

Alternate Assessment Alignment Pilot Study  
Report to the State Department of Education

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## EXECUTIVE SUMMARY

This report details findings from an investigation of the alignment of the state's alternate assessments in English language arts (ELA) and mathematics with other components of the educational system. The criteria used in this alignment study are being evaluated as part of the UNC Charlotte partnership in the *National Alternate Assessment Center* (NAAC). This report is organized by the seven criteria developed by a collaboration of content experts, special educators, and measurement experts at UNC Charlotte (Browder, Wakeman, Flowers, Rickleman, Pugalee, & Karvonen, 2006). While some of the alignment criteria are similar to other alignment methods (e.g., Webb, Surveys of Enacted Curriculum, and Achieve), some of the criteria (criteria 5-7) were designed specifically as value indicators for students with significant cognitive disabilities (see Table 1). An additional difference between this alignment protocol and other alignment methods is the examination of the targeted standards (i.e., standards intentionally selected for students with significant cognitive disabilities) and grade-level content standards. This summary describes how well the interpretation of state standards (Grade level and Measurement Guidelines), the alternate assessments (ELA-AA; Math-AA), and instruction (professional development manual and teacher survey about instruction) met the seven criteria for alignment.

### ***Alignment Results by Criterion***

Criterion 1: *The content is academic and includes the major domains/ strands of the content area as reflected in state and national standards (e.g., reading, math, science).*

Outcome: The measurement guidelines were academic and reflected the major strands of reading and mathematics content (science was not reviewed) except for the omission of a focus on research skills in ELA. The alternate assessment also reflected the major strands of this content with a corresponding omission of research content. A few alternate assessment items were rated as nonacademic by the content experts because they did not fit any of the strands of ELA or mathematics content. These items were deleted from further alignment analysis. The professional development manual and teacher survey revealed a focus on the major strands of ELA and mathematics in instruction. Overall, this state system is aligned to academic content and meets criterion 1. We recommend either including content on Research in the measurement guidelines, alternate assessment, and professional development materials, or providing a rationale for why this ELA content strand is not considered relevant for this population.

Criterion 2: *The content is referenced to the student's assigned grade level (based on chronological age).*

Outcome: For this second criterion, the focus was on alignment with the specific curriculum standards for the content by grade bands in ELA and math. The measurement guidelines and alternate assessment items were aligned with the content standards for the grade band. All categories of standards were represented except for the state standard on Research. The professional development manual reviewed was developed for an earlier era of alternate assessment and only contains information on linking to PK-2 standards. Overall, this state system is focused on grade level content standards in the measurement guidelines and alternate assessment. We recommend organizing professional development materials by grade bands.

Criterion 3: *The achievement expectation is linked to the grade level content, but differs in depth or complexity; it is not grade level achievement. It may focus on prerequisite skills or those learned at earlier grades, but with applications to the grade level content. When applied to state level alternate assessments, these priorities are accessible to IEP planning teams.*

Outcome: As would be expected for an alternate assessment based on alternate achievement standards, the measurement guidelines reflect levels of cognitive demand that are less complex than grade level achievement. The alternate assessment matches the depth of knowledge targeted by these measurement guidelines. For ELA measurement guidelines and alternate assessment, most items focused on reading. Math had a heavy emphasis on numbers and operations. At least 50% of the content standards under each academic domain had at least one MG or AA item except for the Research strand resulting in a 75% range-of-knowledge. Based on the teacher survey of instruction, in ELA, the majority of instructional emphasis was on reading, followed by communication and in math it was numbers and operations. In general, teachers identified a greater emphasis on the lower levels of cognitive demand as the highest performance expectation for the target student in 2005-06. Overall, this state has developed a system that targets

achievement that is an alternative to grade level achievement. However, the balance across strands of content is weighted to one specific strand for both ELA and mathematics while reflecting some content in other strands. Currently, teachers report instruction that reflects similar emphasis by content area but with even lower levels of cognitive demand. Since the measurement guidelines and alternate assessments match in emphasis, these do align. We recommend some discussion about whether future work should focus on a wider range of knowledge for this population or maintain the current balance. We also recommend that professional development materials include ideas for teachers to increase the cognitive complexity reflected in instructional goals.

Criterion 4: *There is some differentiation in achievement across grade levels or grade bands.*

Outcome: This state uses the same alternate assessment across grade levels to show growth across grades. Our analysis revealed that there is a significant difference in the complexity of easier versus more difficult items in this assessment. The professional development materials do not yet indicate how to target increasing competence for a standard across grade levels/ grade bands.

