.71%	89.29%
Reading	3	24	100.00%	87.50%	79.17%	62.50%	100.00%	87.50%	86.11%
	4	24	100.00%	100.00%	87.50%	70.83%	100.00%	95.83%	92.36%
	5	24	91.67%	83.33%	75.00%	79.17%	100.00%	75.00%	84.03%
	6	24	95.83%	95.83%	83.33%	83.33%	95.83%	87.50%	90.28%
	7	24	91.67%	91.67%	95.83%	95.83%	100.00%	95.83%	95.14%
	8	24	100.00%	100.00%	87.50%	75.00%	100.00%	83.33%	90.97%
	English II	24	100.00%	87.50%	79.17%	70.83%	83.33%	95.83%	86.11%
Science	5	25	88.00%	88.00%	80.00%	76.00%	96.00%	68.00%	85.14%
	8	25	80.00%	76.00%	88.00%	56.00%	100.00%	80.00%	80.57%
	Biology	25	100.00%	80.00%	72.00%	72.00%	72.00%	96.00%	84.57%

Section 5. Evaluations

In order to ensure that all panelists were prepared to continue with the alignment rating process, readiness and process evaluations were administered.

Readiness Survey

Following the initial training, panelists took a short readiness survey designed to determine whether or not they felt prepared to begin working with items in the calibration round. If a panelist's responses indicated a lack of preparation, then EdMetric's lead facilitator met with that panelist to address any issues or concerns before the panel moved on with independent ratings. The readiness survey can be found in Appendix E.

Table 21 shows the results of the readiness survey. Overall, panelists indicated that they understood the process and their role within the process. Dr. Davidson or Dr. Rabinowitz met with panelists who had additional questions before continuing training to clarify and provide additional training, as needed. EdMetric staff worked with NCDPI staff to provide timely responses and maintain open communication.

Table 21: Results from Readiness Survey

Item (n-count = 17)	Strongly Agree	Agree	Disagree	Strongly Disagree
I understand what Links for Academic Learning (LAL) means.	47.06%	52.94%	0.00%	0.00%
The training session provided me a clear overview of the alignment process.	64.71%	35.29%	0.00%	0.00%
I understand the goals of the alignment study workshop.	64.71%	35.29%	0.00%	0.00%
I understand my role in the workshop.	70.59%	29.41%	0.00%	0.00%
I understand how to rate the items on the online worksheet.	29.41%	70.59%	0.00%	0.00%
I understand how I will (1) rate the items independently and (2) work with my panel to resolve different ratings.	52.94%	47.06%	0.00%	0.00%
I understand the purpose of each type of rating.	29.41%	70.59%	0.00%	0.00%
The training round was helpful to me.	88.24%	11.76%	0.00%	0.00%
I understand that I will receive additional training throughout the workshop.	70.59%	29.41%	0.00%	0.00%
Before I begin working independently, I would like additional	5.88%	94.12%	0.00%	0.00%

Item (n-count = 17)	Strongly Agree	Agree	Disagree	Strongly Disagree
training and/or to ask additional questions regarding the alignment process.				

Final Evaluation

At the conclusion of the workshop, panelists completed a final evaluation (Appendix F). The results of the final evaluation are presented in Table 22. Overall, panelists agreed that they had received adequate training and that they understood how to make their ratings. In addition, all panelists indicated that they could defend their alignments.

Table 22: Results from the Final Evaluation

Item (n-count = 18)	Strongly Agree	Agree	Disagree	Strongly Disagree
The workshop training and practice prepared me for the assigned tasks.	88.9%	11.1%	0.00%	0.00%
I understand the purpose of discussing the items where my panel disagreed.	88.9%	11.1%	0.00%	0.00%
I understand the purpose of the Calibration Set.	83.3%	16.7%	0.00%	0.00%
I understand the purpose of the Validation Set (if applicable).	83.3%	16.7%	0.00%	0.00%
I rated my items independently.	88.9%	11.1%	0.00%	0.00%
I believe that others listened to my opinions during our discussion of alignment ratings.	94.4%	5.6%	0.00%	0.00%
I understood my role in the workshop.	77.8%	22.2%	0.00%	0.00%
I understood how to make alignment decisions.	72.2%	27.8%	0.00%	0.00%
I understood how to assign DOK (EOG/EOC) or LAL (NCEXTEND1) levels.	72.2%	27.8%	0.00%	0.00%
I understood how to make alignment strength decisions (i.e., full, partial).	83.3%	16.7%	0.00%	0.00%
I understood how to make ALD alignment decisions.	88.9%	11.1%	0.00%	0.00%

Item (n-count = 18)	Strongly Agree	Agree	Disagree	Strongly Disagree
I had enough time to rate all of the items assigned to me.	88.9%	11.1%	0.00%	0.00%
I can defend why I aligned each item as I did.	88.9%	11.1%	0.00%	0.00%
I understood how to use the Workshop Website on Moodle and the linked materials.	94.4%	5.6%	0.00%	0.00%
I felt the group discussion was meaningful.	88.9%	11.1%	0.00%	0.00%
Participating in the workshop increased my understanding of the assessment I worked on.	83.3%	16.7%	0.00%	0.00%
Participating in the workshop increased my understanding of the content standards.	83.3%	16.7%	0.00%	0.00%
The work space was appropriate to facilitate our work.	83.3%	16.7%	0.00%	0.00%
The workshop's organization made sense to me.	88.9%	11.1%	0.00%	0.00%

As part of the final evaluation, panelists were offered the opportunity to provide qualitative feedback regarding the alignment study workshop (Table 23). In general, the comments indicated that panelists appreciated the workshop.

Table 23: Qualitative Feedback from Final Evaluation

Our group was excellent with open communication and rationality
Thank you!
I am so happy that I was invited to join this workshop. I met a lot of very knowledgeable teachers and learned a lot of inputs. Thank you so much.
I enjoyed the experience
N/A. Enjoyed it. Would love to come back. - Panel 2, EXT 5/6
I enjoyed this study. Thank you for the opportunity to participate.
Please spread the tables out a little more so that we can hear ourselves over other groups that are discussing.
Excellent !!!
Appreciate the opportunity to be part of this.
Great experience! :)

Our group was excellent with open communication and rationality
I think the item set tools should be split into individual grade levels. Our group had 7th and 8th and it felt overwhelming to do both grade levels in one chunk for ELA and Math. I would have preferred to do 7th and discuss and then move onto 8th. The alternative would be to give them in a way that saves as you go.

Section 6. Results

Data from the North Carolina educators' final alignment ratings was used to conduct analyses on the NCEXTEND1 assessments. Data was evaluated for each form by grade level and content area. This section presents the results of these analyses.

Mathematics Analyses

Table 24 presents the item-level analysis by content area. The table presents two pieces of information. First, it reports the percentage of items aligned to a North Carolina Extended Content Standard from any grade level. Secondly, the table presents the percentage of items aligned to a North Carolina Extended Content Standard at the item's intended grade level.

Table 24 demonstrates that NCEXTEND1 items were well aligned to the North Carolina Extended Content Standards. For the remainder of this report, only items aligned to a North Carolina Extended Content Standard at the item's intended grade level are included in computations.

At least 96% of items were aligned to any extended content standard and at the intended grade level.

Table 24: Percentage of Items Aligned to any Standard and to an On-Grade Standard, Mathematics

Grade/ Course	N of Original Item Set	% Aligned to Any Standard	% Aligned Items Matched to On-Grade Standard
3	27	100.00%	100.00%
4	27	100.00%	100.00%
5	27	96.30%	96.30%
6	27	100.00%	100.00%
7	27	100.00%	100.00%
8	27	100.00%	100.00%
NC Math 1	28	100.00%	100.00%

Table 25 shows the distribution of items by alignment strength. The majority of items were fully aligned. The percentage of fully aligned items ranged from nearly 85% in grade 4 to 100% in grade 8.

Table 25: Percentage of Items by Alignment Strength for Mathematics

Grade/Course	Number of Items	Full	Partial
3	27	92.59%	7.41%
4	27	85.19%	14.81%

Grade/Course	Number of Items	Full	Partial
5	27	92.31%	7.69%
6	27	92.59%	7.41%
7	27	96.30%	3.70%
8	27	100.00%	0.00%
NC Math 1	28	96.43%	3.57%

Distribution of ALD Levels

Table 26 shows the distribution of ALDs for each grade level in the item bank. The ALD assignments are based on how panelists aligned ALDs, not on actual item difficulty. Level 3 was the most frequently assigned achievement level in grades 3, 4, and 6 while Level 4 was the most frequently assigned achievement level in grades 5, 7, 8, and high school.

Table 26: ALD Distribution, Mathematics

Grade/Course	Number of Items	Not Proficient	Level 3	Level 4
3	27	3.70%	77.78%	18.52%
4	27	3.70%	55.56%	40.74%
5	27	18.52%	33.33%	48.15%
6	27	18.52%	44.44%	37.04%
7	27	11.11%	33.33%	55.56%
8	27	7.41%	29.63%	62.96%
NC Math 1	28	21.43%	35.71%	42.86%

Categorical Concurrence

Table 27 reports the alignment evaluation of categorical concurrence for mathematics. Table 27 shows that all domains are strongly aligned across all grades.

Table 27: Categorical Concurrence, Mathematics

Grade/ Course	Domain	Number of Items	Expected Percent	% Items Aligned to Standard	Alignment Evaluation
3	Measurement & Data, Geometry	10	34-37%	37.04%	Strongly Aligned

Grade/ Course	Domain	Number of Items	Expected Percent	% Items Aligned to Standard	Alignment Evaluation
3	Numbers & Operations - Fractions	4	15-19%	14.81%	Strongly Aligned
3	Numbers & Operations in Base Ten	6	22-26%	22.22%	Strongly Aligned
3	Operations & Algebraic Thinking	7	26-30%	25.93%	Strongly Aligned
4	Geometry	7	19-23%	25.93%	Strongly Aligned
4	Measurement & Data	3	15-19%	11.11%	Strongly Aligned
4	Numbers & Operations - Fractions	4	15-19%	14.81%	Strongly Aligned
4	Numbers & Operations in Base Ten	6	19-23%	22.22%	Strongly Aligned
4	Operations & Algebraic Thinking	6	26-30%	25.93%	Strongly Aligned
5	Geometry	5	19-23%	19.23%	Strongly Aligned
5	Measurement & Data	4	15-19%	15.38%	Strongly Aligned
5	Numbers & Operations - Fractions	3	11-15%	11.54%	Strongly Aligned
5	Numbers & Operations in Base Ten	11	41-45%	42.31%	Strongly Aligned
5	Operations & Algebraic Thinking	3	11-15%	11.54%	Strongly Aligned
6	Expressions & Equations	6	19-23%	22.22%	Strongly Aligned
6	Geometry	4	15-19%	14.81%	Strongly Aligned
6	Ratios & Proportional Relationships	5	15-19%	18.52%	Strongly Aligned

Grade/ Course	Domain	Number of Items	Expected Percent	% Items Aligned to Standard	Alignment Evaluation
6	Statistics & Probability	4	15-19%	14.81%	Strongly Aligned
6	The Number System	8	26-30%	29.63%	Strongly Aligned
7	Expressions & Equations	5	15-19%	18.52%	Strongly Aligned
7	Geometry	8	30-34%	29.63%	Strongly Aligned
7	Ratios & Proportional Relationships	3	11-15%	11.11%	Strongly Aligned
7	Statistics & Probability	6	19-23%	22.22%	Strongly Aligned
7	The Number System	5	19-23%	18.52%	Strongly Aligned
8	Expressions & Equations	7	26-30%	25.93%	Strongly Aligned
8	Functions	6	15-19%	22.22%	Strongly Aligned
8	Geometry	6	18-22%	22.22%	Strongly Aligned
8	Statistics & Probability	3	11-15%	11.11%	Strongly Aligned
8	The Number System	5	15-19%	18.52%	Strongly Aligned
NC Math 1	Functions	11	29-33%	39.29%	Moderately Aligned
NC Math 1	Geometry	2	11-15%	7.14%	Strongly Aligned
NC Math 1	Statistics & Probability	4	18-22%	14.29%	Strongly Aligned
NC Math 1	The Real Number System & Algebra	11	39-43%	39.29%	Strongly Aligned

Links for Academic Learning (LAL)

Table 28 reports the LAL distribution of the item bank. This table shows that the assignment of LAL to item tended to shift up as the grade level increase. For example, the majority of

grade 3 items were aligned to LAL 2 and 3. By grade 8, almost 80% of items were aligned to LAL 5 and 6. It is interesting to note that this trend is not apparent in high school.

Table 28: Distribution of LAL, Mathematics

Grade/ Course	Number of Items	1	2	3	4	5	6
3	27	0.00%	29.63%	40.74%	11.11%	7.41%	11.11%
4	27	0.00%	33.33%	18.52%	14.81%	22.22%	11.11%
5	27	0.00%	15.38%	11.54%	34.62%	11.54%	26.92%
6	27	0.00%	0.00%	18.52%	33.33%	14.81%	33.33%
7	27	0.00%	11.11%	0.00%	18.52%	55.56%	14.81%
8	27	0.00%	11.11%	0.00%	11.11%	40.74%	37.04%
NC Math 1	28	0.00%	17.86%	25.00%	7.14%	42.86%	7.14%

Table 29 reports the alignment evaluation of LAL of the items by Domain. Across the grade levels, the domains were strongly or moderately aligned with a few exceptions: grade 4 Measurement and Data was weakly aligned, grade 5 Number and Operations - Fractions was not aligned, grade 6 Statistics and Probability was not aligned, grade 6 The Number System was weakly aligned, and grade 8 Functions was weakly aligned.

Table 29: LAL Depth of Knowledge, Mathematics

Grade/ Course	Domain	Number of Items	Range of LAL	% Items Aligned At or Below the Indicator's Target LAL	Alignment Evaluation	% Items Aligned At or Above the Indicator's Target LAL
3	Measurement & Data, Geometry	10	2-4	70.00%	Strongly Aligned	100.00%
3	Numbers & Operations - Fractions	4	3-3	100.00%	Strongly Aligned	0.00%
3	Numbers & Operations in Base Ten	6	3-5	100.00%	Strongly Aligned	100.00%
3	Operations & Algebraic Thinking	7	5-5	57.14%	Strongly Aligned	42.86%
4	Geometry	7	2-3	71.43%	Strongly Aligned	71.43%

Grade/ Course	Domain	Number of Items	Range of LAL	% Items Aligned At or Below the Indicator's Target LAL	Alignment Evaluation	% Items Aligned At or Above the Indicator's Target LAL
4	Measurement & Data	3	2-3	33.33%	Weakly Aligned	100.00%
4	Numbers & Operations - Fractions	4	2-3	100.00%	Strongly Aligned	100.00%
4	Numbers & Operations in Base Ten	6	3-5	100.00%	Strongly Aligned	50.00%
4	Operations & Algebraic Thinking	6	5-6	100.00%	Strongly Aligned	66.67%
5	Geometry	5	2-5	80.00%	Strongly Aligned	20.00%
5	Measurement & Data	4	3-5	50.00%	Strongly Aligned	50.00%
5	Numbers & Operations - Fractions	3	2-2	0.00%	Not Aligned	100.00%
5	Numbers & Operations in Base Ten	11	3-6	81.82%	Strongly Aligned	63.64%
5	Operations & Algebraic Thinking	3	6-6	100.00%	Strongly Aligned	100.00%
6	Expressions & Equations	6	5-5	66.67%	Strongly Aligned	66.67%
6	Geometry	4	5-5	100.00%	Strongly Aligned	25.00%
6	Ratios & Proportional Relationships	5	5-5	80.00%	Strongly Aligned	20.00%
6	Statistics & Probability	4	4-4	25.00%	Not Aligned	100.00%
6	The Number System	8	3-6	37.50%	Weakly Aligned	87.50%
7	Expressions & Equations	5	5-5	80.00%	Strongly Aligned	100.00%

Grade/ Course	Domain	Number of Items	Range of LAL	% Items Aligned At or Below the Indicator's Target LAL	Alignment Evaluation	% Items Aligned At or Above the Indicator's Target LAL
7	Geometry	8	2-5	100.00%	Strongly Aligned	100.00%
7	Ratios & Proportional Relationships	3	5-5	100.00%	Strongly Aligned	0.00%
7	Statistics & Probability	6	4-6	83.33%	Strongly Aligned	100.00%
7	The Number System	5	5-5	100.00%	Strongly Aligned	100.00%
8	Expressions & Equations	7	4-5	85.71%	Strongly Aligned	85.71%
8	Functions	6	4-5	33.33%	Weakly Aligned	100.00%
8	Geometry	6	2-6	100.00%	Strongly Aligned	66.67%
8	Statistics & Probability	3	6-6	100.00%	Strongly Aligned	75.00%
8	The Number System	5	5-5	60.00%	Strongly Aligned	100.00%
NC Math 1	Functions	11	5-6	90.91%	Strongly Aligned	33.33%
NC Math 1	Geometry	2	5-6	100.00%	Strongly Aligned	0.00%
NC Math 1	Statistics & Probability	4	4-6	100.00%	Strongly Aligned	25.00%
NC Math 1	The Real Number System & Algebra	11	5-6	100.00%	Strongly Aligned	72.73%

Range of Knowledge (ROK)

Table 30 reports the alignment evaluation of ROK of the item bank. Across the grade levels and reporting categories, ROK indicated strong alignment.

Table 30: Range of Knowledge, Mathematics

Grade/Course	Domain	Number of Items	% Indicators Represented by One or More Item	Alignment Evaluation
3	Measurement & Data, Geometry	5	100.00%	Strongly Aligned
3	Numbers & Operations - Fractions	1	100.00%	Strongly Aligned
3	Numbers & Operations in Base Ten	2	50.00%	Strongly Aligned
3	Operations & Algebraic Thinking	2	100.00%	Strongly Aligned
4	Geometry	3	100.00%	Strongly Aligned
4	Measurement & Data	3	66.67%	Strongly Aligned
4	Numbers & Operations - Fractions	2	100.00%	Strongly Aligned
4	Numbers & Operations in Base Ten	3	100.00%	Strongly Aligned
4	Operations & Algebraic Thinking	4	100.00%	Strongly Aligned
5	Geometry	2	100.00%	Strongly Aligned
5	Measurement & Data	3	100.00%	Strongly Aligned
5	Numbers & Operations - Fractions	1	100.00%	Strongly Aligned
5	Numbers & Operations in Base Ten	4	100.00%	Strongly Aligned
5	Operations & Algebraic Thinking	1	100.00%	Strongly Aligned
6	Expressions & Equations	3	100.00%	Strongly Aligned
6	Geometry	2	100.00%	Strongly Aligned
6	Ratios & Proportional Relationships	2	100.00%	Strongly Aligned
6	Statistics & Probability	2	100.00%	Strongly Aligned

Grade/Course	Domain	Number of Items	% Indicators Represented by One or More Item	Alignment Evaluation
6	The Number System	4	100.00%	Strongly Aligned
7	Expressions & Equations	3	100.00%	Strongly Aligned
7	Geometry	5	100.00%	Strongly Aligned
7	Ratios & Proportional Relationships	1	100.00%	Strongly Aligned
7	Statistics & Probability	3	100.00%	Strongly Aligned
7	The Number System	3	100.00%	Strongly Aligned
8	Expressions & Equations	3	100.00%	Strongly Aligned
8	Functions	3	100.00%	Strongly Aligned
8	Geometry	4	100.00%	Strongly Aligned
8	Statistics & Probability	1	100.00%	Strongly Aligned
8	The Number System	2	100.00%	Strongly Aligned
NC Math 1	Functions	7	100.00%	Strongly Aligned
NC Math 1	Geometry	3	66.67%	Strongly Aligned
NC Math 1	Statistics & Probability	3	100.00%	Strongly Aligned
NC Math 1	The Real Number System & Algebra	7	85.71%	Strongly Aligned

Balance of Representation (BOR)

Table 31 reports the alignment evaluation of BOR of the item bank. Across the grade levels and reporting categories, BOR indicated strong or moderately alignment, except grade 3 Number and Operations in Base Ten which was weakly aligned.

Table 31: Balance of Representation, Mathematics

Grade/Course	Domain	Number of Items	BOR	Alignment Evaluation
3	Measurement & Data, Geometry	10	0.90	Strongly Aligned
3	Numbers & Operations - Fractions	4	1.00	Strongly Aligned
3	Numbers & Operations in Base Ten	6	0.50	Weakly Aligned
3	Operations & Algebraic Thinking	7	0.93	Strongly Aligned
4	Geometry	7	0.81	Strongly Aligned
4	Measurement & Data	3	0.67	Moderately Aligned
4	Numbers & Operations - Fractions	4	0.75	Strongly Aligned
4	Numbers & Operations in Base Ten	6	0.83	Strongly Aligned
4	Operations & Algebraic Thinking	7	0.89	Strongly Aligned
5	Geometry	5	0.70	Strongly Aligned
5	Measurement & Data	4	0.83	Strongly Aligned
5	Numbers & Operations - Fractions	3	1.00	Strongly Aligned
5	Numbers & Operations in Base Ten	11	0.93	Strongly Aligned
5	Operations & Algebraic Thinking	3	1.00	Strongly Aligned
6	Expressions & Equations	6	1.00	Strongly Aligned
6	Geometry	4	1.00	Strongly Aligned
6	Ratios & Proportional Relationships	5	0.70	Strongly Aligned
6	Statistics & Probability	4	1.00	Strongly Aligned

Grade/Course	Domain	Number of Items	BOR	Alignment Evaluation
6	The Number System	8	0.88	Strongly Aligned
7	Expressions & Equations	5	0.73	Strongly Aligned
7	Geometry	8	0.78	Strongly Aligned
7	Ratios & Proportional Relationships	3	1.00	Strongly Aligned
7	Statistics & Probability	6	1.00	Strongly Aligned
7	The Number System	5	0.87	Strongly Aligned
8	Expressions & Equations	7	0.90	Strongly Aligned
8	Functions	6	1.00	Strongly Aligned
8	Geometry	6	0.83	Strongly Aligned
8	Statistics & Probability	3	1.00	Strongly Aligned
8	The Number System	5	0.90	Strongly Aligned
NC Math 1	Functions	11	0.79	Strongly Aligned
NC Math 1	Geometry	2	0.67	Moderately Aligned
NC Math 1	Statistics & Probability	4	0.83	Strongly Aligned
NC Math 1	The Real Number System & Algebra	11	0.70	Strongly Aligned

Overall Summary for Mathematics

Table 32 shows the overall alignment evaluation (see Section 2). Overall, the domains were moderately to strongly aligned in all grades in mathematics.

Table 32: Summary Alignment Evaluation, Mathematics

Grade/ Course	Domain	Categorical Concurrence Evaluation	LAL Evaluation	ROK Evaluation	BOR Evaluation	Overall Evaluation
3	Measurement & Data, Geometry	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
3	Numbers & Operations - Fractions	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
3	Numbers & Operations in Base Ten	Strongly Aligned	Strongly Aligned	Strongly Aligned	Weakly Aligned	Strongly Aligned
3	Operations & Algebraic Thinking	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
4	Geometry	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
4	Measurement & Data	Strongly Aligned	Weakly Aligned	Strongly Aligned	Moderately Aligned	Moderately Aligned
4	Numbers & Operations - Fractions	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
4	Numbers & Operations in Base Ten	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
4	Operations & Algebraic Thinking	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Geometry	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Measurement & Data	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Numbers & Operations - Fractions	Strongly Aligned	Not Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned
5	Numbers & Operations in Base Ten	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Operations & Algebraic Thinking	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned

Grade/ Course	Domain	Categorical Concurrence Evaluation	LAL Evaluation	ROK Evaluation	BOR Evaluation	Overall Evaluation
6	Expressions & Equations	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
6	Geometry	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
6	Ratios & Proportional Relationships	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
6	Statistics & Probability	Strongly Aligned	Not Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned
6	The Number System	Strongly Aligned	Weakly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
7	Expressions & Equations	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
7	Geometry	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
7	Ratios & Proportional Relationships	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
7	Statistics & Probability	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
7	The Number System	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Expressions & Equations	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Functions	Strongly Aligned	Weakly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Geometry	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Statistics & Probability	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	The Number System	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
NC Math 1	Functions	Moderately Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
NC Math 1	Geometry	Strongly Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned	Strongly Aligned
NC Math 1	Statistics & Probability	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned

Grade/ Course	Domain	Categorical Concurrence Evaluation	LAL Evaluation	ROK Evaluation	BOR Evaluation	Overall Evaluation
NC Math1	The Real Number System & Algebra	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned

Reading Analyses

Table 33 presents the item-level analysis by content area. The table presents two pieces of information. First, it reports the percentage of items aligned to a North Carolina Extended Content Standard from any grade level. Secondly, the table presents the percentage of items aligned to a North Carolina Extended Content Standard at the item's intended grade level.

Table 33 demonstrates that NCEXTEND1 items were well aligned to the North Carolina Extended Content Standards. For the remainder of this report, only items aligned to a North Carolina Extended Content Standard at the item's intended grade level are included in computations.

More than 91% of items were aligned to any extended content standard and at the intended grade level.

Table 33: Percentage of Items Aligned to any Standard and to an On-Grade Standard, Reading

Grade/ Course	N of Original Item Set	% Aligned to Any Standard	% Aligned Items Matched to On-Grade Standard
3	24	100.00%	100.00%
4	24	100.00%	100.00%
5	24	91.67%	91.67%
6	24	95.83%	95.83%
7	24	100.00%	91.67%
8	24	95.83%	95.83%
English II	24	100.00%	100.00%

Table 34 shows the distribution of items by alignment strength. The majority of items were fully aligned, except in high school. Here, almost 38% of items were fully aligned.

Table 34: Percentage of Items by Alignment Strength for Reading

Grade/Course	Number of Items	Full	Partial
3	24	70.83%	29.17%

Grade/Course	Number of Items	Full	Partial
4	24	79.17%	20.83%
5	24	68.18%	31.82%
6	24	86.96%	13.04%
7	24	79.17%	20.83%
8	24	56.52%	43.48%
English II	24	37.50%	62.50%

Distribution of ALD Levels

Table 35 shows the distribution of ALDs for each grade level in the item bank. The ALD assignments are based on how panelists aligned ALDs, not on actual item difficulty. Level 3 was the most frequently assigned achievement level in all grades.

Table 35: ALD Distribution, Reading

Grade/Course	Number of Items	Not Proficient	Level 3	Level 4
3	24	4.17%	83.33%	12.50%
4	24	0.00%	87.50%	12.50%
5	24	8.33%	62.50%	25.00%
6	24	4.17%	83.33%	12.50%
7	24	0.00%	95.83%	4.17%
8	24	0.00%	83.33%	12.50%
English II	24	0.00%	100.00%	0.00%

Categorical Concurrence

Table 36 reports the alignment evaluation of categorical concurrence for reading. Table 36 shows that all domains are moderately or strongly aligned, except grade 7 Language which is not aligned. We note that the language domain is not assigned any items grades 3 and 4.

Table 36: Categorical Concurrence, Reading

Grade/Course	Domain	Number of Items	Expected Percent	% Items Aligned to Standard	Alignment Evaluation
3	Language	0	4-12%	0.00%	Not Aligned

Grade/Course	Domain	Number of Items	Expected Percent	% Items Aligned to Standard	Alignment Evaluation
3	Reading for Informational Text	11	46-54%	47.83%	Strongly Aligned
3	Reading for Literature	12	38-46%	52.17%	Moderately Aligned
4	Language	0	4-12%	0.00%	Not Aligned
4	Reading for Informational Text	14	46-54%	58.33%	Strongly Aligned
4	Reading for Literature	10	38-46%	41.67%	Strongly Aligned
5	Language	2	4-12%	9.52%	Strongly Aligned
5	Reading for Informational Text	10	46-54%	47.62%	Strongly Aligned
5	Reading for Literature	9	38-46%	42.86%	Strongly Aligned
6	Language	3	8-16%	13.04%	Strongly Aligned
6	Reading for Informational Text	10	42-50%	43.48%	Strongly Aligned
6	Reading for Literature	10	38-46%	43.48%	Strongly Aligned
7	Language	7	8-16%	38.89%	Not Aligned
7	Reading for Informational Text	7	42-50%	38.89%	Strongly Aligned
7	Reading for Literature	4	38-46%	22.22%	Not Aligned
8	Language	5	8-16%	22.73%	Moderately Aligned
8	Reading for Informational Text	10	42-50%	45.45%	Strongly Aligned
8	Reading for Literature	7	38-46%	31.82%	Moderately Aligned
English II	Language	5	8-16%	20.83%	Strongly Aligned
English II	Reading for Informational Text	11	42-50%	45.83%	Strongly Aligned

Grade/Course	Domain	Number of Items	Expected Percent	% Items Aligned to Standard	Alignment Evaluation
English II	Reading for Literature	8	38-46%	33.33%	Strongly Aligned

Links for Academic Learning (LAL)

Table 37 reports the LAL distribution of items. This table shows that the half of the grade 3 and 4 reading items were assigned to LAL 4, and the majority of grades 5 through high school items were assigned to LAL 5.

Table 37: Distribution of DOK, Reading

Grade/ Course	Number of Items	1	2	3	4	5	6
3	24	0.00%	12.50%	50.00%	37.50%	0.00%	0.00%
4	24	0.00%	12.50%	50.00%	29.17%	8.33%	0.00%
5	24	0.00%	4.17%	16.67%	54.17%	8.33%	16.67%
6	24	0.00%	8.70%	17.39%	73.91%	0.00%	0.00%
7	24	0.00%	0.00%	8.33%	87.50%	0.00%	4.17%
8	24	0.00%	0.00%	0.00%	86.96%	8.70%	4.35%
English II	24	0.00%	8.33%	12.50%	66.67%	8.33%	4.17%

Table 38 reports the alignment evaluation of LAL of the items. The domains were strongly aligned except for grade 3 and 4 Language which was not aligned.

Table 38: LAL Depth of Knowledge, Reading

Grade/Course	Domain	Number of Items	Range of LAL	% Items Aligned At or Below the Indicator's Target LAL	Alignment Evaluation	% Items Aligned At or Above the Indicator's Target LAL
3	Language	0	4-4	0.00%	Not Aligned	0.00%
3	Reading for Informational Text	11	3-4	100.00%	Strongly Aligned	50.00%
3	Reading for Literature	12	3-4	91.67%	Strongly Aligned	38.46%
4	Language	0	4-4	0.00%	Not Aligned	0.00%

Grade/Course	Domain	Number of Items	Range of LAL	% Items Aligned At or Below the Indicator's Target LAL	Alignment Evaluation	% Items Aligned At or Above the Indicator's Target LAL
4	Reading for Informational Text	14	3-4	100.00%	Strongly Aligned	38.46%
4	Reading for Literature	10	4-4	80.00%	Strongly Aligned	36.36%
5	Language	2	4-4	100.00%	Strongly Aligned	100.00%
5	Reading for Informational Text	10	2-6	70.00%	Strongly Aligned	90.00%
5	Reading for Literature	9	4-4	88.89%	Strongly Aligned	70.00%
6	Language	3	4-4	100.00%	Strongly Aligned	100.00%
6	Reading for Informational Text	10	4-4	100.00%	Strongly Aligned	60.00%
6	Reading for Literature	10	4-4	100.00%	Strongly Aligned	81.82%
7	Language	7	4-4	100.00%	Strongly Aligned	100.00%
7	Reading for Informational Text	7	4-6	100.00%	Strongly Aligned	57.14%
7	Reading for Literature	4	4-6	100.00%	Strongly Aligned	75.00%
8	Language	5	4-4	100.00%	Strongly Aligned	100.00%
8	Reading for Informational Text	10	4-5	90.00%	Strongly Aligned	90.00%
8	Reading for Literature	7	4-6	85.71%	Strongly Aligned	57.14%
English II	Language	5	4-4	100.00%	Strongly Aligned	100.00%

Grade/Course	Domain	Number of Items	Range of LAL	% Items Aligned At or Below the Indicator's Target LAL	Alignment Evaluation	% Items Aligned At or Above the Indicator's Target LAL
English II	Reading for Informational Text	11	4-6	81.82%	Strongly Aligned	75.00%
English II	Reading for Literature	8	4-5	100.00%	Strongly Aligned	57.14%

Range of Knowledge (ROK)

Table 39 reports the alignment evaluation of ROK of the item bank. ROK indicated that the domains were strongly aligned except for grade 3 and 4 Language which was not aligned.

Table 39: Range of Knowledge, Reading

Grade/Course	Domain	Number of Items	% Indicators Represented by One or More Item	Alignment Evaluation
3	Language	1	0.00%	Not Aligned
3	Reading for Informational Text	5	100.00%	Strongly Aligned
3	Reading for Literature	5	80.00%	Strongly Aligned
4	Language	1	0.00%	Not Aligned
4	Reading for Informational Text	5	100.00%	Strongly Aligned
4	Reading for Literature	4	100.00%	Strongly Aligned
5	Language	2	100.00%	Strongly Aligned
5	Reading for Informational Text	7	71.43%	Strongly Aligned
5	Reading for Literature	6	66.67%	Strongly Aligned
6	Language	2	100.00%	Strongly Aligned
6	Reading for Informational Text	5	80.00%	Strongly Aligned

Grade/Course	Domain	Number of Items	% Indicators Represented by One or More Item	Alignment Evaluation
6	Reading for Literature	5	80.00%	Strongly Aligned
7	Language	2	100.00%	Strongly Aligned
7	Reading for Informational Text	5	80.00%	Strongly Aligned
7	Reading for Literature	4	75.00%	Strongly Aligned
8	Language	2	100.00%	Strongly Aligned
8	Reading for Informational Text	6	83.33%	Strongly Aligned
8	Reading for Literature	4	100.00%	Strongly Aligned
English II	Language	2	100.00%	Strongly Aligned
English II	Reading for Informational Text	7	57.14%	Strongly Aligned
English II	Reading for Literature	5	60.00%	Strongly Aligned

Balance of Representation (BOR)

Table 40 reports the alignment evaluation of BOR. BOR indicated moderate to strong alignment for all domains except for grades 3 and 4 Language (not aligned) and high school Reading for Informational Text (weakly aligned).

Table 40: Balance of Representation, Reading

Grade/Course	Domain	Number of Items	BOR	Alignment Evaluation
3	Language	0	NA	Cannot be calculated
3	Reading for Informational Text	11	0.85	Strongly Aligned
3	Reading for Literature	12	0.70	Strongly Aligned

Grade/Course	Domain	Number of Items	BOR	Alignment Evaluation
4	Language	0	NA	Cannot be calculated
4	Reading for Informational Text	14	0.89	Strongly Aligned
4	Reading for Literature	10	0.90	Strongly Aligned
5	Language	2	1.00	Strongly Aligned
5	Reading for Informational Text	10	0.63	Moderately Aligned
5	Reading for Literature	9	0.61	Moderately Aligned
6	Language	3	0.83	Strongly Aligned
6	Reading for Informational Text	10	0.70	Strongly Aligned
6	Reading for Literature	10	0.60	Moderately Aligned
7	Language	7	0.64	Moderately Aligned
7	Reading for Informational Text	7	0.74	Strongly Aligned
7	Reading for Literature	4	0.75	Strongly Aligned
8	Language	5	0.70	Strongly Aligned
8	Reading for Informational Text	10	0.77	Strongly Aligned
8	Reading for Literature	7	0.79	Strongly Aligned
English II	Language	5	0.70	Strongly Aligned
English II	Reading for Informational Text	11	0.57	Weakly Aligned
English II	Reading for Literature	8	0.60	Moderately Aligned

Overall Summary for Reading

Table 41 shows the overall alignment evaluation (see Section 2). Overall, the domains were moderately to strongly aligned in all grades except grade 3 and 4 Language which was not aligned.

Table 41: Summary Alignment Evaluation, Reading

Grade/ Course	Domain	Categorical Concurrence Evaluation	LAL Evaluation	ROK Evaluation	BOR Evaluation	Overall Evaluation
3	Language	Not Aligned	Not Aligned	Not Aligned	Cannot be calculated	Not Aligned
3	Reading for Informational Text	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
3	Reading for Literature	Moderately Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
4	Language	Not Aligned	Not Aligned	Not Aligned	Cannot be calculated	Not Aligned
4	Reading for Informational Text	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
4	Reading for Literature	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Language	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Reading for Informational Text	Strongly Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned	Strongly Aligned
5	Reading for Literature	Strongly Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned	Strongly Aligned
6	Language	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
6	Reading for Informational Text	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
6	Reading for Literature	Strongly Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned	Strongly Aligned
7	Language	Not Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned	Moderately Aligned
7	Reading for Informational Text	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned

Grade/ Course	Domain	Categorical Concurrence Evaluation	LAL Evaluation	ROK Evaluation	BOR Evaluation	Overall Evaluation
7	Reading for Literature	Not Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned
8	Language	Moderately Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Reading for Informational Text	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Reading for Literature	Moderately Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
English II	Language	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
English II	Reading for Informational Text	Strongly Aligned	Strongly Aligned	Strongly Aligned	Weakly Aligned	Strongly Aligned
English II	Reading for Literature	Strongly Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned	Strongly Aligned

Science Analyses

Table 42 presents the item-level analysis by content area. The table presents two pieces of information. First, it reports the percentage of items aligned to a North Carolina Extended Content Standard from any grade level. Secondly, the table presents the percentage of items aligned to a North Carolina Extended Content Standard at the item's intended grade level.

Table 42 demonstrates that NCEXTEND1 items were well aligned to the North Carolina Extended Content Standards. For the remainder of this report, only items aligned to a North Carolina Extended Content Standard at the item's intended grade level are included in computations.

All items were aligned to any standard and at least 88% of items were aligned to an extended content standard at the intended grade level.

Table 42: Percentage of Items Aligned to any Standard and to an On-Grade Standard, Science

Grade/Course	N of Original Item Set	% Aligned to Any Standard	% Aligned Items Matched to On-Grade Standard
5	25	100.00%	88.00%
8	25	100.00%	92.00%
Biology	25	100.00%	100.00%

Table 43 shows the distribution of items by alignment strength. The majority of items were fully aligned.

Table 43: Percentage of Items by Alignment Strength for Science

Grade/Course	Number of Items	Full	Partial
5	25	76.00%	24.00%
8	25	100.00%	0.00%
Biology	25	96.00%	4.00%

Distribution of ALD Levels

Table 44 shows the distribution of ALDs for each grade level in the item bank. The ALD assignments are based on how panelists aligned ALDs, not on actual item difficulty. Level 3 was the most frequently assigned achievement level in grade 5 and high school while Level 4 was the most frequently assigned achievement level in grade 8.

Table 44: ALD Distribution, Science

Grade/Course	Number of Items	Not Proficient	Level 3	Level 4
5	25	8.00%	48.00%	44.00%
8	25	0.00%	4.00%	96.00%
Biology	25	0.00%	60.00%	40.00%

Categorical Concurrence

Table 45 reports the alignment evaluation of categorical concurrence for science. Results show that all domains are strongly aligned.

Table 45: Categorical Concurrence, Science

Grade/ Course	Domain	Number of Items	Expected Percent	% Items Aligned to Standard	Alignment Evaluation
5	Earth & Environmental Science	5	16-24%	23.81%	Strongly Aligned
5	Life Science: Ecosystems	6	24-32%	28.57%	Strongly Aligned
5	Life Science: Structures & Functions of Living Organisms	6	24-32%	28.57%	Strongly Aligned
5	Physical Science: Force & Motion	3	8-16%	14.29%	Strongly Aligned

Grade/ Course	Domain	Number of Items	Expected Percent	% Items Aligned to Standard	Alignment Evaluation
5	Physical Science: Matter, Properties & Change	1	8-16%	4.76%	Strongly Aligned
8	Earth & Environmental Science	8	24-32%	34.78%	Strongly Aligned
8	Life Science: Ecosystems	5	24-32%	21.74%	Strongly Aligned
8	Life Science: Structures & Functions of Living Organisms	6	24-32%	26.09%	Strongly Aligned
8	Physical Science: Force & Motion	2	4-12%	8.70%	Strongly Aligned
8	Physical Science: Matter, Properties & Change	2	8-16%	8.70%	Strongly Aligned
Biology	Life Science: Ecosystems	15	64-72%	65.22%	Strongly Aligned
Biology	Life Science: Structures & Functions of Living Organisms	8	28-36%	34.78%	Strongly Aligned

Links for Academic Learning (LAL)

Table 46 reports the LAL distribution of the item bank. This table shows LAL 2 was the most frequently assigned LAL in all grades.

Table 46: Distribution of Links for Academic Learning, Science

Grade/ Course	Number of Items	1	2	3	4	5	6
5	25	0.00%	48.00%	0.00%	32.00%	12.00%	8.00%
8	25	0.00%	44.00%	4.00%	16.00%	8.00%	28.00%
Biology	25	0.00%	40.00%	0.00%	32.00%	12.00%	16.00%

Table 47 reports the alignment evaluation of LAL of the item bank. The domains were moderately to strongly aligned except for grade 8 Physical Science: Matter, Properties, and Changes which was not aligned.

Table 47: Links for Academic Learning, Science

Grade/ Course	Domain	Number of Items	Range of LAL	% Items Aligned At or Below the Indicator's Target LAL	Alignment Evaluation	% Items Aligned At or Above the Indicator's LAL
5	Earth & Environmental Science	5	4-4	80.00%	Strongly Aligned	60.00%
5	Life Science: Ecosystems	6	4-5	100.00%	Strongly Aligned	33.33%
5	Life Science: Structures & Functions of Living Organisms	6	4-4	100.00%	Strongly Aligned	50.00%
5	Physical Science: Force & Motion	3	4-6	66.67%	Strongly Aligned	66.67%
5	Physical Science: Matter, Properties & Change	1	4-5	100.00%	Strongly Aligned	0.00%
8	Earth & Environmental Science	8	4-6	75.00%	Strongly Aligned	50.00%
8	Life Science: Ecosystems	5	4-4	40.00%	Moderately Aligned	80.00%
8	Life Science: Structures & Functions of Living Organisms	6	3-4	100.00%	Strongly Aligned	0.00%
8	Physical Science: Force & Motion	2	4-4	100.00%	Strongly Aligned	50.00%
8	Physical Science: Matter, Properties & Change	2	4-4	0.00%	Not Aligned	100.00%
Biology	Life Science: Ecosystems	15	4-4	66.67%	Strongly Aligned	62.50%
Biology	Life Science: Structures & Functions of Living Organisms	8	4-4	75.00%	Strongly Aligned	62.50%

Range of Knowledge (ROK)

Table 48 reports the alignment evaluation of ROK for science. ROK indicated that the domains were strongly aligned.

Table 48: Range of Knowledge, Science

Grade/ Course	Domain	Number of Items	% Indicators Represented by One or More Item	Alignment Evaluation
5	Earth & Environmental Science	2	100.00%	Strongly Aligned
5	Life Science: Ecosystems	3	66.67%	Strongly Aligned
5	Life Science: Structures & Functions of Living Organisms	2	100.00%	Strongly Aligned
5	Physical Science: Force & Motion	2	100.00%	Strongly Aligned
5	Physical Science: Matter, Properties & Change	2	50.00%	Strongly Aligned
8	Earth & Environmental Science	3	100.00%	Strongly Aligned
8	Life Science: Ecosystems	2	100.00%	Strongly Aligned
8	Life Science: Structures & Functions of Living Organisms	4	75.00%	Strongly Aligned
8	Physical Science: Force & Motion	2	100.00%	Strongly Aligned
8	Physical Science: Matter, Properties & Change	1	100.00%	Strongly Aligned
Biology	Life Science: Ecosystems	8	87.50%	Strongly Aligned
Biology	Life Science: Structures & Functions of Living Organisms	3	100.00%	Strongly Aligned

Balance of Representation (BOR)

Table 49 reports the alignment evaluation of BOR for science. BOR indicated moderate to strong alignment for all domains except for grade 5 Physical Science: Matter, Properties, and Changes which was weakly aligned.