Criterion 5: *The focus of achievement promotes access to the activities, materials, and settings typical of the grade level but with the accommodations, adaptations, and supports needed for individualization.*

Outcome: Because the state developed a single alternate assessment for use across grade levels, the goal was to utilize tasks that were applicable to all grades/ ages. Our analysis revealed that this goal was achieved as nearly all items were appropriate for either elementary or older students. In contrast, teachers reported that they adapted instructional materials primarily from grades K-2, even with students assigned to higher grades. We recommend that the professional development materials contain information on how to adapt a grade level activity to students' current skill levels. The materials do include information on teaching in inclusive settings.

Criterion 6: *The focus of achievement maintains fidelity with the content of the original grade level standards (content centrality) and when possible, the specified performance (category of knowledge).*

Outcome: Overall content and performance centrality of the alternate assessment items to the measurement guidelines suggested a good quality of alignment. We recommend that professional development include guidelines for teachers on how to determine if an objective aligns to a state standard (e.g., see [www.naacpartners.org](http://www.naacpartners.org) resources for teachers on this topic.)

Criterion 7: *Multiple levels of access to the general curriculum are planned so that students with different levels of symbolic communication can demonstrate learning.*

Outcome: The alternate assessments contain items at all symbolic levels reflecting its accessibility for a wide range of students within this population. However, it is weighted heavily with items at the symbolic level. The professional development materials also contain examples at all symbolic levels although this specific terminology is not used. We recommend some state discussion of whether students below the symbolic level will/should be able to achieve proficiency on this alternate assessment with the number of items provided.

### ***Overall Analysis of Alignment***

This state has evidence supporting alignment for its measurement guidelines and alternate assessment based on all seven criteria. We conclude that overall this is an alternate assessment system that links to the grade level content. Some areas for consideration in further development of the system are noted above related to balance of content. We understood from the onset that the professional development materials reviewed have not been revised to reflect the current focus of the alternate assessment system. This was verified in our analysis as the materials currently support criteria 1, 2, and 7 but need additional material to address the remaining criteria. The information on instruction obtained from teachers was limited in both respondents and number of criteria addressed by the survey. However, it did suggest that the content of instruction roughly matched the alternate assessments while the cognitive complexity and grade level of adapted materials were not as well aligned.

## **ALTERNATE ASSESSMENT ALIGNMENT PILOT STUDY REPORT TO THE STATE DEPARTMENT OF EDUCATION**

This alignment study was conducted on the basis of information obtained on the alternate assessment in February 2006 on the performance-based English Language Arts (ELA) and Mathematics (Math) alternate assessments (AAs) for grades 3 through 8. The AAs are in the development stage and are scheduled for full-scale use during the 2006-2007 academic year. Alignment of professional development activities and instruction were based on the previous alternate assessments (i.e., portfolio assessment) and the analyses in this study are used to suggest potential professional development activities for the performance-based AAs.

The criteria in this alignment study are being evaluated as part of the UNC Charlotte partnership in the *National Alternate Assessment Center* (NAAC). This report is organized by the seven criteria developed by a collaboration of content experts, special educators, and measurement experts at UNC Charlotte (Browder, Wakeman, Flowers, Rickleman, Pugalee, & Karvonen, 2006). While some of the alignment criteria are similar to other alignment methods (e.g., Webb, Surveys of Enacted Curriculum, and Achieve), some of the criteria (criteria 5-7) were designed specifically as value indicators for students with significant cognitive disabilities (See Table 1). An additional difference between this alignment protocol and other alignment methods is the examination of the targeted standards (i.e., standards intentionally selected for students with significant cognitive disabilities) and grade-level content standards. These results will inform decision makers about what content standards are being emphasized and what standards are being excluded for students with significant cognitive disabilities when compared with the general education population.

All reviewers were instructed on the purpose of alternate assessments and reviewed all the testing materials and academic content standards provided by the state of . The content reviewers rated the alignment of AA items to content standards as a team until there was consensus. After both the content experts had consensus, they rated subsequent items independently. Independent ratings of some common items were used to evaluate inter-rater agreement. Special education experts rated the professional development materials, and the age appropriateness and symbolic levels of the MGs and alternate assessment items.

### **DESCRIPTION OF CURRICULUM STANDARDS AND ALTERNATE ASSESSMENTS**

The ELA-AA consisted of 248 items nested in 44 tasks. The development of the items was guided by 72 Measurement Guidelines (MGs), which were detailed descriptions of content and performance expectations for AAs. The test specifications linked the AA items and MGs to the grade-level content standards and were used by the alignment team to examine alignment. 's grade-level content standards consist of four content domains for grades 3-8 (Reading, Writing, Communication, and Research), and included content standards and performance indicators that provided detailed description of the content domain. The state's academic content standards are designated by grade with substantial overlap across grades 3-8.

The Mathematics AA consisted of 216 item nested within 44 tasks. The development of the items was guided by 48 measurement guidelines. As with the ELA-AA items, test specifications indicated the intended link between the items, MGs, and grade-level content standards. Grade-band content standards (3-5 and 6-8) consisted of five content domains (Numbers & Operations, Algebra, Geometry, Measurement, and Data Analysis & Probability). The math content standards are organized by grade bands.