Table 49: Balance of Representation, Science

Grade/ Course	Domain	Number of Items	BOR	Alignment Evaluation
5	Earth & Environmental Science	5	0.90	Strongly Aligned
5	Life Science: Ecosystems	6	0.67	Moderately Aligned
5	Life Science: Structures & Functions of Living Organisms	6	1.00	Strongly Aligned
5	Physical Science: Force & Motion	3	0.83	Strongly Aligned
5	Physical Science: Matter, Properties & Change	1	0.50	Weakly Aligned
8	Earth & Environmental Science	8	0.83	Strongly Aligned
8	Life Science: Ecosystems	5	0.90	Strongly Aligned
8	Life Science: Structures & Functions of Living Organisms	6	0.75	Strongly Aligned
8	Physical Science: Force & Motion	2	1.00	Strongly Aligned
8	Physical Science: Matter, Properties & Change	2	1.00	Strongly Aligned
Biology	Life Science: Ecosystems	15	0.82	Strongly Aligned
Biology	Life Science: Structures & Functions of Living Organisms	8	0.92	Strongly Aligned

Overall Summary for Science

Table 50 shows the overall alignment evaluation (see Section 2). Overall, the domains were moderately to strongly aligned in all grades.

Table 50: Summary Alignment Evaluation, Science

Grade/ Course	Domain	Categorical Concurrence Evaluation	LAL Evaluation	ROK Evaluation	BOR Evaluation	Overall Evaluation
5	Earth & Environmental Science	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned

Grade/ Course	Domain	Categorical Concurrence Evaluation	LAL Evaluation	ROK Evaluation	BOR Evaluation	Overall Evaluation
5	Life Science: Ecosystems	Strongly Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned	Strongly Aligned
5	Life Science: Structures & Functions of Living Organisms	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Physical Science: Force & Motion	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
5	Physical Science: Matter, Properties & Change	Strongly Aligned	Strongly Aligned	Strongly Aligned	Weakly Aligned	Strongly Aligned
8	Earth & Environmental Science	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Life Science: Ecosystems	Strongly Aligned	Moderately Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Life Science: Structures & Functions of Living Organisms	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Physical Science: Force & Motion	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
8	Physical Science: Matter, Properties & Change	Strongly Aligned	Not Aligned	Strongly Aligned	Strongly Aligned	Moderately Aligned
Biology	Life Science: Ecosystems	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned
Biology	Life Science: Structures & Functions of Living Organisms	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned	Strongly Aligned

Section 7. Discussion

Overall, there appeared to be moderate to strong alignment across all grade-level domains within all content areas with the notable exception of grades 3 and 4 Language. Other than these two areas, the North Carolina NCEXTEND1 mathematics, reading, and science test forms appeared to be well-aligned to the North Carolina extended content standards as operationalized by the test blueprints; however, there were identified areas for consideration.

There does appear to be strong evidence that the educators assigned items to the same extended content standard as found in the metadata in mathematics and science. Further, there is strong evidence that educators assigned reading items to the same domain but different standards as the metadata in certain grade content areas. NCDPI may want to investigate metadata assignments in most grades in reading.

The results of the DOK analyses in mathematics suggest additional items targeted at a lower LAL are needed in grade 4 Measurement and Data, grade 5 Numbers and Operations-Fractions, grade 6 Statistics and Probability, grade 6 the Number System, and grade 8 Functions. The BOR suggests a better distribution of items is needed for grade 3 Numbers and Operations in Base Ten.

The results of the evaluation study suggest that additional item development is needed in grades 3 and 4 Language. In addition, the BOR analysis suggests a better distribution of high school Informational items are needed.

In science, the BOR results suggest a better distribution of grade 5 Physical Science: Matter, Properties, and Change are needed. The LAL analyses suggest that additional items targeted to a lower LAL are needed in grade 8 Physical Science: Matter, Properties, and Change.

Recommendations

If NCDPI were to develop new items, we suggest the following distribution of new items.

- In grades 3 and 4, develop 20 items to cover the Language standards (i.e., five items per standard).
- In grade 3 mathematics, develop five items to cover NC3.NBT.2.
- In high school English II, develop five items each to cover RI.9-10.1, RI.9-10.5, and RI.9-10.6.
- In grade 8, develop five items targeted to appropriate LAL to cover Physical Science: Matter, Properties, & Change.

These recommendations are based on the panelist alignments.

Conclusions

Overall, alignment was considered moderate to strong across the test forms with some specific areas identified for improvement and future item development. The purpose that guided this work was to investigate the alignment of the NCEXTEND1 assessments to the breadth and depth of the North Carolina Extended Content Standards as operationalized by the test blueprint.

There is ample evidence of alignment in terms of categorical concurrence, range, complexity, and breadth between the items and the assessable North Carolina content standards in almost all grades and content areas. However, definite work is needed in grades 3 and 4 Language to ensure the breadth of the North Carolina extended content standards are covered.

Section 8. Validity Evidence

Evidence from this alignment study supports the validity argument for the use of the NCEXTEND1 as a measure of the North Carolina extended content standards by addressing relevant portions of the *Standards for Educational and Psychological Testing* (AERA, NCME, & APA, 2014). Specifically, the study provides evidence to support Standard 1.11 which states:

> When rationale for test score interpretation for a given use rests in part on the appropriateness of test content, the procedures followed in specifying and generating test content should be described and justified with reference to… the construct the test is intended to measure or the domain it is intended to represent.

Evidence for Standard 1.1 should therefore demonstrate adequate representation of the construct, specifically alignment between the NCEXTEND1 assessments and the North Carolina Extended Content Standards in terms of content, balance of content, cognitive complexity, and coverage of the depth and breadth of the state's extended content standards. Results of this study support the argument that the NCEXTEND1 assessments, as described in the table of test specifications (i.e., blueprint), address these requirements by demonstrating some degree of alignment (Tables 32, 41, and 51). In terms of procedural evidence, the study was designed and implemented to include relevant experts external to the test program itself. Standard 4.6 states:

> When appropriate to documenting the validity of test score interpretations for intended uses, relevant experts external to the testing program should review the test specifications to evaluate their appropriateness for intended uses of the test scores… The purpose of the review, the process by which the review is conducted, and the results of the review should be documented. The qualifications, relevant experiences, and demographic characteristics of the expert judges should also be documented.

The study purpose, process, and results as well as the qualifications, experiences, and demographic characteristics of all expert reviewers are captured in this technical report (see Section 2 and Section 3).

Finally, Standard 12.4 states:

> When a test is used as an indicator of achievement in an instructional domain or with respect to specified content standards, evidence of the extent to which the test samples the range of knowledge and elicits the processes reflected in the target domain should be provided. Both the tested and the target domains should be described in sufficient detail for their relationship to be evaluated. The analyses should make explicit those aspects of the target domain that the test represents, as well as those aspects that the test fails to represent.

This alignment study provides evidence to support the claim that the NCEXTEND1 forms, as represented by the test blueprints, represent both the NCEXTEND1 extended content standards and the intended uses and interpretations of the test. However, an analysis of alignment ratings did identify some areas of weakness across grades and alignment criteria. These areas are specified in Table 4, Table 5, Table 6, and Table 7 and discussed in Section 7.

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Appendix A – Design Document

Design Document

Study of the Alignment of the North Carolina Content Standards and Extended Standards with the End-of-Grade (K-8) and End-of-Course (High School) Assessments

Revised: November 4, 2022

Finalized: December 22, 2022

EDMETRIC LLC

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Section 1. Overview

North Carolina Department of Public Instruction (NCDPI) contracted with EdMetric LLC (EdMetric) to conduct an independent alignment study of new content standards with assessments in grades 3–8 and high school. Specifically, the study will examine alignment relationships related to:

- North Carolina Standard Course of Study (content standards) and the End-of-Grade (EOG) assessments in mathematics and reading for grades 3–8
- North Carolina content standards and the End-of-Course (EOC) assessments for NC Math 1, NC Math 3, and English II for high school
- North Carolina extended content standards and the NCEXTEND1 alternate assessments in mathematics and reading for grades 3–8
- North Carolina extended content standards and the NCEXTEND1 alternate assessments in NC Math 1, English II, and Biology for high school
- North Carolina extended content standards and the NCEXTEND1 alternate assessments in science for grade 5 and grade 8.

Background

Alignment is an oft-used word in education, and alignment studies are a critical element of a validity argument (AERA, APA & NCME, 2014). Assessment alignment refers specifically to the connection between the assessment and the content standards as operationalized through the test blueprint. We expect that students taking well-aligned assessments are measured on the content standards with the breadth and depth expected by the test blueprints. For this reason, this study will be designed to evaluate degree of match between content standards and assessment items at two levels:

- Intended blueprint
- Enacted blueprint

According to the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014), the evaluation of an assessment system must include alignment evidence. The broadest intent of this study is to provide an independent evaluation of the degree of alignment between the assessments and the State's academic content standards. The results of the alignment study will provide validity evidence that the items measure the underlying content standards. To the degree that they do, we find support for the claims that the assessment measures the intended construct. The results of the study will therefore contribute to the validity evidence gathered by NCDPI to demonstrate the degree of alignment between the assessments and the standards for state and federal accountability purposes.

Study Claims

States are required to demonstrate the alignment of their assessments with their academic content and achievement standards under the Every Student Succeeds Act (ESSA; United States Department of Education, 2017). In the context of a comprehensive system of academic content standards and assessments, the items on the assessments must allow students to demonstrate their knowledge and skills on the academic content standards. From this, the following claims may be articulated:

- *The items in the End-of-Grade/End-of-Course assessments align to the breadth and depth of the North Carolina Standard Course of Study.*
- *The items in the North Carolina alternate assessments align to the breadth and depth of the North Carolina Extended Content Standards.*

The study will evaluate these claims.

Document Purpose

This document describes the design of the alignment study of the EOG and EOC assessments to the North Carolina Standard Course of Study standards for each specific grade and content area. The purpose of this design document is to guide the organization and implementation of the study. The design document outlines the rationale for the study methodology and provides implementation details and recommendations. EdMetric will lead the workshop to collect data for the study. Section 1 provides an overview of the study plan. Section 2 summarizes the planned methodology for the study. Section 3 provides information on the roles and responsibilities of those who will participate in the study as well as information regarding panelists. Section 4 describes the planned workshop. Section 5 overviews the technical report.

Section 2. Methodology Overview

A modified Webb (1997, 1999, 2007) approach will be used for EOG/EOC alignment. An approach that combines Links for Academic Learning (LAL; Flowers, Wakeman, Browder, & Karvonen, 2007) and a modified Webb methodology will be used for the NCEXTEND1. Panelist responses will be used to determine the degree of alignment between items and the underlying North Carolina reading, mathematics, and science content standards as represented in the performance expectations. Alignment will be measured using the following categories:

- Categorical concurrence
- Depth-of-knowledge consistency
- Range-of-knowledge correspondence (which measures the enacted blueprint relative to the intended blueprint)
- Balance of knowledge

North Carolina's assessment blueprints will be used to review coverage of the full range of the content, and to ensure adequate balance of knowledge.

A two-day alignment workshop will be conducted where 40 educators will align the EOG/EOC assessments to the North Carolina Standard Course of Study. Another 20 North Carolina stakeholders will align the NCEXTEND1 alternate assessments to the North Carolina extended content standards. In total, 2229 items will be evaluated in the study across assessments and content areas (Table 1).

Table 1. Summary of Item Counts by Assessment

Assessment	Content Area	Totals
EOG/EOC	Reading	781
	Math	1015
NCEXTEND1	Reading	168
	Math	190
	Science	75
	Total	**2229**

Approach Rationale

Alignment studies have routinely used Webb's (1997, 1999) criteria to establish defensible claims of alignment. Webb (1997) discussed the importance of studying the alignment of the knowledge structures, and even student dispositional expectations, as well as the articulation of content across grade levels and age groups. Webb (2007) prioritized these criteria, calling out (a) categorical concurrence, (b) depth-of-knowledge consistency, (c) range-of-knowledge correspondence, and (d) balance of representation. We will also be using the six-level LAL scale for cognitive complexity of the NCEXTEND1 with attention to Webb and Christopherson (2019) for the science content.

Alignment Study Phases

The alignment study will be conducted in phases.

- **Pre-Work (Phase 1) -** Our proposed design seeks to ease the complexity and to increase efficiency of the panelists' task by having all items first rated for cognitive complexity and alignment by content/alignment experts. Our experience is that the use of initial ratings provides panelists with a starting point they can react to, which eases the cognitive load of the task and decreases the initial amount of time panelists spend in understanding the rating task.

- **Educator Workshop (Phase 2) -** EdMetric will conduct an in-person alignment workshop involving North Carolina educators. In the two-day workshop, these stakeholders will review each operational item. They will decide if they agree or disagree with the initial ratings of the content expert. If they disagree with any aspect of the initial rating, we will ask them to indicate this in EdMetric's alignment tool. North Carolina educators will have the final determination on item ratings.

- **Analyses and Reporting (Phase 3) -** During the third phase, EdMetric will analyze the alignment data for interrater reliability, categorical concurrence, depth of knowledge, breadth of knowledge, and range of knowledge. In addition, EdMetric will prepare a detailed technical report of the workshop and the study results.

Content Standards

For the purposes of this study, the following nomenclature will be applied to describe the levels of the standards used as the units of analysis:

- **Domain**
- **Standard**

Figure 1 illustrates the application of this nomenclature using an example from the Grade 3 EOG mathematics standards.

Operations and Algebraic Thinking	
Represent and solve problems involving multiplication and division.	
NC.3.OA.1	For products of whole numbers with two factors up to and including 10: • Interpret the factors as representing the number of equal groups and the number of objects in each group. • Illustrate and explain strategies including arrays, repeated addition, decomposing a factor, and applying the commutative and associative properties.
NC.3.OA.2	For whole-number quotients of whole numbers with a one-digit divisor and a one-digit quotient: • Interpret the divisor and quotient in a division equation as representing the number of equal groups and the number of objects in each group. • Illustrate and explain strategies including arrays, repeated addition or subtraction, and decomposing a factor.
NC.3.OA.3	Represent, interpret, and solve one-step problems involving multiplication and division. • Solve multiplication word problems with factors up to and including 10. Represent the problem using arrays, pictures, and/or equations with a symbol for the unknown number to represent the problem. • Solve division word problems with a divisor and quotient up to and including 10. Represent the problem using arrays, pictures, repeated subtraction and/or equations with a symbol for the unknown number to represent the problem.
Understand properties of multiplication and the relationship between multiplication and division.	
NC.3.OA.6	Solve an unknown-factor problem, by using division strategies and/or changing it to a multiplication problem.
Multiply and divide within 100.	
NC.3.OA.7	Demonstrate fluency with multiplication and division with factors, quotients and divisors up to and including 10.

1

Figure 1. Outtake of the Content Standards

Figure 2 illustrates the application of this nomenclature using an example from the Extended Content Standards.

Grade 4

NC *Standard Course of Study* and Extended Content Standards English Language Arts (ELA) Alignment Grade 4			
NC *Standard Course of Study* K-12 ELA for Implementation in 2018-2019, Adopted April 2017		**Extended Content Standards K-12 for ELA for Implementation 2018-19, Adopted June 2017**	
READING: LITERATURE			
Abbreviation	**Standard**	**Abbreviation**	**Standard**
CCR Anchor Standard R.1 – Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.			
RL.4.1	Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	**RL.4.1**	Use details from the text to recount what the text says.
CCR Anchor Standard R.2 – Determine central ideas (RI) or themes (RL) of a text and analyze their development; summarize the key supporting details and ideas.			
RL.4.2	Determine a theme of a story, drama, or poem from details in the text; summarize the text.	**RL.4.2**	Identify the theme of a familiar story, drama or poem.
CCR Anchor Standard R.3 – Analyze how and why individuals, events, and ideas develop and interact over the course of a text.			
RL.4.3	Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text.	**RL.4.3**	Use details from the text to describe characters in the story.

Figure 2. Outtake of the Extended Content Standards

Assessment Items

In a typical alignment study, stakeholder (i.e., panelist) ratings are used to calculate alignment statistics (e.g., range of knowledge, breadth of knowledge, depth of knowledge). For the general assessments, panelists will be trained on the alignment process using 10 items, and will rate an

additional 30 items during a calibration round. Once panelists rate all 30 items, they will discuss those items where 50% or more disagreed on the item rating. Following calibration, the panelists will move to another set of 30 common items (called validation items). They will repeat the process with the validation items. The intention of these 70 items is to build common understanding among the panelists and to ensure the panelists are approaching the alignment task with similar understanding of each facet (e.g., cognitive complexity) of the study.

Once panelists have completed the study of the 70 items, they will move to their unique sets of items. Remaining items for the grade band will be distributed among the panelists until the entire item bank for the grade band has been reviewed. (See Table 3, Table 4, and Table 5 for a detailed descriptions of item distributions.) Because EdMetric has our content/alignment experts conduct the initial review, all items will have two sets of independent ratings.

For the alternate assessments, panelists in each grade group will be trained using a common set of 10 items, and the remaining items for the grade band across all content areas will be distributed among the panelists in that grade group. Again, because EdMetric content experts will conduct an initial review, all items will have two sets of independent ratings.

Table 2 shows the item bank includes 781 Reading items; 1,015 mathematics items; and 433 alternate assessment items.

Table 2. Summary of Operational Items in the North Carolina Item Bank

Grade	General		Alternate		
	Reading	Math	Reading	Math	Science
3	120	120	24	27	
4	80	120	24	27	
5	120	120	24	27	25
6	132	135	24	27	
7	88	135	24	27	
8	88	135	24	27	25
HS	153	250	24	28	25
Total	781	1015	168	190	75

All items will be reviewed in this study. To do this with efficiency, we will distribute these items as follows: 10 training items (5 from each grade), 30 calibration items (15 from each grade), and 30 validation items (15 from each grade). The remaining items will be evenly split among the five panelists in the grade group.

Table 3 and Table 4 show how items will be distributed across panelists for ELA and mathematics, respectively. So that all of the items have at least two independent ratings, panelists will first work in groups and then move to individual work. For the alternate assessments, the same panel will analyze all three content area tests from two grade levels. Table 5 shows how the items will be distributed across panelists.

Table 3. Distribution of Items for Reading, EOG/EOC

Grade	Items	Training	Calibration & Validation	Panelist 1	Panelist 2	Panelist 3	Panelist 4	Panelist 5
3-4	200	10	60	26	26	26	26	26
5-6	252	10	60	37	37	36	36	36
7-8	176	10	60	22	21	21	21	21
HS	153	10	60	17	17	17	16	16

Table 4. Distribution of Items for Mathematics, EOG/EOC

Grade	Items	Training	Calibration & Validation	Panelist 1	Panelist 2	Panelist 3	Panelist 4	Panelist 5
3-4	240	10	60	34	34	34	34	34
5-6	255	10	60	37	37	37	37	37
7-8	270	10	60	40	40	40	40	40
HS	250	10	60	36	36	36	36	36

Table 5. Distribution of Items for ELA, Mathematics, & Science, NCEXTEND1

Grade	Items	Training	Calibration & Validation	Panelist 1	Panelist 2	Panelist 3	Panelist 4	Panelist 5
3-4	102	10	40	11	11	10	10	10
5-6	127	10	40	16	16	15	15	15
7-8	127	10	40	16	16	15	15	15
HS	77	10	40	6	6	5	5	5

Expert Review

EdMetric content/alignment experts will conduct an initial alignment evaluation of the EOG/EOC items to the North Carolina content standards and the EXTEND1 items to the North Carolina extended content standards. One expert will assign ratings to each grade level and content area. This design is intended to ease the complexity and to increase efficiency of the panelists' task by having all items first rated for cognitive complexity and alignment by content experts. The use of initial ratings provides panelists with a starting point they can react to, which seems to ease the cognitive load of the task and to decrease the initial amount of time panelists spend in understanding the rating task.

Evaluation Criteria for General Assessments

Content Match: Categorical Concurrence

Categorical concurrence refers to how similar and consistent content is on the standards and on the assessment. Reviewers' alignment judgments (e.g., full, partial, none) will be used to establish the number of items assigned to a standard. Webb requires six items per performance level in order to consider the standard fully addressed. Each assessment will be evaluated for alignment in terms of its respective blueprint at the item bank level and at the test event level. To do so, the percentage of items assigned to each domain will be compared to the assessment blueprint, as described in Table 6.

Table 6. Categorical Concurrence Evaluation Rules[1]

Concurrence of percent of items measuring the Domain to the test blueprint Domain target	Evaluation
</= 5%	Strongly Aligned
> 5% and </= 10%	Moderately Aligned
> 10% and </= 15%	Weakly Aligned
<10%	Not Aligned

Cognitive Complexity

For the EOG and EOC assessments, we will use Webb's depth of knowledge (DOK) rating to measure the cognitive complexity. With the DOK assignment, the review panels judge cognitive complexity to support the development of assessments of similar levels of cognitive complexity. For this evaluation, Webb's (1997, 1999) DOK criteria will be used to judge alignment (see Table 7).

Table 7. General Assessment Cognitive Complexity Evaluation Rules

Percent of items corresponding to a Standard at or above the complexity level (e.g., DOK) of the Standard	Evaluation
>/= 50%	Strongly Aligned
>/= 40% and < 50%	Moderately Aligned
>/= 30% and < 40%	Weakly Aligned
<30%	Not Aligned

[1] The evaluation levels for Categorical Concurrence and other Webb review categories are derived from Webb's recommendations with the concurrence of content/alignment experts. They are considered challenging but attainable and have the extra benefit of meeting the approval of the USED peer review process.

Range of Knowledge

The range of knowledge (ROK) examines the extent to which test forms cover the standards (Webb, 1997, 1999), measuring the enacted blueprint relative to the intended blueprint. Table 8 summarizes the evaluation rules that will be used to evaluate ROK alignment.

Table 8. Range of Knowledge Evaluation Rules

Percent of Standards for a given Domain that have an associate item	Evaluation
>/= 50%	Strongly Aligned
>/= 40% and < 50%	Moderately Aligned
>/= 30% and < 40%	Weakly Aligned
<30%	Not Aligned

Balance of Knowledge

Balance of knowledge (BOK) is a measure of how items are distributed across the standards. This alignment criterion examines whether the number of test items matched to a domain is proportional to the number of standards within that domain, as indicated in the test blueprint. For this, a Webb (1999) index score is computed for each domain. The BOK is computed as:

$$BoK = 1 - \left(\frac{\left(\sum \left| \frac{1}{B} - \frac{I_K}{H} \right| \right)}{2} \right)$$

where B is the total number of items within the domain, I_K is the number of items aligned to each standard (K), and H is the total number of items aligned to the standard. Table 9 summarizes the rules that will be used to evaluate BOK alignment.

Table 9. Balance of Knowledge Evaluation Rules

BOK Index	Evaluation
>/= 0.70	Strongly Aligned
>/= 0.60 and < 0.70	Moderately Aligned
>/= 0.50 and < 0.60	Weakly Aligned
<0.50	Not Aligned

Evaluation Criteria for Alternate Assessments

Categorical concurrence, ROK, and BOK will be computed in the same way as described for the general assessment. Cognitive complexity will be measured differently for the alternate assessment. This is described below.

Cognitive Complexity

With the DOK assignment, the panelists will investigate the complexity of the items. The items in the item pool should have the same cognitive rigor as what is expected by the standards. There are different options for rating DOK for the NCEXTEND1. In K–12 assessment, Webb's (1997, 1999) DOK or variations (Hess, et al., 2009) are typically used for alignment studies. However, these approaches are not considered viable options for NCEXTEND1 because the lowest threshold of cognitive complexity in these models does not fully describe the range in the target population.

We recommend the LAL (Flowers, et al., 2007) DOK definition and codes for the alignment study. The LAL has a developmental component within the definition of cognitive complexity that is appropriate to the target population. The six-level coding scheme is reasonable for alignment raters and practitioners in the field to distinguish levels of cognitive complexity within alternate assessments. It incorporates a range of DOK that can be aligned to the standards. Furthermore, the LAL approach is consistent with other alternate assessments and has been applied in other alignment evaluations.

Each extended content standard will be assigned a DOK level by educators. Each item will be assigned a LAL level. (Note that the DOK-to-item assignment is independent of the DOK of the extended content standard.) Once data are collected, EdMetric will examine the DOK consistency of the item pool to the indicators within each blueprint reporting category.

For this evaluation, we will use evaluation criteria to meet the needs of the student population in the context of NCEXTEND1 (Table 10). For Webb (1999), at least 50% of the items corresponding to a reporting category must be at or *above* the DOK level of the indicators within each reporting category in order for the criterion to be strongly met. For the alternate, the expected relationship between DOK targets and items will reflect access as well as challenge, and will necessarily be adjusted to 50% at or *below*.

Table 10. Alternate Assessment Cognitive Complexity Evaluation Rules

Percent of items corresponding to a Standard at or below complexity level (e.g., LAL DOK) of the Standard	Evaluation the
>/= 50%	Strongly Aligned
>/= 40% and < 50%	Moderately Aligned
>/= 30% and < 40%	Weakly Aligned
<30%	Not Aligned

Section 3. Roles and Responsibilities

Following the expert review, 60 educators will be convened in an in-person workshop. An online orientation webinar will precede this workshop.

Panelist Recruitment

For the proposed alignment study, we recommend that 60 North Carolina educators be recruited for the 12 grade-span panels. Each panel for the general assessments should include at least three grade- level content teachers, one teacher of English Learners (EL), and one special educator. Each panel for the alternate assessment should include special education teachers and at least one grade-level general education teacher.

Table 11 shows the suggested panel configuration for the study. The special educators should have strong knowledge of the North Carolina extended content standards, and the classroom teachers should have strong knowledge of North Carolina's content standards. Ideally, some teachers will be cross-certified and have experience with multiple sets of standards.

Table 11. Suggested Panel Count Configuration

End-of-Grade/End-of-Course			NCEXTEND1 End-of-Grade/End-of-Course
Grade Levels	**ELA**	**Math**	**ELA/Math/Science**
3-4	5	5	5
5-6	5	5	5
7-8	5	5	5
HS	5	5	5
Total	**20**	**20**	**20**

EdMetric will outline panelist requirements and work with NCDPI to recruit panelists from a list supplied by NCDPI. We will look to NCDPI for guidance on the parameters that we should consider when recruiting teachers to best support the claim we are evaluating (e.g., region of state, school type, panelist demographics, etc.).

NCDPI Staff

A member of NCDPI should welcome panelists during the opening session of the workshop. In addition, NCDPI staff should be available throughout the workshop to answer policy-related questions.

Workshop Roles and Responsibilities

Various roles and responsibilities must be covered to address the requirements of an alignment study with fidelity, including lead facilitator and content area facilitators. Table 12 designates staff and specifies each person's role in the study.

Table 12. Workshop Staff

Staff	Role	Responsibility
Dr. Karla Egan	Workshop Lead	Dr. Egan will design the workshop. She will provide workshop oversight and answer panelist questions. She will also provide room support for the content areas.
Dr. Anne Davidson	Workshop Co-facilitator	Dr. Davidson will provide support for all content areas during the workshop.
Dr. Stanley Rabinowitz	Technical Advisor	Dr. Rabinowitz will provide support for all content areas during the workshop.
Michael Brown	Content Area Lead	Mr. Brown will serve as the content area lead for the math group.
Susan Schepp	Content Area Lead	Ms. Schepp will serve as the content area lead for the NCEXT1 group.
Gretchen Schultz	Content Area Lead	Ms. Schultz will serve as the content area lead for the ELA group.

Section 4. Workshop Implementation

This section details the planned study implementation using an in-person workshop format.

Prior to the Workshop

Workshop Site Development

EdMetric will create a Moodle site for all workshop panelists that will serve as a centralized browser-based location for all workshop materials. This site allows us to control logins to workshop hours. It also allows each panelist to maintain a separate login.

Online Orientation Webinar

Prior to the in-person alignment workshop, EdMetric will schedule an online orientation webinar to provide participants with an overview of the purpose of the alignment study, a discussion of roles and responsibilities, and a review of the materials participants will use during the workshop (e.g., standards documents, assessments, information on DOK). Alignment" is not a concept that most educators grapple with on a daily basis. An orientation webinar will help familiarize participants with the alignment study's purpose, materials, and processes.

Panelist Registration

Panelists will register for the workshop using Google Forms. Prior to the workshop, all panelists will be asked to sign a non-disclosure agreement and agree to the confidentiality of all test content and study materials. If panelists will not sign a non-disclosure agreement, they will be replaced.

In-Person Alignment Workshop

EdMetric will conduct the alignment workshop involving North Carolina educators. Participants will build on the Phase I work to complete alignment ratings for all items. Dr. Egan will kick off the meeting with general training, including a brief session on Webb's depth of knowledge and content complexities. Following the general training, panelists will divide into small groups and work through a set of 10 training items specific to their assessment. Panelists will take a brief online survey to gauge their level of understanding of the process, as well as to identify areas of confusion or concern. Once questions are addressed, the panelists will begin their alignment work.

Each panel will have access to NCDPI TMS staff who will participate as observers and, if needed, for explanation of content standards and DOKs.

When more than 50% of the panelists in a given group disagree with the initial item rating (e.g., standard, cognitive complexity), the item will be flagged. Panelists will discuss all flagged items prior to making a final recommendation. The panelists' ratings will always be given precedence when panelists disagree with the initial rating.

In the proposed meeting, panelists will participate in at least two rounds of discussion to talk about areas of disagreement in their alignment work. Panelists will be encouraged (but not forced) to come to a joint agreement during the meeting if possible. The workshop will conclude with a participant evaluation that will contribute to the overall validity of the alignment process and the use of the

assessments in the context of North Carolina's statewide assessment system. Table 13 shows a high-

Table 13. High-level Workshop Agenda

Time	Activities
DAY 1	
8:30 a.m.	• Workshop opening session • Rate training items • Complete *Readiness Survey* • Rate calibration items independently
12:00 p.m.	*Lunch break*
12:30 p.m.	• Discuss disagreements of calibration items as a group • Rate calibration items a final time
5:00 p.m.	*Adjourn for the day*
DAY 2	
8:30 a.m.	• Rate validation items independently • Discuss disagreements as a group • Rate validation items a final time
12:00 p.m.	*Lunch break*
12:30 p.m.	• Individual ratings • Complete *Final Evaluation*
5:00 p.m.	*Adjourn*

Opening Session and Training Overview

EdMetric trains panelists in multiple ways during the workshop. In this section, we cover each training component.

- **Pre-training.** Prior to the in-person meeting, participants will join a short online session to orient them to the alignment study process and materials.

- **Large-group training.** Immediately following welcome from NCDPI, EdMetric staff will provide an overview of alignment and why it is important.

We will walk through the concepts introduced at the pre-training session. One tool that we have found very useful in explaining alignment is the humble Venn diagram. Panelists have commented that the tool in Figure 2 provided an "aha" moment during alignment training.

- **Small-group practice.** Once panelists are in their small groups, our facilitators will introduce the alignment tool and guide the panelists through the first five standards. This allows panelists to immediately practice the concepts that they have just heard.

- **Readiness Survey.** After small-group practice, panelists will take a short readiness survey. This survey asks panelists if they feel prepared to begin the calibration sample of items. If a panelist answers "no," then an EdMetric facilitator will meet with the panelist individually to answer any questions.

- **PowerPoint Slides.** Part of large-group training and small-group practice will involve PowerPoint slides.

- **One-page Overview**. Prior to the workshop, we will send all panelists a one-page overview of alignment in order to acquaint them with the concepts of the workshop.

Alignment Tools

EdMetric has created an Alignment Tool that can be customized to study designs and that will ease the cognitive load of panelists participating in alignment studies. Each panelist will have their own log-in for the tool. The tool compiles data after each round and populates the subsequent round with the items that need to be discussed. Each panelist will be able to review their own ratings as well as the ratings of the other panelists in the group. For the workshop, we require that all panelists have access to a computer.

Round Process

In this section, we describe the round-by-round planned implementation for the workshop.

Round 1. Following the review of the training standards, panelists will independently align the remaining items. Panelists will remain in their breakout rooms for this work. Once all panelists complete their independent work, EdMetric will analyze the data for the agreement with the content expert ratings. Final alignment is based on majority opinion, not consensus.

Round 2. Panelists will discuss those items where a majority of panelists (more than 50%) disagreed with the original expert rating. The group facilitator guides the discussion through each item, by showing panelists where a disagreement occurred and asking panelists to discuss why they made the alignments that they did. Once panelists finish the discussion, they will independently align the flagged items. Once all panelists complete their independent work, EdMetric will analyze the data for the agreement with the content expert ratings.

Round 3. If necessary, we will conduct Round 3 for any remaining items where the panelist ratings disagree with each other. Here, the group leader will facilitate discussion of the

remaining items and enter the group's final rating for the standard. Again, final alignment is based on majority opinion, not consensus.

Workshop Monitoring

Throughout the workshop, EdMetric staff will monitor the rooms to ensure all panelists are participating in the workshop discussion. In addition, we will monitor panelist progress through our alignment tool. This will allow us to monitor how quickly panelists are completing their review.

Evaluation Survey

Readiness Survey

After practice, panelists will take a short readiness survey. This survey asks panelists if they feel prepared to begin the rating of items. If a panelist indicates that they feel unprepared, EdMetric's lead facilitator will meet with the panelist to address their questions.

Final Evaluations

After completing the item reviews, panelists will take a final evaluation. Panelists will be asked for their opinions on the procedure as well as demographic information. They will also be given the opportunity to provide qualitative feedback for the workshop.

Data Management & Security

EdMetric will use a cloud-based approach to data management and security. For data management of non-secure documents and information, we use Google Workspace tools and applications to integrate teams working in different locations. We will use a mutually agreeable file structure that all team members can access. Google Documents allows us to easily share project documents among all team members. We recognize, however, that some states do not allow the use of Google Workspace tools. If this is the case, then we will work within One Drive to organize and share documents and data.

We use Moodle to organize our workshops. By using Moodle, all panelists have unique log-ins, and we can easily turn on and off access to the workshop, thereby controlling access to data. The Moodle site serves as a central location for all panelist work, and it provides a single place where panelists log-in for workshop activities.

We transfer secure data (e.g., personally-identifiable student information, item metadata with answer keys) using Sync.com. This system allows us to use email files and folders of any size, without using attachments. We provide our clients with a secure link where they can easily upload and download secure data. It allows us to set password protection and expiration dates to better secure files.

Capturing Results

EdMetric will use our specialized alignment tool for the study. This tool allows panelists to easily enter their alignment ratings, and it allows us to capture and aggregate data in real time. We feed the final results from this tool into our data analysis program that allows us to efficiently

report alignment results for study criteria.

Section 5. Technical Report

EdMetric will document the process and results in a comprehensive technical report. The technical report will contain a narrative description of the workshop, detailed information about judgments made by panelists, information about discussions, graphical representations of panelists' judgments, detailed summaries of panelists' evaluations, and copies of the handouts and slide decks used during the alignment workshop. Figure 3 presents a proposed table of contents for the alignment study report, which can be updated to reflect developments in the study with approval by NCDPI.

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Figure 3. Proposed Table of Contents of Alignment Technical Report

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Appendix B – Recruitment Letter

From: **Mark Phipps** mark.phipps@edmetric.com
Subject: North Carolina Alignment Studies: Jan./Feb. 2023 Workshop Dates - Interest Survey
Date: October 28, 2022 at 5:20 PM
To:
Bcc:

MP

Greetings,

At the end of January and the first couple days of February, 2023, the North Carolina Department of Public Instruction (NCDPI), in conjunction with EdMetric, will be conducting several alignment study workshops for **EOG/EOC/NCEXTEND1** and the **English Language Development Standards**.

We had targeted October 2022 (this month) for these studies to be conducted; however, we had to move to new dates in Jan/Feb due to locating a venue that could accommodate the studies.

We are redistributing the interest survey now that we have confirmed meeting dates for the studies (which is why you are receiving the survey again and to see who is interested and available for the new times).

You are receiving this email as you were nominated by a school or district administrator as a highly qualified candidate to potentially serve on one of these alignment study committees. Educators who wish to be considered for participation must submit an application to alert us of their interest and availability.

Serving on a committee is viewed as an important professional development opportunity for both the educator and the school district and you will receive CEUs for your participation. Since these studies are now occurring during the school year, please confirm availability with your administrator. If selected, the state will provide funds to your district to pay for a substitute and will pay for qualified travel. More information will be sent to those who are selected.

HOW TO APPLY: Interested applicants should use the link below to fill out an online application to submit their availability.

- **North Carolina Alignment Studies - Interest Survey**
- The interest survey deadline to apply is **Wednesday, November 9th, 2022.**

MEETING DATES:

- **January 30-31, 2023: English Language Development Standards Alignment Study**
- **February 1-2, 2023: EOG/EOC/NCEXTEND1 Alignment Study**

IMPORTANT NOTE: We are preparing to host these important workshops **in-**

IMPORTANT NOTE: We are preparing to host these important workshops **in-person** in Raleigh, NC. All parties are working together to ensure a safe environment that aligns with expert protocols to mitigate the spread of Covid-19, such as physical distancing.

After the application process has been completed, EdMetric will select a representative sample from across the state to participate. The first round of invitations will be sent out no later than November 30th, 2022. If you are selected you will receive a meeting invitation with full details including location, travel, lodging, and substitute information.

Further, we do need teachers that serve in general education, EL, and EC teachers on all committees. We will be looking for a diversity of these roles to serve during the workshops.

Can't attend or are not interested? No worries, but we still ask that you click the button to access the Interest Survey, log-in and state you are unavailable. This will avoid unwanted, and unnecessary, follow-up emails to you.

We hope you consider participating in one of these important workshops.

--
Mark Phipps

EdMetric
mark.phipps@edmetric.com
651-757-5646

From: **Mark Phipps** mark.phipps@edmetric.com
Subject: North Carolina Alignment Study - General & NCEXTEND1 I February 1-2, 2023
Date: November 22, 2022 at 2:51 PM
To:
Bcc:

Greetings, {First Name}!

On behalf of the North Carolina Department of Public Instruction (NCDPI), EdMetric would like to invite you to participate on the Alignment Study Committee for:

- **Alternate/EXTEND1 - Grades 3-4**, in support of the (General or NCEXTEND1) Assessments.
- This is your anticipated group; if your assigned group should change, we will communicate that as soon as possible.

At the alignment study, participating educators will review, discuss, and align the EOG/EOC assessments to the North Carolina Standard Course of Study, or will align the NCEXTEND1 alternate assessments to the North Carolina extended content standards. You will be working in small groups or panels to align items, which will include both independent work and collaborating with others.

Based on your background and qualifications, you have been invited to participate. Serving on a committee is viewed as an important professional development opportunity for both the educator and the school district. Your participation is highly encouraged.

Important Meeting Details

WHEN

Wednesday, February 1 and Thursday, February 2, 2023 | 8:30 AM - 5 PM, both days

Note: Please arrive before the start time for check-in and so that the training and work can begin on time.

WHERE

McKimmon Center

1101 Gorman St, Raleigh, NC 27606

Note: There is plenty of free parking at the McKimmon center and there will be no charge for parking.

RSVP

Please **RSVP** to this invitation **by Friday, December 2nd, 2022**

Note: You will RSVP by completing the brief questionnaire at the link below.

RSVP Questionnaire Link

RSVP Questionnaire Link

This meeting will take place in Raleigh, NC. Per state policies, participants traveling 35+ miles to the McKimmon Center (1101 Gorman St, Raleigh, NC 27606) would be eligible for lodging reimbursement at the approved per diem lodging rate. Individuals who qualify and elect to stay at the prearranged hotel will be responsible for paying for your room when you arrive and someone from DPI will be in attendance on the last day of the workshop to collect paperwork for reimbursement.

DPI will also collect paperwork for any substitute reimbursements and travel mileage.

Please fill out the RSVP Questionnaire to complete the registration process. Once you complete the registration process, you will receive an email confirming your registration.

If you have any questions or need assistance with completing the RSVP Questionnaire, you can reach me (Mark Phipps) at: mark.phipps@edmetric.com.

Thank you.

Mark Phipps
mark.phipps@edmetric.com
www.edmetric.com
EdMetric LLC
651-757-5646

Appendix C – Workshop Agenda

NCEXTEND1 Alignment Study Workshop Agenda

Wednesday, February 1 – Thursday, February 2, 2023

Time	Activities	Notes
	DAY 1	
8:00 – 9:00 am	*All Study Participants* ● Welcome from the North Carolina Department of Public Instruction ● Welcome from EdMetric ● Housekeeping ● Training Overview ● Alignment Introduction	*Materials:* *Each Panelist has their own Moodle Access* *Opening Slide deck* *Module 1 Slides*
9:00 – 9:15	*Transition to Breakout & Break*	
9:15 – 10:00	*Breakout – Large Group* ● Student Population ● Alignment Training ● Cognitive Complexity Training	*Module 1A Student Population* *Module 2 Content Alignment Slides* *Module 3 Cognitive Complexity Slides - LAL* *LAL Summary* *Module 4 Decision Rules Slides* *Module 5 Process Steps*
10:00 – 12:00 pm	*Breakout – Panels* *ELA Training Set* ● Panelists independently rate 10 ELA items (2 passages) selected for training. ● Table leaders will keep time and facilitators oversee. ● Discuss training items with disagreement. ● Re-rate training items and submit. ● Readiness Survey	*ELA Training Set Link - Moodle* *Readiness Survey Link - Moodle*
12:00 – 1:00	*Lunch*	

NCEXTEND1 Alignment Study Workshop Agenda

Time	Activities	Notes
1:00 – 3:45	*ELA Calibration Set* ● Panelists independently rate all ELA items from both grade levels. ● Table leaders will keep time and facilitators oversee. ● Discuss items with disagreement. ● Re-rate items and submit.	*ELA Calibration Set Link - Moodle*
3:45 – 4:00	*Break*	
4:00 – 5:00	*Math Training Set* ● Panelists independently rate five (5) math items selected for training. ● Table leaders will keep time and facilitators oversee. ● Discuss training items with disagreement. ● Re-rate training items. *Begin Math Calibration Set* ● Panelists independently rate items.	*Math Item Set Link - Moodle*
	Conclude for Day	

NCEXTEND1 Alignment Study Workshop Agenda

Time	Activities	Notes
	Day 2	
8:00 – 12:00 am	*Breakout Rooms – Panels* *Complete Math Calibration Set* ● Panelists independently rate items. ● Table leaders will keep time and facilitators oversee. ● Discuss items with disagreement. ● Re-rate items and submit. *Break as needed.*	*Module 6 Day-2 Orientation* *Math Item Set Link - Moodle*
12:00 – 12:30	*Lunch*	
12:30 – 4:45	*Breakout Rooms – Panels* *Science Training Set* ● Panelists independently rate five (5) science items selected for training. ● Table leaders will keep time and facilitators oversee. ● Discuss training items with disagreement. ● Re-rate training items. *Complete Science Calibration Set* ● Panelists independently rate items. ● Table leaders will keep time and facilitators oversee. ● Discuss items with disagreement. ● Re-rate items and submit. *Break as needed.*	*Science Item Set Link - Moodle*
4:45 – 5:00	● Final evaluation ● Best wishes and thanks!	*Evaluation Link - Moodle*
	Conclude for Day	

Appendix D – Training Slides

NC EOG/EOC & NCEXTEND1 Alignment Study

North Carolina Department of Public Instruction

February 1 - 2, 2023

EdMetric LLC

EdMetric LLC

Welcome!

The NCDPI and EdMetric teams welcome you to this alignment study.

We appreciate your expertise and willingness to participate.

By participating, you support the development and improvement of the EOG/EOC and NCEXTEND1 assessments.