The tasks and items on the alternate assessments are designed to be independent of age (i.e., appropriate for both younger and older students). Results of the assessment are reported on a single continuous scale for all students with significant cognitive disabilities between in grades 3-8. Within the AAs, assessment tasks are organized from low to high complexity. Students are not expected to complete all the tasks and items, but are provided a starting point based on a placement procedure. After the starting point has been determined for a student, the student is administered each item until the student can no longer answer the questions.

### **EXPERT REVIEWERS AND TEACHER SURVEY RESPONDENTS**

The alignment team consisted of three English Language Arts (ELA) experts, two mathematics experts, two experts in the education of students with significant cognitive disabilities, and two measurement experts. The ELA and mathematics experts were licensed school administrators with experience in elementary, middle, and high

school settings and were also certified in math and science or English language arts, social studies, and/or media; one ELA expert was a literacy specialist with a master's degree in reading.

At the beginning of each alignment activity, the team worked together to come to a consensus on the alignment of educational components. When experts disagreed, decision rules were made to insure consistency. Then the reviewers independently rated a subset of items/standards/extended standards (i.e., measurement guidelines) and agreement between raters was examined. When the raters agreed 100%, each rater was given specific tasks. Some of the tasks were overlapping to check for agreement between raters.

For the ELA alignment, the exact inter-rater agreement was: (a) 82% for academic content standards and academic (i.e., NCTE) alignment, (b) 82% between academic content standards and measurement guidelines, (c) 78% between ELA-AA items and academic content standards, (d) 90% for accessibility (symbolic communication), and (e) 100% for age appropriateness. All disagreements were decided by a third reviewer.

The agreement for the math alignment activities was higher than for ELA. There was (a) 84% agreement about alignment between content standards and academics, (b) 89% for content standards and measurement guidelines, (c) 95% for math-AA items and academic content standards, (d) 88% for accessibility, and (e) 96% for age appropriateness.

The Curriculum Indicators Survey (CIS) was used to assess classroom instruction. Nine teachers completed the CIS in February 2006. One of those teachers was the alternate assessment leader for her district, but did not administer any alternate assessments herself. Her responses are excluded from this summary. All eight teachers who responded to the survey had Master's degrees and special education certification. None had any teaching licenses with concentrations in ELA or math, although three had National Board certification and three had elementary education certifications. All respondents had at least four years of teaching experience, and two had 31 or more years of experience.

#### **CRITERIA FOR ALIGNING ALTERNATE ASSESSMENTS TO GRADE LEVEL ACADEMIC CONTENT**

Nonregulatory guidance has specified that alternate assessments “should be clearly related to grade-level content, although it may be restricted in scope or complexity or take the form of introductory or prerequisite skills” (U.S. Department of Education, 2005, p.26). As stated in this regulation, there should be a clear *link* to the content standards for the grade in which the student is enrolled. While this gives states flexibility to determining the scope and breadth of content of alternate assessments, it does not exempt states from designing assessments that measure an academic domain with interpretable results and accurately reflecting what the student knows and can do within that academic domain. For this reason, the authors believe that the investigation of alignment between academic content, academic performance, alternate assessments, and instructional practices and resources should be as strenuous as those used for the assessment of students in the general population. In contrast, it is also expected there would be some differences in the depth, breadth or complexity of content addressed when the achievement target is an alternative to grade level achievement. Because of the unique characteristics and needs of students with significant cognitive disabilities (e.g., testing formats and instructional practices), additional alignment criteria also need to be considered for alternate assessments.

In our conceptual framework, we propose seven criteria for linking to grade-level academic content standards (see Table 1). To be linked to grade level standards, the target for achievement must be academic content (e.g., reading, math, science) that is referenced to the student's assigned grade based on chronological age. Functional activities and materials may be used to promote understanding, but the target skills for student achievement are academically-focused. Some prioritization of the content will occur in setting this expectation, but it should reflect the major domains of the curricular area (e.g., strands of math) and have fidelity with this content and how it is typically taught in general education. The alternate expectation for achievement may focus on prerequisite skills or some partial attainment of the grade level, but students should still have the opportunity to meet high expectations, to demonstrate a range of cognitive demand, to achieve within their level of symbolic communication, and to show growth across grade levels or grade bands.