Alignment Study

February 1, 2023

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Test Development Team

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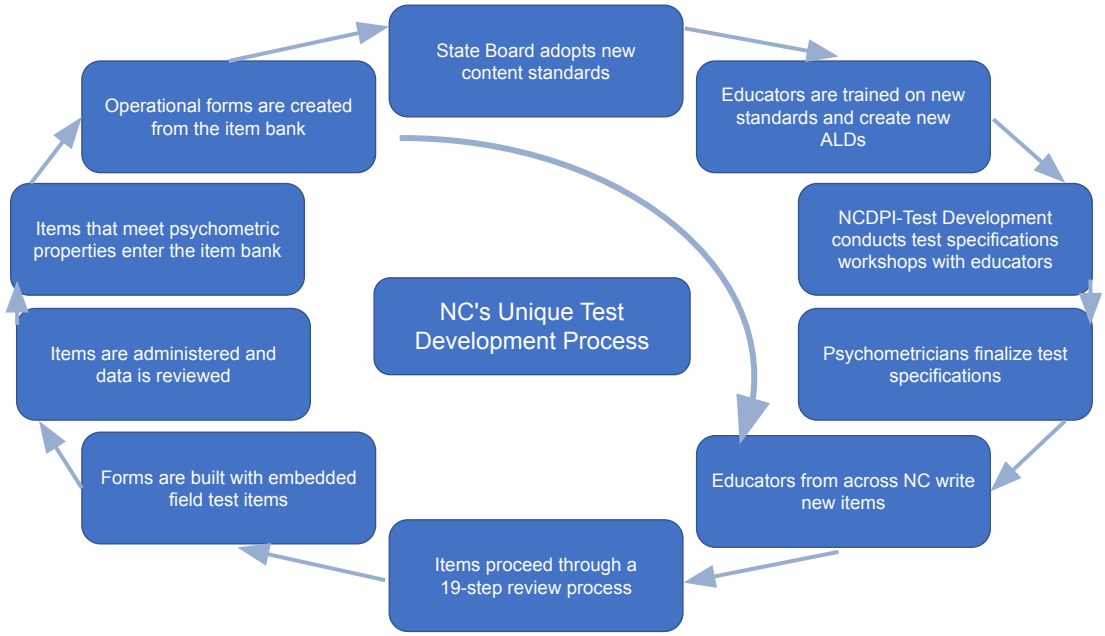
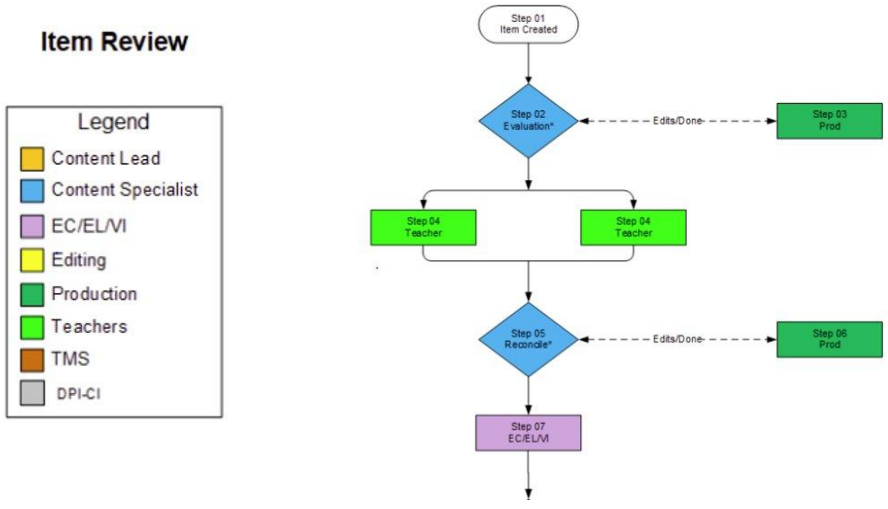
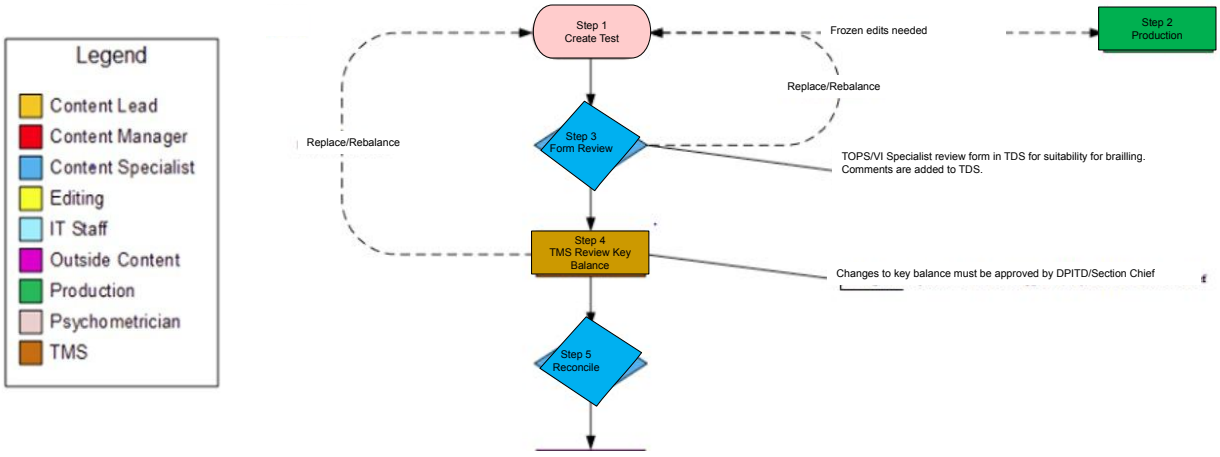
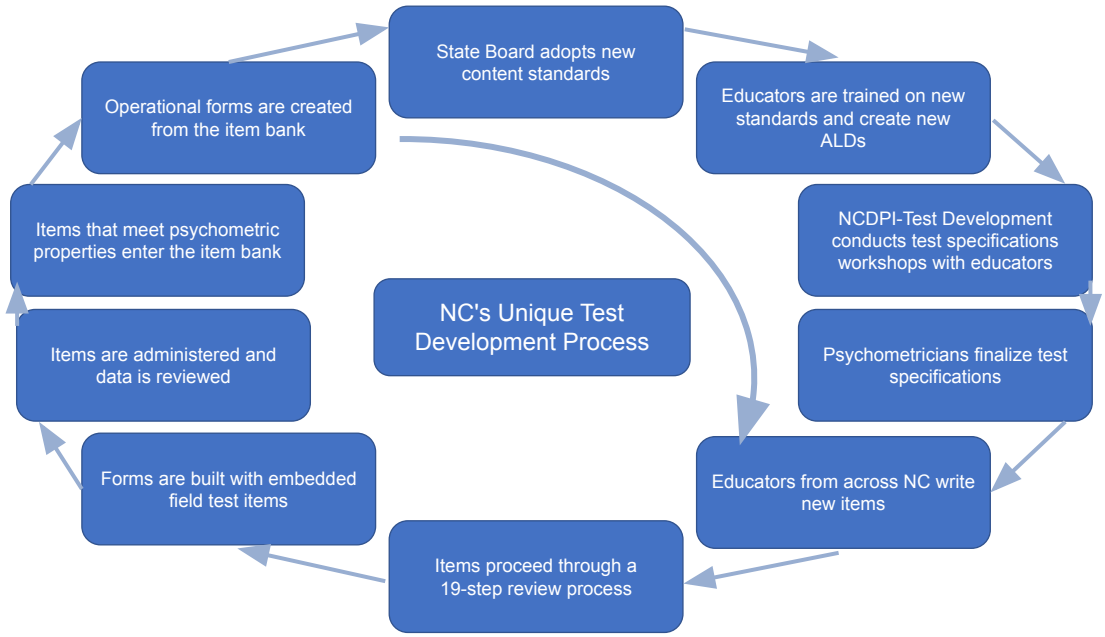


Item Development Process



Test Development Process





Norm Referenced vs. Criterion Referenced

- **Norm referenced tests** compare individual performance with the performance of a group.
- **Criterion-referenced assessments** measure how well a student has mastered a specific learning goal (or objective). Student performance is judged by how closely the performance matches specific criteria, not by how the student compares to others.

Test Development Timeline

Alignment Study

- **What is an alignment study?**
  - Examines the extent to which the North Carolina assessments align to the corresponding NC *Standard Course of Study* and the NC Extended Content Standards
- **Why is an alignment study needed?**
  - Collects validity evidence for assessment peer review for the U.S. Department of Education
- **Why use an outside vendor?**
  - Conducts an independent evaluation

When is an alignment study necessary?

- Adopt new state standards
- Change blueprint
- Create a new test
- Develop new Achievement Level Descriptors

Ambassadors

Substitute Pay, CEUs, and Reimbursements

- Substitute pay
  - Tereca Batts will be here tomorrow to pass out the form that needs to be completed and mailed in.
- Reimbursement (travel, hotel, meals)
  - Tereca Batts will be here tomorrow to answer questions and collect forms and receipts.
- CEUs – 2 days (1.6 CEUs)
  - CEU credit will appear on your NCEES transcript within one week. Participants without NCEES access should notify Elizabeth Nash (Elizabeth.Nash@dpi.nc.gov) to get a paper copy of your certificate.

North Carolina Department of
PUBLIC INSTRUCTION

EDMETRIC

EdMetric Team

EOC/EOG Facilitators

- Dr. Karla Egan
- Dr. Melia Franklin
- Gretchen Schultz (ELA)
- Mike Brown (Math)

NCEXTEND1 Facilitators

- Dr. Anne Davidson
- Dr. Stanley Rabinowitz
- Susan Schepp

Program Managers

- Mark Phipps
- Amy Jones

Assessments

- EOG/EOC
  - Mathematics: Grades 3 – 8, NC Math 1, NC Math 3
  - Reading: Grades 3 – 8, English II
- NCEXTEND1
  - Mathematics: Grades 3 – 8, NC Math 1
  - Reading: Grades 3 – 8, English II
  - Science: Grades 5, 8, Biology

Housekeeping

- Cell phones
  - Put cell phones away.
  - Only use cellphones outside of this room.
- No personal devices
- Non-disclosure agreements

Training Module 1: *What is assessment alignment?*

Alignment is…

the relative match between the content standards and the assessment items

Alignment Strength

➔ ***Full Alignment***

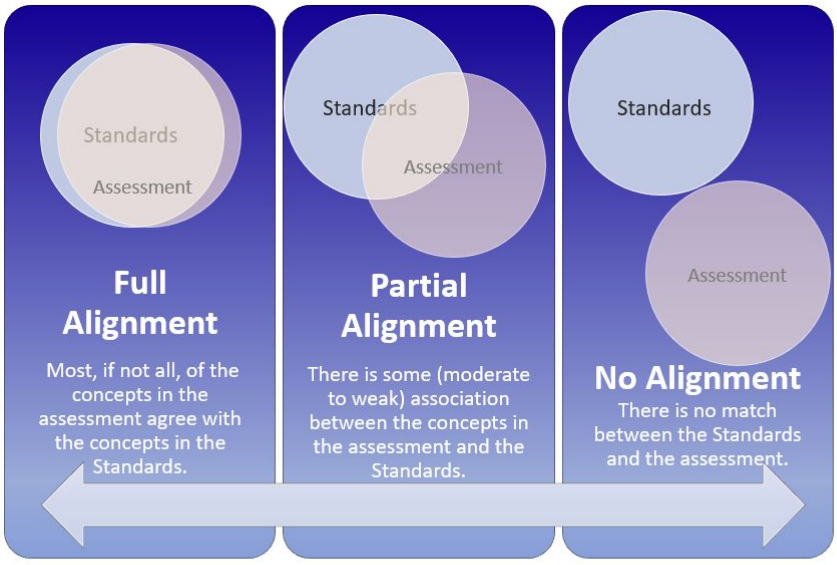
The assessment corresponds with fullest intent of the assessable Standards, including content and cognitive complexity.

➔ ***Partial Alignment***

The assessment corresponds with a significant part but not all of the assessable Standards.

➔ ***Not Aligned***

There is no alignment between the assessable Standards and the assessment.



Content Standards - Reading

GRADE 4

LANGUAGE STRAND: Language skills are inseparable from and vital to reading, writing, speaking, and listening. Even though these skills are in a separate strand, it is important for students to use effective and correct language skills in all contexts. The NC ELA Language Standards emphasize the use of accurate language skills, not just the identification of accurate language skills. The Grammar and Conventions Grade Band Continuums allow for differentiation and re-teaching as needed. It is important that students begin to demonstrate proficiency in the lower grade(s) of each band, while students in the highest grade of the band should demonstrate proficiency of the listed language skills by the *end of the school year*.

Language Standards

Conventions of Standard English

L.4.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking; demonstrate proficiency within the 4-5 grammar continuum. (See Language Standards – Grammar Continuum page 8.)

L.4.2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing; demonstrate proficiency within the 4-5 conventions continuum. (See Language Standards – Conventions Continuum page 11.)

Knowledge of Language

L.4.3 Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- a. Choose words and phrases to convey ideas precisely.
- b. Choose punctuation for effect.
- c. Differentiate between contexts that call for formal English and situations where informal discourse is appropriate.

Vocabulary Acquisition and Use

L.4.4 Determine and/or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies: context clues, word parts, word relationships, and reference materials.

L.4.5 Demonstrate understanding of figurative language and nuances in word meanings.
- a. Explain the meaning of simple similes and metaphors in context.
- b. Recognize and explain the meaning of common idioms, adages, and proverbs.

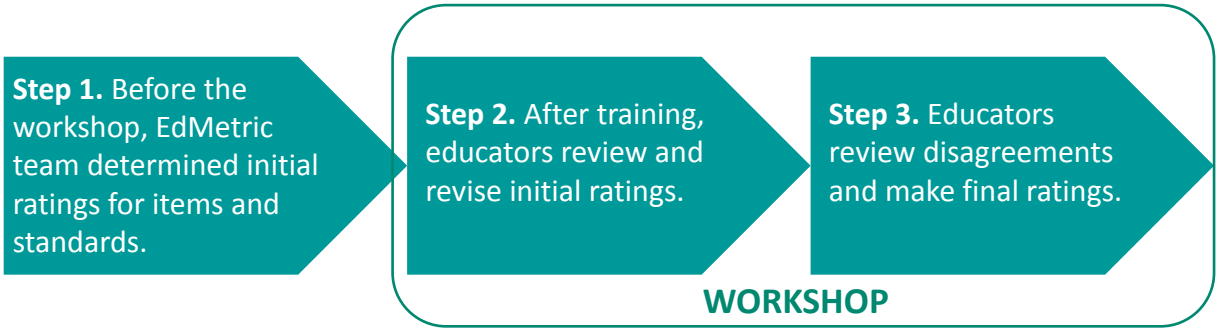
L.4.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being and that are basic to a particular topic.

Level of Alignment Ratings

We align an assessment using different lenses.

- Student performance
- Content categories
- Cognitive complexity

Study Process Overview



Workshop Overview

1. Training
2. Practice (10 items in panels)
3. Readiness Survey
4. Calibration Set
5. Validation Set
6. Individual Item Sets
7. Process Evaluation Survey
8. Final Evaluation

Roles & Responsibilities

- ➔ Panelists
  - ◆ Panel Contribution
  - ◆ Table Leader
- ➔ Facilitators
  - ◆ Workshop Leads
  - ◆ Content Area Leads

Next up…

- NCEXTEND1 panels move to your breakout room.
- Training Round
  - Practice with technology tools
  - Become familiar with the concepts of alignment

Questions?

info@edmetric.com

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Released Content

- NCEXTEND1
- EOG & EOC

Module 1A: *Who is our student population?*

NCEXTEND1

- Assessment to meet the promise of educating every child
  - Individuals with Disabilities in Education Act (IDEA)
  - Americans with Disabilities Act (ADA)
  - Every Student Succeeds Act (ESSA)
- An “alternate assessment of alternate achievement standards”
- Meets needs of the student population for assessment quality and accessibility
- Strengthens the validity argument

Students

- Determined by the Participation Guidelines
  - IEP team works together to decide
  - Steps to determine eligibility
- Students with significant cognitive disabilities
  - Not a single category
  - Diverse communication modes and cognitive modes
  - Single or multiple disabilities

Participation Guidelines

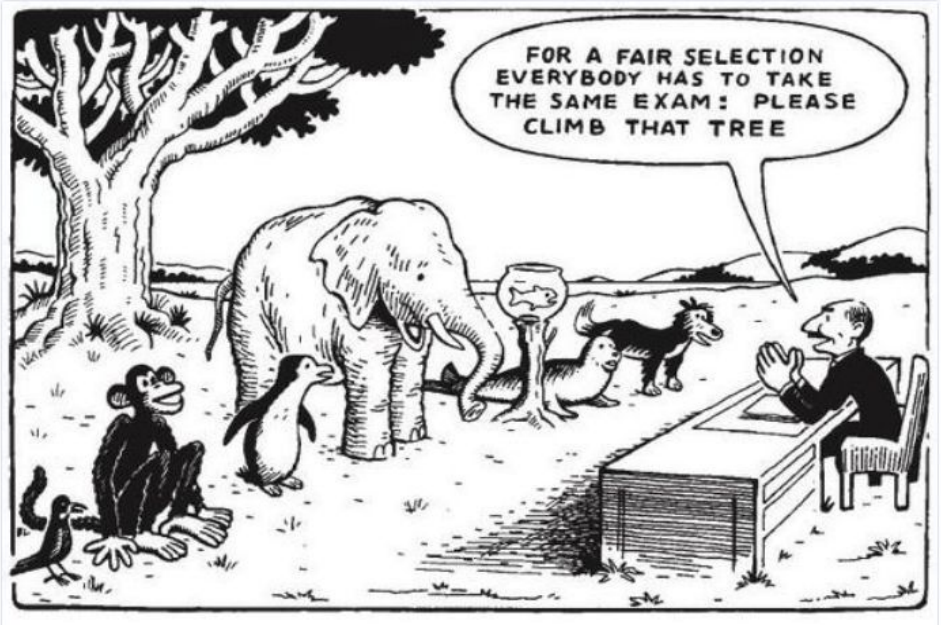
- The student must have a **current Individualized Education Program (IEP)**.
- The student must be **enrolled in grades 3–8, 10, or 11**, according to PowerSchool. Note: Only those students enrolled in 11th grade for the first time are required to take the NCEXTEND1 alternate assessment at grade 11.
- The student must be **instructed using the North Carolina Extended Content Standards** in all assessed content areas (i.e., Reading, Mathematics, and Science).
- The student must have a **significant cognitive disability**.
  - The student's disability significantly impacts **adaptive behaviors**, defined as those skills which are essential for someone to live and function independently.
  - The student requires **extensive and repeated individualized instruction and support** to make meaningful gains.
  - The student uses substantially **adapted materials and individualized methods of accessing information** in alternative ways.

from https://files.nc.gov/dpi/documents/files/ncextend1_eligibility_criteria_2019.pdf

Evidence for the decision to participate in the NCEXTEND1 is not based on:

1. a disability category or label
2. poor attendance or extended absences
3. native language/social/cultural or economic difference
4. expected poor performance on the general education assessment
5. academic and other services the student receives
6. educational environment or other instructional setting
7. percent of time receiving special education
8. English Learner (EL) status
9. low reading level/achievement level
10. anticipated disruptive behavior
11. impact of student scores on accountability system
12. administrator decision
13. anticipated emotional duress
14. need for accommodations to participate in assessment process

Development of the NCEXTEND1



Important Characteristics

- Expressive language (communication)
- Receptive language (communication)
- Vision
- Hearing
- Motor skills
- Engagement
- Health issues
- Use of an Augmentative Communication System

(based on Towles-Reeves & Kearns, 2007)

Alignment Results

- Used to inform item development
- Used for federal reporting

Questions?

info@edmetric.com

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Module 2: *What criteria do we use to judge alignment?*

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❖ Key criteria

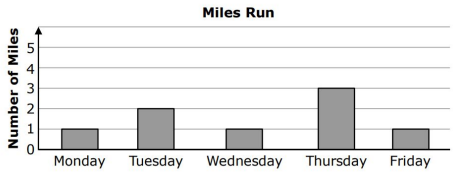
1. Rate the item's content
2. Rate the item's cognitive complexity

Key 1: Aligning content categories

In this section, we talk about how assessment items align to the intent (i.e., topics, meaning) of the standards.

Identifying the Standard

This bar graph shows the number of miles John ran each day, Monday through Friday.



How many more miles did John run on Thursday than on Friday?

1 mile

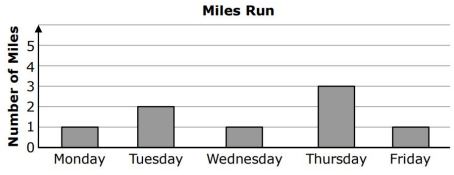
2 miles

3 miles

Examine the item, including the answer options. Think about what content it asks students to know or skills and knowledge they need to demonstrate or apply.

Identifying the Standard

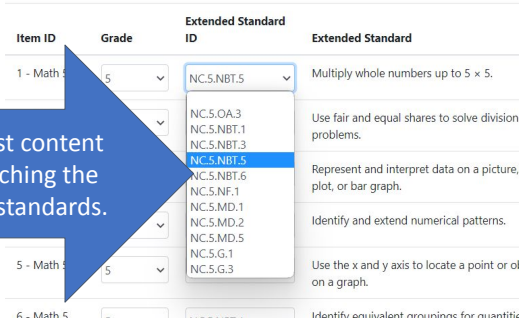
This bar graph shows the number of miles John ran each day, Monday through Friday.



How many more miles did John run on Thursday than on Friday?

1 mile | 2 miles | 3 miles

Select the best content standard matching the intent of the standards.



❖ Content Standards - ELA

READING: INFORMATIONAL TEXT
CCR Anchor Standard RI.1 – Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
RI.K.1 With guidance and support, identify a detail in a familiar text.
RI.1.1 Identify details in familiar text.
RI.2.1 Answer who and what, where questions to demonstrate understanding of details in a familiar text.
RI.3.1 Answer who and what, where, questions to demonstrate understanding of details in a text.
RI.4.1 Identify explicit details in an informational text.
RI.5.1 Identify words in the text to answer a question about explicit information.

Level of Alignment Ratings

❖ Content Standards - Math

Number and Operations in Base Ten	
Standard	
Generalize place value understanding for multi-digit whole numbers.	
NC.4.NBT.2	Use concrete and pictoral representations to count up to 100 items.
NC.4.NBT.7	Round any whole number 0-30 to the nearest ten.
Use place value understanding and properties of operations to perform multi-digit arithmetic.	
NC.4.NBT.4	Add and subtract two-digit whole numbers.

Level of Alignment Ratings

❖ Content Standards - Science

5th Grade Earth and Environmental Science Earth Systems, Structures and Processes				
Essential Standard		**Essence**	**Extended Essential Standard**	
5.E.1 Understand weather patterns and phenomena, making connections to the weather in a particular place and time.		**Understand weather conditions and patterns**	**EX.5.E.1 Understand dangerous weather conditions.**	
Clarifying Objectives	5.E.1.1 Compare daily and seasonal changes in weather conditions (including wind speed and direction, precipitation, and temperature) and patterns. 5.E.1.2 Predict upcoming weather events from weather data collected through observation and measurements. 5.E.1.3 Explain how global patterns such as the jet stream and water currents influence local weather in measurable terms such as temperature, wind direction and speed, and precipitation.		**Clarifying Objectives**	EX.5.E.1.1 Describe different types of weather (e.g. rain showers, thunderstorms, hail, tornadoes, hurricanes, blizzards). EX.5.E.1.2 Identify reasons for staying inside during severe weather (e.g. thunderstorms, hail, tornadoes, hurricanes).

Level of Alignment Ratings

Alignment Strength

➔ ***Full Alignment***

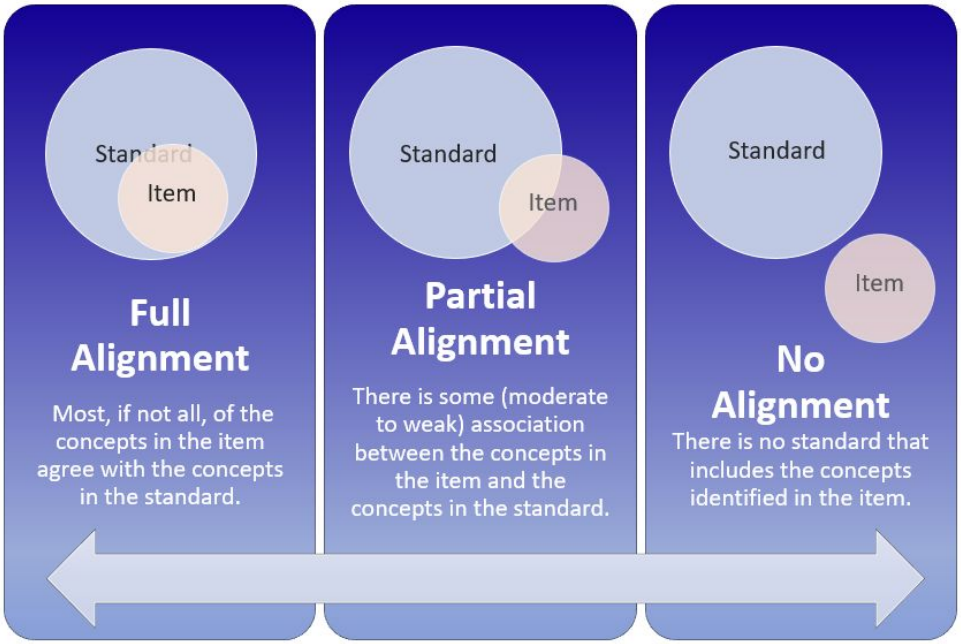
Corresponds with fullest *intent* of the standard

➔ ***Partial Alignment***

Corresponds with a significant *part* but not all of the standard

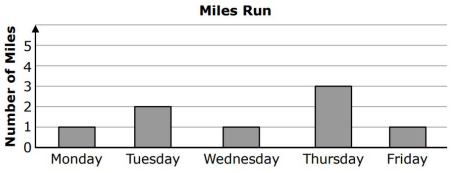
➔ ***Not Aligned***

No standard could be aligned



Identifying Alignment Strength

This bar graph shows the number of miles John ran each day, Monday through Friday.

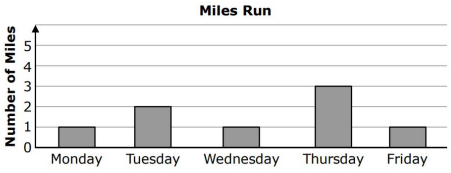


How many more miles did John run on Thursday than on Friday?

1 mile | 2 miles | 3 miles

Identifying the Secondary Standard

This bar graph shows the number of miles John ran each day, Monday through Friday.



How many more miles did John run on Thursday than on Friday?

1 mile | 2 miles | 3 miles

Assign Secondary Standard when:

- An alternative alignment may be made
- An off-grade alignment has been made
- A secondary standard is necessary to cover a critical part of the standard (*Ask, Is the primary standard I selected a partial alignment? If so, is there another standard that addresses what is not already aligned?*)

ALDs

Achievement Level 4
Students at Level 4 demonstrate a **thorough** understanding of the North Carolina Extended Content Standards and are on track for competitive employment and post-secondary education.

Achievement Level 3
Students at Level 3 demonstrate **sufficient** understanding of the North Carolina Extended Content Standards though some support may be needed to engage with content at the next grade/course.

Not Proficient
Students who are not proficient demonstrate **inconsistent** understanding of the North Carolina Extended Content Standards and will need significant support at the next grade/course.

Achievement Level	Meets On-Grade-Level Proficiency Standard	Meets Career-and-College Readiness Standard
Level 4	Yes	Yes
Level 3	Yes	No
Not Proficient	No	No

Reading ALDs

NCEXTEND1 Reading Achievement Level Descriptors—Grade 3

Achievement Level 4
*Students at Level 4 demonstrate a **thorough** understanding of the North Carolina Extended Content Standards and are on track for competitive employment and post-secondary education.*

Level 4 Students can:
Reading: Literature
- Answer who and what questions to demonstrate understanding of details in a familiar text.
- Identify the feeling of characters in a story. Determine words and phrases that complete sentences in a text. Determine the beginning, middle, and end of a familiar story in order.
- Identify parts of illustrations or tactual information that depicts a particular setting or event.

Reading: Informational
- Answer who and what, where, questions to demonstrate understanding of details in a text.
- Identify the main topic and retell key details of a text.
- Order two events from a text as "first" and "next."
- Identify key words that complete sentences in a text. Use information gained from illustrations and the words in a text to answer who and what questions.

Language
- Demonstrate knowledge of word meanings drawn from grade 3 content.

Math ALDs

NCEXTEND1 Mathematics Achievement Level Descriptors – Grade 3

Level 4

*Students at Level 4 demonstrate a **thorough** understanding of North Carolina Extended Content Standards and are on track for competitive employment and post-secondary education.*

Level 4 students can:

- Use repeated addition, bar models, and arrays to find a total product when there are repeated equal groups;
- Identify arithmetic patterns;
- Use decade numbers (10, 20, 30) as benchmarks to demonstrate understanding of place value for numbers 0–30;
- Count by tens using models such as objects, base-ten blocks, ten- frames, or money;
- Differentiate a fractional part from a whole;
- Tell time to the hour on a digital clock;
- Measure the length of objects using standard units;
- Use picture or bar graph data to answer questions about data;
- Recognize that perimeter is the distance around a shape;
- Identify the attributes of two-dimensional shapes (circle, square, rectangle, triangle, oval, rhombus).

Science ALDs

NCEXTEND1 Science Achievement Level Descriptors—Grade 5

Achievement Level 4

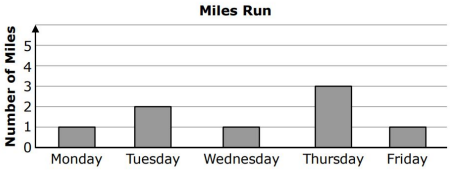
*Students at Level 4 demonstrate a **thorough** understanding of the North Carolina Extended Content Standards and are on track for competitive employment and post-secondary education.*

Level 4 Students can:

- Compare and understand changes in motion, understand that a push/pull can move an object, and be able to describe factors that impact motion.
- Understand, identify, compare, and classify changes in matter.
- Understand possible dangers related to different types of weather and identify reasons for staying inside during severe weather.
- Identify and understand basic structures of the human body that are essential for life, and their functions.
- Identify common ecosystems and plants and animals found in those ecosystems.
- Identify and differentiate living and non-living things in a given ecosystem.

Identifying the ALD

This bar graph shows the number of miles John ran each day, Monday through Friday.



How many more miles did John run on Thursday than on Friday?

1 mile

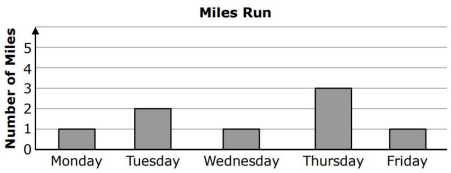
2 miles

3 miles

Examine the item, including the answer options. Think about what a correct response to the item indicates about the student's level of achievement.

Identifying the Standard

This bar graph shows the number of miles John ran each day, Monday through Friday.



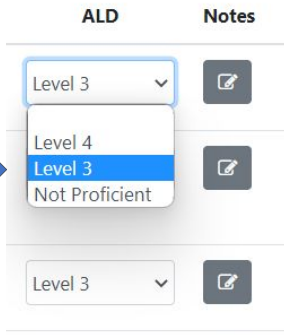
How many more miles did John run on Thursday than on Friday?

1 mile

2 miles

3 miles

Select the best content standard matching these demands.



Questions?

info@edmetric.com

EDMETRIC

Module 3: *Cognitive Complexity*

EDMETRIC

❖ Key criteria

1. Rate items by content categories
2. Rate items by cognitive complexity

Key 2: Aligning cognitive complexity

In this section, we talk about how assessment items align to the *thought processes* that the Extended Standards demand.

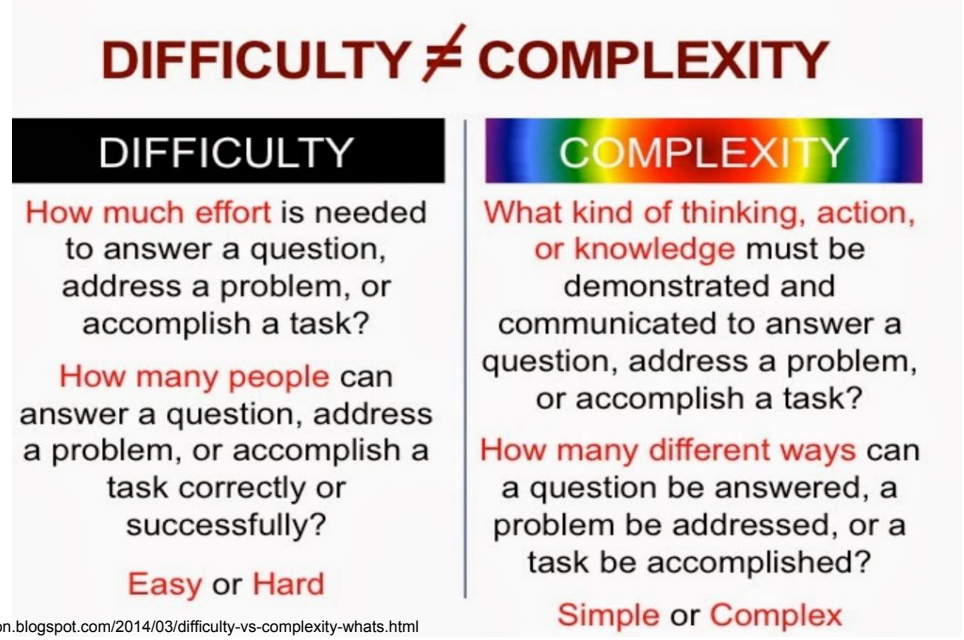
❖ Cognitive complexity

- Focus on thought processes
- Cognitive demand of the item, standard, or task
- Measured with Links for Academic Learning (LAL) scale

Complexity is *not* difficulty.

- Complexity is often confused with difficulty.
- Difficulty
  - Refers to student performance (% correct) on a given task
  - Does not describe an item's or task's cognitive demand

…easy? *…difficult?*



http://maverikeducation.blogspot.com/2014/03/difficulty-vs-complexity-whats.html

❖ Measure of complexity

Links for Academic Learning (LAL)

Flowers, C., Wakeman, S., Browder, D. & Karvonen, M. (2007).

❖ Measure of complexity

1 - Attention

Level 1

1 - Attention

touch, look, vocalize, respond, attend

Test Cards: Provided by NCDPI

- Selection: Pandas
- Stem: "Which picture shows that pandas are shy?"
- A: a picture of a panda eating bamboo
- B: a picture of a panda hiding behind a tree
- C: a picture of a panda sitting

*Objects/symbols may be substituted for the pictures if used routinely in the classroom. (Provided by the assessor)

Grade 3 Reading https://www.dpi.nc.gov/media/10670/open

❖ Measure of complexity

2 – Memorize or Recall

Level 2

2 - Memorize/recall

list, describe (facts), identify, state, define, label, recognize, record, match, recall, relate

Test Cards: Provided by NCDPI

- Selection: Pandas
- Stem: "Which word completes the sentence from the selection? Pandas eat a tall grass called _____."
- A: bamboo
- B: seeds
- C: leaves

*Objects/symbols may be substituted for the pictures if used routinely in the classroom. (Provided by the assessor)

Trial 1

- The assessor presents and reads the stem.
- The assessor says: **"Which word completes the sentence from the selection? Pandas eat a tall grass called _____."**
- The assessor presents the answer choices in the following order (*Choice A*, *Choice B*, *Choice C*).
- The assessor says: (A) **"bamboo"** (B) **"seeds"** (C) **"leaves"**
- The assessor repeats the stem and says: **"Which word completes the sentence from the selection? Pandas eat a tall grass called _____. Select an answer."**
- If the student answers correctly, the assessor presents the next item.
- If the student answers incorrectly, the assessor removes the incorrect answer and proceeds to trial 2.
- If the student does not respond, the assessor randomly removes one of the incorrect answers and proceeds to trial 2.

Grade 3 Reading https://www.dpi.nc.gov/media/10670/open

❖ Measure of complexity

3 - Performance

Level 3

3 - Performance

perform, demonstrate, follow, count, locate, read

Test Cards: Provided by NCDPI

- Stimulus: a scripted graphic showing 15 eggs
- Stem: "How many eggs does Sam have left?"
- A: 8
- B: 9
- C: 21

*Objects/symbols may be substituted for the pictures if used routinely in the classroom. (Provided by the assessor)

Grade 4 Math https://www.dpi.nc.gov/media/10679/open

❖ Measure of complexity

4 - Comprehension

Level 4

4 - Comprehension

explain, conclude, group/categorize, restate, review, translate, describe (concepts), paraphrase, infer, summarize, illustrate

Test Cards: Provided by NCDPI

- Selection: Pelé
- Stem: "What is the main idea of the selection?"
- A: Pelé was an amazing soccer player.
- B: Pelé was a man who lived in Brazil.
- C: Pelé was a man who grew up with little money.

*Objects/symbols may be substituted for the pictures if used routinely in the classroom. (Provided by the assessor)

English II https://www.dpi.nc.gov/media/10689/open

❖ Measure of complexity

5 - Application

Level 5

5 - Application

compute, organize, collect, apply, classify, construct, solve, use, order, develop, generate, interact with text, implement

Test Cards: Provided by NCDPI

- Stem: "What is the value of x in $3x + 4 + x = 20$?"
- A: 3
- B: 4
- C: 5

*Objects/symbols may be substituted for the pictures if used routinely in the classroom. (Provided by the assessor)

Math 1 https://www.dpi.nc.gov/media/10690/open

❖ Measure of complexity

6 - Analysis, Synthesis, or Evaluation

Level 6

6 - Analysis, Synthesis, Evaluation

pattern, analyze, compare, contrast, compose, predict, extend, plan, judge, evaluate, interpret, cause/effect, investigate, examine, distinguish, differentiate, generate

Test Cards: Provided by NCDPI

- Stimulus: a scripted graphic presenting milk and a pair of scissors
- Stem: "How are these two alike?"
- A: Both are examples of a chemical change.
- B: Both are examples of a physical change.
- C: Both are examples of things changing temperature.

*Objects/symbols may be substituted for the pictures if used routinely in the classroom. (Provided by the assessor)

Grade 5 Science https://www.dpi.nc.gov/media/10687/open

LAL Levels
1 - Attention touch, look, vocalize, respond, attend
2 - Memorize/recall list, describe (facts), identify, state, define, label, recognize, record, match, recall, relate
3 - Performance perform, demonstrate, follow, count, locate, read
4 - Comprehension explain, conclude, group/categorize, restate, review, translate, describe (concepts), paraphrase, infer, summarize, illustrate
5 - Application compute, organize, collect, apply, classify, construct, solve, use, order, develop, generate, interact with text, implement
6 - Analysis, Synthesis, Evaluation pattern, analyze, compare, contrast, compose, predict, extend, plan, judge, evaluate, interpret, cause/effect, investigate, examine, distinguish, differentiate, generate

LAL Considerations

- Focus on thought processes
- Cognitive demand of the item, standard, or task
- Select the highest level that best describes the thought processes that the item demands of the student

Recap: LAL is a measure of cognitive complexity.

Measure of cognitive complexity

Describes thinking

Implies interaction between student understanding and the ways the student can respond to the task

Six levels that increase in complexity

Now for the next module…

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Module 4: *Decision Rules*

Summary

- Review each item for
  - Extended standard
  - Alignment strength
  - Cognitive complexity (LAL)
  - Secondary standard (optional)
  - ALD

Decision Rule #1

- Assign the Standard first.
  - Content match
  - Alignment strength refers to the relative strength of the Extended Standard.
  - Align to an on-grade standard (even if partial) before assigning to an off-grade standard (even if full).

Decision Rule #2

- Regarding alignment strength: if the item captures *most* of the meaning of the Standard
  - to the **fullest intent** → pick "Full" alignment
  - with **a significant part but not all of the standard** → pick "Partial" alignment.

Decision Rule #3

- Regarding "No Aligned"
  - If you cannot find a standard that aligns (e.g., content is below Grade 3), select a related standard with the closest match → then pick "No Alignment".

Decision Rule #4

- Select the *highest* LAL level demanded by the item.
  - Ask, *What is the most complex level of thinking the student has to do?*
  - Ask, *Of all that the student is being asked to do, what is the most complex?*

Decision Rule #5

- Assign a secondary standard only if
  - an alternative alignment may be made
  - an off-grade alignment has been made
  - a secondary standard is necessary to cover a critical part of the standard (Ask, Is the primary standard I selected a partial alignment? If so, is there another standard that addresses what is not already aligned?)

Ask: *Is the primary standard I selected a partial alignment? If so, is there another standard that addresses what is not already aligned?*

Decision Rule #6

- Select the ALD that best matches the student's proficiency if they answer the item correctly.

Questions?

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Module 5: *Item Sets*

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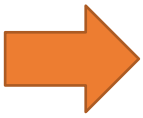
Item Batches

- Calibration
  - 15 items
  - Rate items independently
  - Discuss items where the majority of the group disagrees
- Individual Items
  - Items rated independently

Calibration



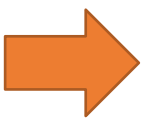
Round-1 Results

Panel disagreements for each item

Round-2 Ratings

Apply discussion to second round of ratings

Calibration



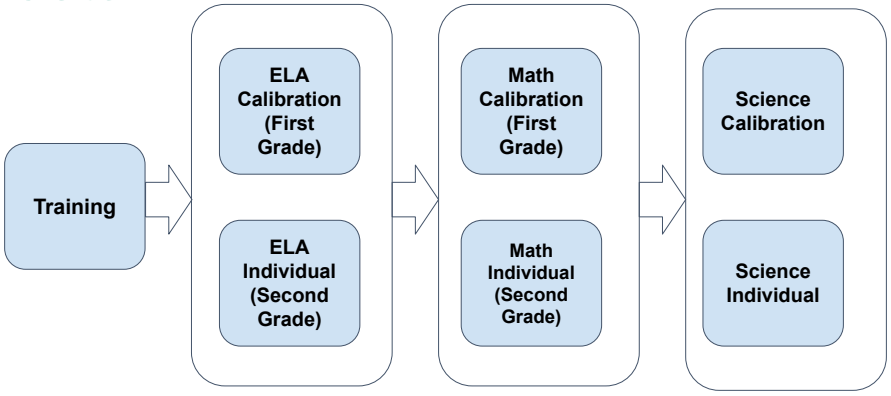
Round-2 Results

Remaining disagreements for each item

Final Ratings

Apply discussion to third round of ratings

Item Sets



Results

- Used to inform item development
- Used for federal reporting

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Day 2 Orientation

Updates

Check back on…

Math

- 3_4_C (Calibration)

ELA

- 5_6_T (Training) & 5_6_C (Calibration)
- 7_8_C (Calibration)
- HS_T (Training) & HS_C (Calibration)

Check in

What did you notice?

What hung you up?

Off-grade
Full vs. partial
Others

Science

- Content Standards
- LAL
- Dimension of Science
  - Disciplinary Core Ideas (DCI)
  - Science and Engineering Practices (SEP)
  - Cross-cutting Concepts (CCC)

Appendix E – Readiness Survey

NC Readiness Survey

* Required

Please consider each statement below. Choose the level of agreement or disagreement you have with each statement.

1. Please select your workshop panel *

Mark only one oval.

- EOG 3-4 Reading
- EOG 5-6 Reading
- EOG 7-8 Reading
- English II Reading
- EOG 3-4 Math
- EOG 5-6 Math
- EOG 7-8 Math
- EOC HS Math
- EXT1 3-4 *Skip to question 3*
- EXT1 5-6 *Skip to question 3*
- EXT1 7-8 *Skip to question 3*
- EXT1 High School *Skip to question 3*

Depth of Knowledge

2. I understand what depth of knowledge (DOK) means. *

Mark only one oval.

- Strongly Agree *Skip to question 4*
- Agree *Skip to question 4*
- Disagree *Skip to question 4*
- Strongly Disagree *Skip to question 4*

Links for Academic Learning

3. I understand what Links for Academic Learning (LAL) means. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Readiness Questions

4. The training session provided me a clear overview of the alignment process. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

5. I understand the goals of the alignment study workshop. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

6. I understand my role in the workshop. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

7. I understand how to rate the items on the online worksheet. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

8. I understand how I will (1) rate the items independently and (2) work with my panel to resolve different ratings.

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

9. I understand the purpose of each type of rating. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

10. The training round was helpful to me. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

11. I understand that I will receive additional training throughout the workshop. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

12. Before I begin working independently, I would like additional training and/or to ask additional questions regarding the alignment process.

Mark only one oval.

- Yes
- No

If you answered "Yes" to the previous questions, then please answer the next question.

13. Please list your question or provide your name and panel here. *

Appendix F – Final Evaluation Survey

NC Final

* Required

Final Evaluation

Please consider each statement below. Choose the level of agreement or disagreement you have with each statement.

1. Please select your workshop panel *

Mark only one oval.

- EOG 3-4 Reading
- EOG 5-6 Reading
- EOG 7-8 Reading
- English II Reading
- EOG 3-4 Math
- EOG 5-6 Math
- EOG 7-8 Math
- EOC HS Math
- EXT1 3-4
- EXT1 5-6
- EXT1 7-8
- EXT1 High School

2. The workshop training and practice prepared me for the assigned tasks. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

3. I understand the purpose of discussing the items where my panel disagreed. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

4. I understand the purpose of the Calibration Set. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

5. I understand the purpose of the Validation Set (if applicable). *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

6. I rated my items independently. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

7. I believe that others listened to my opinions during our discussion of alignment ratings. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

8. I understood my role in the workshop. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

9. I understood how to make alignment decisions. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

10. I understood how to assign DOK (EOG/EOC) or LAL (NCEXTEND1) levels. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

11. I understood how to make alignment strength decisions (i.e. full, partial). *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

12. I understood how to make ALD alignment decisions. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

13. I had enough time to rate all of the items assigned to me. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

14. I can defend why I aligned each item as I did. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

15. I understood how to use the Workshop Website on Moodle and the linked materials. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

16. I felt the group discussion was meaningful. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

17. Participating in the workshop increased my understanding of the assessment I worked on. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

18. Participating in the workshop increased my understanding of the content standards. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

19. The work space was appropriate to facilitate our work. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

20. The workshop's organization made sense to me. *

Mark only one oval.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

Demographic Information

21. What type of community do you represent *

Mark only one oval.

- Urban
- Suburban
- Town
- Rural

22. What title best describes your role? *

Mark only one oval.

- General Education Classroom Teacher
- Special Education Classroom Teacher
- Building Administrator
- District Administrator
- Curriculum Specialist
- Non-classroom Teacher

23. How many years have you served in this role? *

Mark only one oval.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- More than 24

24. How many years have you taught in North Carolina schools? *

Mark only one oval.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- More than 24

25. Please check all of the following in which you have experience: *

Check all that apply.

- [ ] Mathematics Instruction
- [ ] ELA Instruction
- [ ] Reading or Literacy Intervention/Support
- [ ] Science Instruction
- [ ] Instruction of Students with Significant Cognitive Disabilities
- [ ] Instruction of English Learners
- [ ] Instruction of English Learners with Disabilities
- [ ] Other...

26. With what gender do you identify? *

Mark only one oval.

- ◯ Prefer not to say
- ◯ Female
- ◯ Male
- ◯ Non-binary

27. Are you of Hispanic origin? *

Mark only one oval.

- ◯ Prefer not to say
- ◯ Yes
- ◯ No

28. With what group do you identify? *

Mark only one oval.

- Prefer not to say
- American Indian or Alaska Native
- Asian
- Black or African-American
- Native Hawaiian or Other Pacific Islander
- White or Caucasian
- Multiple Races

Your Turn

We appreciate you! Thank you for your participation!

29. Please share any comments or suggestsions related to the workshop

Appendix G – LAL Scale

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Links for Academic Learning (LAL) Cognitive Complexity

It is important to describe cognitive complexity. For some populations of students, the Links for Academic Learning (Flowers, et al., 2007) definition and codes will be used for our study. Example verbs are offered to characterize the typical cognitive demands at each level. However, these verbs may or may not be used in actual curriculum or assessment content. To best determine the best LAL Level, ask,

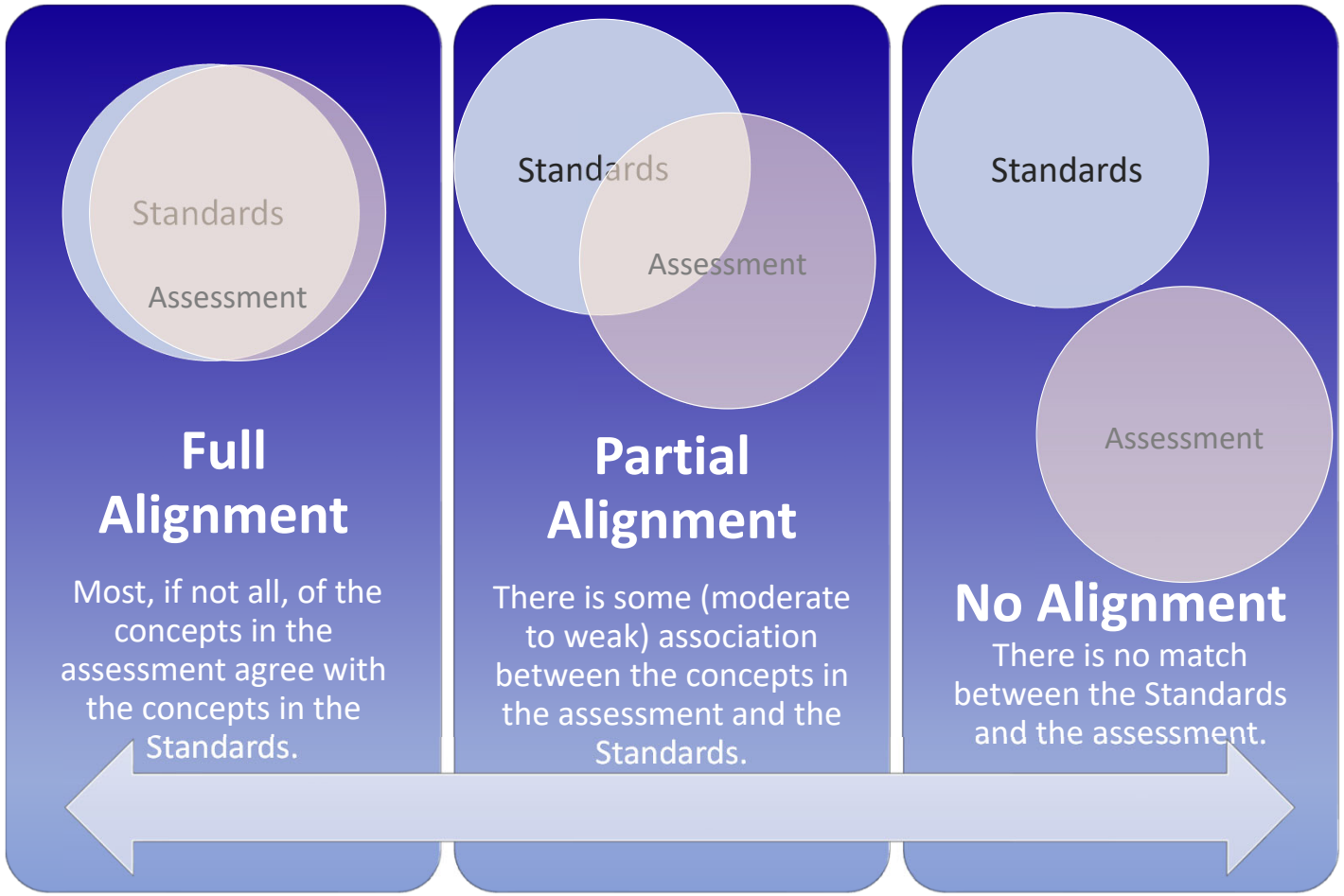
What does the student have to do? What kind of cognition is required?

1 - Attention Content could ask students to touch, look, vocalize, respond, or attend.
2 – Memorize, Recall Content could demand students list, describe (facts), identify, state, define, label, recognize, record, match, recall, or relate.
3 - Performance Content could demand that students perform, demonstrate, follow, count, locate, or read.
4 - Comprehension Content could demand that students explain, conclude, group/categorize, restate, review, translate, describe (concepts), paraphrase, infer, summarize, or illustrate.
5 - Application Content could demand that students compute, organize, collect, apply, classify, construct, solve, use, order, develop, generate, interact with text, or implement.
6 - Analysis, Synthesis, Evaluation Content could demand that students pattern, analyze, compare, contrast, compose, predict, extend, plan, judge, evaluate, interpret, cause/effect, investigate, examine, distinguish, differentiate, or generate.

Reference: Flowers, C., Wakeman, S., Browder, D., & Karvonen, M. (2007). *Links for academic learning: An alignment protocol for alternate assessments based on alternate achievement standards*. Charlotte, North Carolina: University of North Carolina at Charlotte.

Appendix H – Other Alignment Materials

- Alignment Strength Schematic
- State standards and PLDs/ALDs
    - These files (standards and PLDs/ALDs) are posted on the NCDPI's website and were provided to teachers in print form and in electronic form.


Standards
Assessment
Full Alignment
Most, if not all, of the concepts in the assessment agree with the concepts in the Standards.
Standards
Assessment
Partial Alignment
There is some (moderate to weak) association between the concepts in the assessment and the Standards.
Standards
Assessment
No Alignment
There is no match between the Standards and the assessment.

Appendix I – Detailed Alignment Results

ELA Detailed Results

Table 1: Detailed Results, ELA 3

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
1	3	RL.3.1	Full	2	Level 3		RI.3.7
2	3	L.3.5.a	Full	4	Not Proficient		L.3.4
3	3	RI.3.4	Full	3	Level 3		RI.3.4
4	3	RI.3.3	Full	4	Level 3		RI.3.3
5	3	RI.3.2	Partial	4	Level 3		RI.3.2
10	3	RL.3.5	Partial	3	Level 3		RI.3.2
11	3	RL.3.1	Full	3	Level 3		L.3.4
12	3	RL.3.4	Full	3	Level 3		RI.3.1
13	3	RL.3.1	Partial	4	Level 3		RI.3.4
14	3	RL.3.3	Full	3	Level 3		RL.3.5
6	3	RI.3.2	Partial	4	Level 3		RL.3.7
7	3	RL.3.1	Full	3	Level 3		RL.3.4
8	3	RI.3.1	Full	3	Level 3		RL.3.1
9	3	RI.3.4	Full	3	Level 3		RL.3.3
15	3	RI.3.2	Partial	4	Level 4		RI.3.2
16	3	RI.3.4	Full	3	Level 3		RI.3.4
17	3	RI.3.7	Full	2	Level 3		RI.3.7
18	3	RI.3.3	Full	4	Level 3		RI.3.3
19	3	RI.3.7	Partial	3	Level 3		RI.3.1
20	3	RL.3.3	Full	4	Level 4		RL.3.3
21	3	RL.3.1	Full	2	Level 3		RL.3.7
22	3	RL.3.4	Full	3	Level 3		RL.3.4

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
23	3	RL.3.1	Full	3	Level 3		RL.3.1
24	3	RL.3.5	Partial	4	Level 4		RL.3.5

Table 2: Detailed Results, ELA 4

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
1	4	RI.4.2	Full	4	Level 3		RI.4.2
2	4	RI.4.4	Full	4	Level 3		RI.4.4
3	4	RI.4.4	Full	4	Level 3		L.4.4
4	4	RI.4.1	Full	3	Level 3		RI.4.3
5	4	RL.4.1	Full	4	Level 3		RL.4.1
6	4	RL.4.4	Full	4	Level 4		RL.4.4
7	4	RL.4.3	Full	3	Level 3		RL.4.3
8	4	RL.4.1	Full	3	Level 3		RL.4.1
9	4	RL.4.2	Partial	5	Level 4		RL.4.2
10	4	RI.4.2	Full	3	Level 3		RI.4.2
11	4	RI.4.7	Partial	2	Level 3		L.4.4
12	4	RI.4.4	Full	3	Level 3		RI.4.4
13	4	RI.4.1	Partial	2	Level 3		RI.4.1

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
14	4	RI.4.7	Partial	2	Level 3		RI.4.7
15	4	RL.4.3	Full	3	Level 3		RL.4.3
16	4	RL.4.3	Full	3	Level 3		RL.4.1
17	4	RL.4.4	Full	3	Level 3		RL.4.4
18	4	RL.4.1	Full	3	Level 3		RL.4.3
19	4	RL.4.2	Partial	5	Level 4		RL.4.2
20	4	RI.4.2	Full	4	Level 3		RI.4.2
21	4	RI.4.4	Full	4	Level 3		RI.4.4
22	4	RI.4.1	Full	3	Level 3		RI.4.3
23	4	RI.4.3	Full	3	Level 3		RI.4.7
24	4	RI.4.3	Full	3	Level 3		RI.4.1

Table 3: Detailed Results, ELA 5

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
1	5	RI.5.2	Partial	4	Not Proficient		RI.5.2
2	5	RL.5.4	Partial	3	Level 3		L.5.5.a
3	5	RI.5.3	Full	6	Level 4		RI.5.1
4	5	RI.5.3	Full	3	Level 3		RI.5.7
5	5	RI.5.5	Full	6	Level 4		RI.5.5

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
6	5	RL.5.2	Full	4	Level 4		RL.5.2
7	5	RL.5.4	Full	4	Level 3		RL.5.1
8	5	RL.5.4	Full	4	Level 3		RL.5.4
9	5	RL.5.7	Full	3	Level 3		RL.5.7
10	5	RL.5.6	Full	5	Level 4		RL.5.6
11	5	RI.5.5	Full	5	Level 3		RI.5.5
12	5	RI.5.4	Full	4	Level 3		L.5.4
13	5	L.5.5.a	Full	4	Level 3		RI.5.4
14	5	RI.5.3	Full	6	Level 4		RI.5.3
15	5	RI.5.2	Partial	4	Level 3		RI.5.2
16	5	L.5.4	Partial	4	Level 3		RI.5.4
17	NA	NA	NA	NA	NA		RI.5.7
18	5	RI.5.8	Full	4	Level 3		RI.5.8
19	5	RI.5.3	Full	6	Level 4		RI.5.3
20	5	RL.5.2	Partial	4	Level 3		RL.5.2
21	5	RL.4.6	Partial	4	Level 3		RL.5.6
22	5	RL.5.4	Full	4	Level 3		RL.5.4
23	5	RL.5.7	Partial	3	Level 3		RL.5.7
24	NA	NA		4			RL.5.3

Table 4: Detailed Results, ELA 6

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
1	6	RL.6.1	Full	4	Level 3		RL.6.1
2	6	RL.6.6	Partial	4	Level		RL.6.4

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
					3		
3	6	RL.6.1	Full	4	Level 3		RL.6.3
4	6	RL.6.6	Full	4	Level 3		RL.6.6
5	6	RL.6.2	Full	4	Level 3		RL.6.2
6	6	RI.6.2	Full	4	Level 3		RI.6.2
7	NA	NA	NA	NA	NA		RI.6.4
8	6	RI.6.1	Full	2	Level 3		RI.6.1
9	6	RI.6.6	Full	4	Level 3		RI.6.6
10	6	RI.6.2	Full	4	Level 3		RI.6.2
11	6	L.6.4	Full	4	Level 3		L.6.4
12	6	RI.6.8	Full	4	Level 4	RI.6.6	RI.6.4
13	6	RI.6.3	Full	3	Level 3		RI.6.3
14	6	L.6.5.a	Full	4	Level 4		L.6.5.a
15	6	RI.6.2	Full	4	Level 4		RI.6.2
16	6	L.6.4	Full	4	Level 3		L.6.4
17	6	RI.6.3	Full	3	Level 3		RI.6.3
18	6	RI.6.3	Partial	3	Level 3		RI.6.1
19	6	RI.6.6	Full	4	Level 3		RI.6.6
20	6	RL.1.7	Partial	2	Level		RL.6.2

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
					3		
21	6	RL.6.1	Full	3	Level 3		RL.6.1
22	6	RL.6.6	Full	4	Level 3		RL.6.4
23	6	RL.6.6	Full	4	Level 3		RL.6.6
24	6	RL.6.3	Full	4	Level 3		RL.6.3

Table 5: Detailed Results, ELA 7

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
1	7	RI.7.5	Partial	3	Level 3		RI.7.1
2	7	L.7.4	Full	4	Level 3		L.7.4
3	7	RI.7.6	Full	4	Level 3		RI.7.6
4	7	RI.7.2	Full	4	Level 3		RI.7.2
5	7	RL.7.2	Full	4	Level 3		RL.7.2
6	7	L.7.4	Full	4	Level 3		RL.7.4
7	7	RL.7.3	Partial	4	Level 3		RL.7.1
8	7	L.7.4	Full	4	Level 3		RL.7.4
9	7	RL.7.6	Full	6	Level 4		RL.7.6
10	7	RI.7.3	Full	4	Level 3		RI.7.3

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
11	7	RI.7.3	Full	4	Level 3		RI.7.5
12	7	L.7.5.a	Full	4	Level 3		L.7.5.a
13	6	RI.6.6	Full	4	Level 3		RI.7.6
14	7	RI.7.2	Full	4	Level 3		RI.7.2
15	7	RL.7.1	Partial	3	Level 3		RL.7.1
16	7	RL.7.2	Full	4	Level 3		RL.7.2
17	7	L.7.4	Full	4	Level 3		RL.7.4
18	7	L.7.4	Full	4	Level 3		RL.7.4
19	6	RL.6.6	Full	4	Level 3		RL.7.6
20	7	L.7.4	Full	4	Level 3		L.7.4
21	7	RI.7.8	Partial	4	Level 3		RI.7.1
22	7	RI.7.8	Partial	4	Level 3		RI.7.5
23	7	RI.7.8	Full	4	Level 3		RI.7.3
24	7	RI.7.6	Full	4	Level 3		RI.7.6

Table 6: Detailed Results, ELA 8

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
1	8	RI.8.2	Partial	4	Level		RI.8.2

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
					3		
2	8	RI.8.4	Partial	4	Level 3		RI.8.4
3	8	RI.8.8	Partial	4	Level 3		RI.8.5
4	8	RI.8.6	Partial	4	Level 3		RI.8.6
5	8	RL.8.3	Full	4	Level 3		RL.8.1
6	8	L.8.4	Full	4	Level 3		RL.8.4
7	8	L.8.4	Full	4	Level 3		RL.8.4
8	8	RL.8.3	Full	4	Level 3		RL.8.3
9	8	RL.8.2	Partial	4	Level 3		RL.8.2
10	8	RI.8.4	Partial	6	Level 3		RI.8.4
11	8	RI.8.1	Full	4	Level 4		RI.8.1
12	8	L.8.5.a	Full	4	Level 3		L.8.5.a
13	8	RI.8.3	Full	4	Level 4		RI.8.3
14	8	RI.8.6	Partial	4	Level 3		RI.8.6
15	8	RL.8.1	Partial	4	Level 3		RL.8.1
16	8	RL.8.4	Partial	4	Level 3		RL.8.4
17	8	L.8.4	Full	4	Level 3		RL.8.4
18	8	RL.8.3	Full	4	Level 3		RL.8.3

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
19	8	RL.8.2	Full	5	Level 3		RL.8.2
20	8	RI.8.2	Partial	4	Level 3		RI.8.2
21	NA	NA	NA	NA	NA		RI.8.1
22	8	L.8.4	Full	4	Level 3		L.8.4
23	8	RI.8.4	Full	4	Level 3		L.8.5.a
24	8	RI.8.3	Full	5	Level 4		RI.8.3

Table 7: Detailed Results, ELA HS

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
1	HS	RI.9-10.4	Partial	4	Level 3		L.10.4
2	HS	RI.9-10.8	Full	4	Level 3		RI.10.3
3	HS	L.9-10.5.a	Full	4	Level 3		RI.10.4
4	HS	RI.9-10.2	Partial	4	Level 3		RI.10.2
5	HS	RL.9-10.1	Partial	4	Level 3	RI.9-10.1	RL.10.1
6	HS	RL.9-10.4	Partial	4	Level 3		RL.10.4
7	HS	L.9-10.5.a	Full	4	Level 3		RL.10.4
8	HS	RL.9-10.5	Partial	3	Level 3	RL.9-10.1	RL.10.5
9	HS	RI.9-10.3	Full	6	Level 3		RL.10.3

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
10	HS	L.9-10.5.a	Full	4	Level 3		L.10.5.a
11	HS	RI.9-10.8	Partial	4	Level 3		RI.10.8
12	HS	RI.9-10.2	Partial	4	Level 3	RI.9-10.1	RI.10.2
13	HS	RI.9-10.3	Partial	4	Level 3	RL.9-10.2	RI.10.1
14	HS	RI.9-10.8	Partial	5	Level 3		RI.10.5
15	HS	RL.9-10.4	Partial	4	Level 3		RL.10.4
16	HS	RL.9-10.1	Partial	4	Level 3		RL.10.3
17	HS	L.9-10.4	Full	4	Level 3		RL.10.4
18	HS	RL.9-10.5	Partial	3	Level 3		RL.10.5
19	HS	RL.9-10.1	Partial	2	Level 3		RL.10.1
20	HS	RI.9-10.8	Full	3	Level 3		RI.10.3
21	HS	L.9-10.5.a	Full	4	Level 3		L.10.5.a
22	HS	RI.9-10.4	Partial	4	Level 3		RI.10.4
23	HS	RL.9-10.1	Partial	2	Level 3		RI.10.1
24	HS	RI.9-10.8	Full	5	Level 3		RI.10.8

Math Detailed Results

Table 8: Detailed Results, Math 3

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
1	3	NC.3.G.1	Full	2	Level 3		3.G.1
2	3	NC.3.NBT.3	Full	3	Level 3		3.NBT.2
3	3	NC.3.NF.1	Full	2	Level 3		3.NF.1
4	3	NC.3.MD.2	Full	3	Level 3		3.MD.2
5	3	NC.3.MD.8	Full	5	Level 4		3.MD.8
6	3	NC.3.NBT.3	Full	3	Level 3		3.NBT.2
7	3	NC.3.G.1	Full	3	Level 3		3.G.1
8	3	NC.3.NBT.3	Full	3	Level 3		3.NBT.3
9	3	NC.3.NF.1	Full	2	Level 3		3.NF.1
10	3	NC.3.OA.9	Full	6	Level 4		3.OA.9
11	3	NC.3.OA.1	Full	4	Level 3		3.OA.1
12	3	NC.3.OA.9	Full	6	Level 4		3.OA.9
13	3	NC.3.MD.1	Full	2	Level 3		3.MD.1
14	3	NC.3.MD.3	Full	5	Level 3		3.MD.3
15	3	NC.3.OA.1	Partial	3	Not Proficient		3.OA.1
16	3	NC.3.NBT.3	Full	3	Level 3		3.NBT.3
17	3	NC.3.MD.1	Full	2	Level 3		3.MD.1
18	3	NC.3.G.1	Full	2	Level 3		3.G.1
19	3	NC.3.OA.1	Partial	3	Level 3		3.OA.1
20	3	NC.3.NBT.3	Full	3	Level 3		3.NBT.3
21	3	NC.3.MD.3	Full	4	Level 3		3.MD.3
22	3	NC.3.OA.1	Full	4	Level 4		3.OA.1
23	3	NC.3.OA.9	Full	6	Level 4		3.OA.9

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
24	3	NC.3.NBT.3	Full	3	Level 3		3.NBT.2
25	3	NC.3.NF.1	Full	2	Level 3		3.NF.1
26	3	NC.3.MD.2	Full	3	Level 3		3.MD.2
27	3	NC.3.NF.1	Full	2	Level 3		3.NF.1

Table 9: Detailed Results, Math 4

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
1	4	NC.4.NBT.4	Full	3	Level 3		4.NBT.4
2	4	NC.4.G.3	Full	2	Level 3		4.G.3
3	4	NC.4.MD.1	Full	2	Level 4		4.MD.1
4	4	NC.4.NF.1	Partial	2	Level 4		4.NF.1
5	4	NC.4.OA.3	Full	5	Level 4		4.OA.3
6	4	NC.4.G.3	Full	2	Level 3		4.G.3
7	4	NC.4.NF.1	Partial	2	Level 3		4.NF.1
8	4	NC.4.NBT.4	Full	5	Level 4		4.NBT.4
9	4	NC.4.NBT.2	Partial	3	Level 3		4.NBT.2
10	4	NC.4.G.2	Full	3	Level 4		4.MD.6
11	4	NC.4.OA.5	Full	6	Level 3		4.OA.5
12	4	NC.4.G.1	Partial	2	Level 3		4.G.2
13	4	NC.4.OA.4	Full	3	Level 3		4.OA.4
14	4	NC.4.MD.3	Full	5	Level 4		4.MD.3
15	4	NC.4.NBT.7	Full	4	Level 3		4.NBT.7
16	4	NC.4.G.1	Full	2	Level 3		4.G.1
17	4	NC.4.OA.1	Full	4	Level 4		4.OA.1

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
18	4	NC.4.NF.1	Full	2	Level 3		4.NF.3
19	4	NC.4.NBT.7	Full	4	Level 3		4.NBT.7
20	4	NC.4.G.1	Full	2	Level 3		4.G.1
21	4	NC.4.NBT.4	Full	5	Level 3		4.NBT.4
22	4	NC.4.G.3	Full	6	Level 4		4.G.3
23	4	NC.4.OA.5	Full	6	Not Proficient		4.OA.5
24	4	NC.4.NF.3	Full	3	Level 4		4.NF.1
25	4	NC.4.MD.3	Full	5	Level 4		4.MD.3
26	4	NC.4.OA.1	Full	4	Level 4		4.OA.1
27	4	NC.4.OA.3	Full	5	Level 3		4.OA.3

Table 10: Detailed Results, Math 5

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
1	5	NC.5.NBT.5	Full	5	Level 3		5.NBT.5
2	5	NC.5.NBT.6	Full	4	Level 3		5.NBT.6
3	5	NC.5.MD.2	Full	6	Level 4		5.MD.2
4	5	NC.5.OA.3	Full	6	Level 4		5.OA.3
5	5	NC.5.G.1	Full	3	Level 4		5.G.1
6	5	NC.5.NBT.1	Full	4	Not Proficient		5.NBT.1
7	5	NC.5.NBT.3	Full	6	Not Proficient		5.NBT.3
8	5	NC.5.G.3	Full	2	Level 3		5.G.3
9	5	NC.5.NBT.5	Full	5	Level 4		5.NBT.5
10	5	NC.5.MD.5	Full	5	Level 4		5.MD.5

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
11	5	NC.5.NBT.6	Full	4	Level 3		5.NBT.6
12	5	NC.5.NBT.3	Full	6	Level 4		5.NBT.3
13	5	NC.5.NBT.1	Full	4	Level 4		5.NBT.1
14	5	NC.5.NF.1	Full	3	Level 4		5.NF.1
15	5	NC.5.OA.3	Full	6	Level 3		5.OA.3
16	NA	NA	NA	NA	NA		5.NBT.6
17	5	NC.5.NF.1	Full	4	Not Proficient		5.NF.1
18	5	NC.5.G.3	Partial	2	Level 4		5.G.3
19	5	NC.5.NBT.3	Full	6	Level 3		5.NBT.3
20	5	NC.5.NBT.6	Partial	4	Not Proficient		5.NBT.6
21	5	NC.5.NF.1	Full	3	Level 3		5.NF.1
22	5	NC.5.G.3	Full	2	Level 4		5.G.3
23	5	NC.5.MD.1	Full	2	Level 3		5MD.1
24	5	NC.5.OA.3	Full	6	Level 4		5.OA.3
25	5	NC.5.MD.2	Full	4	Level 4		5.MD.2
26	5	NC.5.G.3	Full	4	Level 4		5.G.3
27	5	NC.5.NBT.5	Full	4	Level 3		5.NBT.5

Table 11: Detailed Results, Math 6

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
1	6	NC.6.RP.1	Full	4	Not Proficient		6.RP.1
2	6	NC.6.SP.4	Full	6	Level 4		6.SP.4
3	6	NC.6.NS.1	Full	6	Level 3		6.NS.1

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
4	6	NC.6.NS.2	Partial	4	Not Proficient		6.NS.2
5	6	NC.6.NS.5	Full	6	Level 4		6.NS.5
6	6	NC.6.RP.1	Full	4	Not Proficient		6.RP.1
7	6	NC.6.G.2	Full	3	Level 3		6.G.2
8	6	NC.6.EE.1	Full	5	Not Proficient		6.EE.1
9	6	NC.6.NS.3	Full	3	Level 3		6.NS.3
10	6	NC.6.NS.5	Full	6	Level 3		6.NS.5
11	6	NC.6.RP.1	Full	4	Level 4		6.RP.1
12	6	NC.6.G.2	Full	5	Level 3		6.G.2
13	6	NC.6.RP.3	Full	6	Level 4		6.RP.3
14	6	NC.6.G.1	Full	3	Level 3		6.G.1
15	6	NC.6.EE.7	Full	6	Level 3		6.EE.7
16	6	NC.6.EE.3	Full	3	Level 3		6.EE.3
17	6	NC.6.EE.7	Full	6	Level 4		6.EE.7
18	6	NC.6.SP.1	Full	6	Level 4		6.SP.1
19	6	NC.6.G.1	Full	3	Level 3		6.G.1
20	6	NC.6.SP.1	Full	4	Level 3		6.SP.1
21	6	NC.6.NS.2	Full	4	Level 4		6.NS.2
22	6	NC.6.RP.1	Full	4	Not Proficient		6.RP.1
23	6	NC.6.EE.1	Partial	5	Level 3		6.EE.1
24	6	NC.6.EE.3	Full	4	Level 3		6.EE.3
25	6	NC.6.NS.2	Full	4	Level 4		6.NS.2
26	6	NC.6.SP.4	Full	6	Level 4		6.SP.4
27	6	NC.6.NS.3	Full	5	Level 4		6.NS.3

Table 12: Detailed Results, Math 7

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
1	7	NC.7.G.6	Full	5	Level 4		7.G.6
2	7	NC.7.NS.1	Full	5	Level 4		7.NS.1
3	7	NC.7.G.2	Full	2	Level 3		7.G.2
4	7	NC.7.SP.5	Full	4	Not Proficient		7.SP.5
5	7	NC.7.RP.1	Full	4	Level 3		7.RP.1
6	7	NC.7.G.1	Full	2	Level 3		7.G.1
7	7	NC.7.G.4	Full	5	Level 4		7.G.4
8	7	NC.7.NS.1	Full	5	Level 3		7.NS.1
9	7	NC.7.EE.4	Full	5	Level 4		7.EE.4
10	7	NC.7.SP.3	Full	6	Level 4		7.SP.3
11	7	NC.7.EE.4	Full	5	Level 4		7.NS.3
12	7	NC.7.SP.1	Full	6	Level 4		7.SP.1
13	7	NC.7.G.5	Full	2	Level 4		7.G.5
14	7	NC.7.NS.2	Full	5	Level 4		7.NS.2
15	7	NC.7.G.4	Full	5	Level 4		7.G.4
16	7	NC.7.RP.1	Full	4	Level 3		7.RP.1
17	7	NC.7.SP.5	Full	4	Not Proficient		7.SP.5
18	7	NC.7.EE.1	Full	5	Not Proficient		7.EE.1
19	7	NC.7.EE.4	Full	5	Level 3		7.EE.4
20	7	NC.7.NS.3	Full	5	Level 4		7.NS.3
21	7	NC.7.EE.2	Full	6	Level 4		7.EE.2
22	7	NC.7.G.6	Full	5	Level 4		7.G.6
23	7	NC.7.NS.2	Partial	5	Level 3		7.NS.2

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
24	7	NC.7.SP.1	Full	5	Level 3		7.SP.1
25	7	NC.7.RP.1	Full	4	Level 3		7.RP.1
26	7	NC.7.G.4	Full	5	Level 4		7.G.4
27	7	NC.7.SP.3	Full	6	Level 4		7.SP.3

Table 13: Detailed Results, Math 8

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
1	8	NC.8.NS.2	Full	6	Level 4		8.NS.2
2	8	NC.8.F.2	Full	5	Level 4		8.F.2
3	8	NC.8.G.5	Full	4	Level 4		8.G.5
4	8	NC.8.EE.7	Full	5	Level 3		8.EE.7
5	8	NC.8.G.2	Full	2	Level 3		8.G.2
6	8	NC.8.F.5	Full	6	Level 4		8.F.5
7	8	NC.8.NS.1	Full	5	Not Proficient		8.NS.1
8	8	NC.8.NS.2	Full	6	Level 4		8.NS.2
9	8	NC.8.SP.1	Full	6	Level 3		8.SP.1
10	8	NC.8.NS.1	Full	5	Level 3		8.NS.1
11	8	NC.8.G.2	Full	4	Level 4		8.G.2
12	8	NC.8.EE.3	Full	5	Level 3		8.EE.3
13	8	NC.8.SP.1	Full	6	Level 4		8.SP.1
14	8	NC.8.G.9	Full	5	Not Proficient		8.G.9
15	8	NC.8.EE.3	Full	5	Level 3		8.EE.3
16	8	NC.8.EE.1	Full	5	Level 4		8.EE.1

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
17	8	NC.8.F.4	Full	6	Level 4		8.F.4
18	8	NC.8.EE.7	Full	5	Level 4		8.EE.7
19	8	NC.8.F.2	Full	6	Level 4		8.F.2
20	8	NC.8.EE.1	Full	2	Level 4		8.EE.1
21	8	NC.8.SP.1	Full	6	Level 4		8.SP.1
22	8	NC.8.F.5	Full	6	Level 4		8.F.5
23	8	NC.8.F.4	Full	4	Level 3		8.SP.1
24	8	NC.8.G.5	Full	6	Level 3		8.G.5
25	8	NC.8.NS.1	Full	5	Level 4		8.NS.1
26	8	NC.8.G.4	Full	2	Level 4		8.G.4
27	8	NC.8.EE.3	Full	5	Level 4		8.EE.3

Table 14: Detailed Results, Math HS

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
1	HS	NC.ECS-M1.F-IF.3	Full	5	Level 3		F-IF.3
2	HS	NC.ECS-M1.S-ID.2	Full	3	Not Proficient		S-ID.1
3	HS	NC.ECS-M1.F-IF.2	Full	3	Level 3	NC.ECS-M1.F-IF.1	F-IF.2
4	HS	NC.ECS-M1.A-REI.10	Full	4	Level 3		A-REI.10
5	HS	NC.ECS-M1.N-RN.2	Full	5	Level 3		N-RN.2
6	HS	NC.ECS-M1.F-IF.1	Full	5	Level 3		F-IF.1

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
7	HS	NC.ECS-M1.A-REI.3	Full	5	Level 4		A-REI.3
8	HS	NC.ECS-M1.S-ID.3	Full	3	Not Proficient		S-ID.3
9	HS	NC.ECS-M1.A-SSE.3	Full	3	Level 4		A-SSE 3
10	HS	NC.ECS-M1.F-IF.9	Full	2	Not Proficient		G-GPE.5
11	HS	NC.ECS-M1.G-GPE.4	Full	2	Not Proficient		G-GPE.4
12	HS	NC.ECS-M1.A-CED.1	Full	5	Level 4		A-CED.1
13	HS	NC.ECS-M1.F-IF.7	Full	2	Level 3		F-IF.7
14	HS	NC.ECS-M1.N-RN.2	Full	5	Level 4		N-RN.2
15	HS	NC.ECS-M1.F-IF.4	Full	2	Level 4		F-IF.4
16	HS	NC.ECS-M1.G-GPE.6	Full	3	Level 4		G-GPE.6
17	HS	NC.ECS-M1.A-APR.1	Full	5	Level 4		A-APR.1
18	HS	NC.ECS-M1.S-ID.2	Full	6	Not Proficient		S-ID.2
19	HS	NC.ECS-M1.F-IF.9	Full	6	Level 3		F-IF.9
20	HS	NC.ECS-M1.A-REI.10	Full	3	Level 3		A-REI.10
21	HS	NC.ECS-M1.F-IF.4	Full	2	Level 4		S-ID.2

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Secondary Extended Standard	Metadata
22	HS	NC.ECS-M1.F-IF.3	Full	5	Level 4		F-IF.3
23	HS	NC.ECS-M1.A-CED.1	Full	5	Level 3		A-CED.1
24	HS	NC.ECS-M1.F-IF.9	Full	4	Level 4	NC.ECS-M1.G-GPE.5	G-GPE.5
25	HS	NC.ECS-M1.S-ID.1	Partial	3	Level 3	NC.ECS-M1.A-CED.1	S-ID.1
26	HS	NC.ECS-M1.N-RN.2	Full	5	Level 4		N-RN.2
27	HS	NC.ECS-M1.A-CED.1	Full	5	Not Proficient		A-CED.1
28	HS	NC.ECS-M1.F-IF.6	Full	5	Level 4		F-IF.6

Science Detailed Results

Table 15: Detailed Results, Science 5

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Dimension	Secondary Extended Standard	Metadata
1	5	EX.5.P.1.1	Full	5	Level 4	DCI		5.P.1.1
2	5	EX.5.P.1.2	Full	5	Level 4	DCI		5.P.1.2
3	5	EX.5.P.2.1	Full	2	Level 3	DCI		5.P.2.1
4	5	EX.5.P.2.2	Full	4	Level 4	DCI		5.P.2.3
5	5	EX.5.E.1.1	Partial	2	Level 3	DCI		5.E.1.1
6	5	EX.5.E.1.2	Full	4	Level 3	DCI		5.E.1.2
7	8	EX.8.E.1.2	Partial	2	Level 3	DCI		5.L.2.1
8	5	EX.5.L.2.2	Full	2	Level 3	DCI		5.L.2.2
9	5	EX.5.L.2.3	Full	2	Level 3	DCI		5.L.2.3
10	5	EX.5.L.1.1	Partial	2	Level 3	DCI		5.L.1.1
11	5	EX.5.L.1.2	Full	4	Level 4	DCI		5.L.1.1
12	5	EX.5.L.1.2	Full	4	Level 4	DCI		5.L.1.2
13	5	EX.5.P.1.2	Full	6	Level 3	DCI	EX.5.P.1.2	5.P.1.1
14	4	EX.4.P.1.3	Full	6	Not Proficient	DCI		5.P.1.2
15	3	EX.3.P.2.3	Full	2	Level 4	DCI		5.P.2.3
16	5	EX.5.E.1.1	Partial	2	Not Proficient	DCI		5.E.1.1
17	5	EX.5.E.1.2	Full	4	Level 3	DCI		5.E.1.2
18	5	EX.5.L.2.2	Partial	4	Level 4	DCI		5.L.2.1
19	5	EX.5.L.2.2	Partial	4	Level 4	DCI		5.L.2.2
20	5	EX.5.L.2.3	Full	2	Level 3	DCI		5.L.2.3
21	5	EX.5.L.1.1	Full	2	Level 4	DCI		5.L.1.1
22	5	EX.5.L.1.2	Full	4	Level 4	DCI		5.L.1.2

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Dimension	Secondary Extended Standard	Metadata
23	5	EX.5.E.1.1	Full	5	Level 4	DCI		5.E.1.1
24	5	EX.5.L.2.3	Full	2	Level 3	DCI		5.L.2.3
25	5	EX.5.L.1.1	Full	2	Level 3	DCI		5.L.1.1

Table 16: Detailed Results, Science 8

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Dimension	Secondary Extended Standard	Metadata
1	8	EX.8.P.1.1	Full	5	Level 4	CCC		8.P.1.1
2	8	EX.8.P.2.1	Full	2	Level 4	DCI		8.P.2.1
3	8	EX.8.P.2.3	Full	4	Level 4	DCI		8.P.2.3
4	8	EX.8.E.1.1	Full	2	Level 4	DCI		8.E.1.1
5	8	EX.8.E.1.2	Full	6	Level 4	DCI		8.E.1.2
6	8	EX.8.E.1.3	Full	6	Level 4	DCI		8.E.1.3
7	8	EX.8.L.1	Full	4	Level 4	DCI		8.L.1.1
8	8	EX.8.L.1.2	Full	2	Level 4	DCI		8.L.1.2
9	8	EX.8.L.1.3	Full	2	Level 4	DCI		8.L.1.3
10	8	EX.8.L.1.4	Full	2	Level 4	DCI		8.L.1.4
11	8	EX.8.L.2.1	Full	4	Level 4	DCI		8.L.2.1
12	8	EX.8.L.2.2	Full	6	Level 4	CCC		8.L.2.2
13	7	EX.7.P.2.2	Full	3	Level	DCI		8.P.1.1

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Dimension	Secondary Extended Standard	Metadata
					4			
14	8	EX.8.E.1.1	Full	2	Level 3	DCI		8.E.1.1
15	8	EX.8.E.1.2	Full	6	Level 4	DCI		8.E.1.2
16	8	EX.8.E.1.3	Full	6	Level 4	DCI		8.E.1.3
17	8	EX.8.L.1.2	Full	2	Level 4	DCI		8.L.1.2
18	8	EX.8.L.1.3	Full	2	Level 4	DCI		8.L.1.3
19	8	EX.8.L.1.4	Full	2	Level 4	DCI		8.L.1.4
20	8	EX.8.L.2.1	Full	2	Level 4	DCI		8.L.2.1
21	8	EX.8.L.2.2	Full	6	Level 4	DCI		8.L.2.2
22	8	EX.8.P.1.1	Full	5	Level 4	CCC		8.P.1.1
23	8	EX.8.E.1.2	Full	4	Level 4	DCI		8.E.1.1
24	7	EX.7.L.2.3	Full	2	Level 4	DCI		8.L.2.1
25	8	EX.8.L.2.2	Full	6	Level 4	DCI		8.L.2.2

Table 17: Detailed Results, Science HS

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Dimension	Secondary Extended Standard	Metadata
1	HS	EX.H.Bio.2.1.1	Full	2	Level 3	DCI		Bio.2.1
2	HS	EX.H.Bio.1.2	Full	2	Level 3	DCI		Bio.1.2

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Dimension	Secondary Extended Standard	Metadata
3	HS	EX.H.Bio.1.3	Full	4	Level 3	DCI		Bio.1.3
4	HS	EX.H.Bio.1.1	Full	4	Level 3	DCI		Bio.1.1
5	HS	EX.H.Bio.2.1.2	Full	2	Level 3	DCI		Bio.2.1
6	HS	EX.H.Bio.2.1.3	Full	4	Level 3	DCI		Bio.2.1
7	HS	EX.H.Bio.2.1.4	Full	5	Level 4	DCI	EX.H.Bio.2.1.3	Bio.2.1
8	HS	EX.H.Bio.2.1.5	Full	2	Level 3	DCI		Bio.2.1
9	HS	EX.H.Bio.2.2.2	Full	4	Level 4	DCI	EX.H.Bio.2.2.1	Bio.2.2
10	HS	EX.H.Bio.2.2.2	Full	6	Level 4	DCI	EX.H.Bio.2.2.1	Bio.2.2
11	HS	EX.H.Bio.2.2.3	Full	2	Level 3	DCI		Bio.2.2
12	HS	EX.H.Bio.1.1	Full	4	Level 3	DCI		Bio.1.1
13	HS	EX.H.Bio.1	Full	2	Level 3	DCI	EX.H.Bio.1.2	Bio.1.2
14	HS	EX.H.Bio.1.3	Full	6	Level 4	DCI		Bio.1.3
15	HS	EX.H.Bio.2.1.1	Full	2	Level 3	DCI		Bio.2.1
16	HS	EX.H.Bio.2.1.3	Full	2	Level 3	DCI	EX.H.Bio.1.1	Bio.2.1
17	HS	EX.H.Bio.2.1.3	Full	4	Level 3	DCI	EX.H.Bio.2.1.2	Bio.2.1
18	HS	EX.H.Bio.2.1.4	Full	5	Level 4	DCI		Bio.2.1
19	HS	EX.H.Bio.2.1.5	Full	4	Level 4	DCI		Bio.2.1
20	HS	EX.H.Bio.2.2	Full	4	Level 4	DCI		Bio.2.2

Item	Grade	Extended Standard	Alignment Strength	LAL	ALD	Dimension	Secondary Extended Standard	Metadata
21	HS	EX.H.Bio.2.2.2	Full	6	Level 4	DCI	EX.H.Bio.2.2.1	Bio.2.2
22	HS	EX.H.Bio.2.2.3	Full	6	Level 4	DCI		Bio.2.2
23	HS	EX.H.Bio.1.1	Partial	2	Level 3	DCI		Bio.1.1
24	HS	EX.H.Bio.1.2	Full	5	Level 4	DCI		Bio.1.2
25	HS	EX.H.Bio.1.3	Full	2	Level 3	DCI		Bio.1.3