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Table 1: *Criteria for Instruction and Assessment that Links to Grade Level Content*

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1. The content is academic and includes the major domains/ strands of the content area as reflected in state and national standards (e.g., reading, math, science.)
2. The content is referenced to the student's assigned grade level (based on chronological age).
3. The achievement expectation is linked to the grade level content, but differs in depth or complexity; it is not grade level achievement. It may focus on prerequisite skills or those learned at earlier grades, but with applications to the grade level content. When applied to state level alternate assessments, these priorities are accessible to IEP planning teams.
4. There is some differentiation in achievement across grade levels or grade bands.
5. The focus of achievement promotes access to the activities, materials, and settings typical of the grade level but with the accommodations, adaptations, and supports needed for individualization.
6. The focus of achievement maintains fidelity with the content of the original grade level standards (content centrality) and when possible, the specified performance (category of knowledge).
7. Multiple levels of access to the general curriculum are planned so that students with different levels of symbolic communication can demonstrate learning.

*Source: Browder, Wakeman, Flowers, Rickelman, Pugalee, & Karvonen, 2006*

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The following sections report the results of the pilot alignment method organized around the seven criteria, as applied to the state's alternate assessment system. In each section, results are reported for measurement guidelines and alternate assessments in ELA and math. Information about professional development and classroom instruction related to each criterion is provided at the end of each section.

## ALIGNMENT RESULTS

**Criterion 1: The content is academic and includes the major domains/strands of the content areas as reflected in national standards as defined by the National Council of Teachers of English (NCTE) and National Council of Teachers of Mathematics (NCTM).**

### *1.1 Are the MGs and AA Items Academic?*

All measurement guidelines (MGs<sup>1</sup>) and AA items were screened to determine if they were academic. An item was considered not academic if it could not be assigned by the content experts to one of the strands of English identified by the NCTE or NCME (see 1.2). Reviewers reported that all the MGs for ELA ( $N=72$ ) and math ( $N=48$ ) were academic. Of the 248 items on the ELA-AA, 232 (93.4%) items were rated academic, while 16 ELA items (listed below) were rated as not academic. All 216 (100%) of the Math-AA items were rated academic. ELA-AA items rated as not academic are excluded from further analyses.

### *1.2 To which national standards in ELA and math do the MGs and AA items align?*

Next, the alignment of MGs and AA items were aligned to the major components/strands of national standards of the NCTE and NCTM. The six interrelated national ELA standards used in this alignment procedure are (1) Reading, (2) Writing, (3) Speaking, (4) Listening, (5) Viewing, and Visually Representing, and (6) Research. The five strands of mathematics are (1) Numbers and Operations, (2) Algebra, (3) Geometry, (4) Measurement, and (5) Data Analysis and Probability.

#### ELA Results

The alignment of the 72 ELA MGs guidelines to National Council of Teachers of English's (NCTE) *Standards for English Language Arts* is reported in Table 2. Most of the measurement guidelines were aligned to Reading (70%), followed by Writing (11%), Viewing/Visual (11%), Speaking (8%) and Listening (7%) (see Table 2). No MGs aligned to Research. MGs that aligned to reading were further analyzed for alignment to the National Reading Panel (NRP) Components including Comprehension, Vocabulary, Phonics, Phonic Awareness, and Fluency. Most of the reading MGs aligned to Comprehension (61.2% of reading items), followed by Phonic Awareness (20.4%) and Vocabulary (18.4%). There were no MGs that aligned to Phonics or Fluency.

The alignment of the ELA-AA items to the six national ELA standards is also reported in Table 2. Most of the items aligned to Reading (60%), followed by Speaking (20%), Listening (9.9%), Writing (9.5%), and Viewing/Visual (1%). No items aligned to Research domain. Further analyses of the Reading items' alignment to the NRP standards indicated that most reading items were aligned to Comprehension ( $n=73$ , 82%) with few items aligned to Phonics ( $n=7$ , 7.8%), Phonic Awareness ( $n=5$ , 5.6%) and Vocabulary ( $n=4$ , 4.5%). No items were aligned to Fluency.

Table 2: *Alignment of ELA Measurement Guidelines and AA Items to NCTE Standards*

Components	Measurement Guidelines		ELA-AA Items	
	N	%	N	%
Reading	50	69.5	139	59.9
Writing	8	11.1	22	9.5
Speaking	6	8.3	46	19.8
Listening	5	6.9	23	9.9

<sup>1</sup> The measurement guidelines (MGs) are knowledge and skills targeted for students with significant cognitive disabilities.

Viewing/Visual	8	11.1	2	.9
Research	0	0	0	0

Raters found several items that aligned to more than one standard. Items that aligned to a second standard are reported in Table 3. Of the 20 reading items, seven aligned to the Comprehension component of the NRP.

Table 3: *Secondary Alignment of ELA-AA Items to NCTE Standards*

Components	N Items	%
Reading	20	21.3
Writing	5	5.3
Speaking	14	14.9
Listening	19	20.2
Viewing/Visual	35	37.2
Research	1	1.1

A similar percentage of MGs and ELA-AA items were found across the national standards. The MGs emphasized reading and most of the AA items were aligned to reading. The following figure provides an illustration of the percentage of MGs and ELA-AA items across the six national standards.

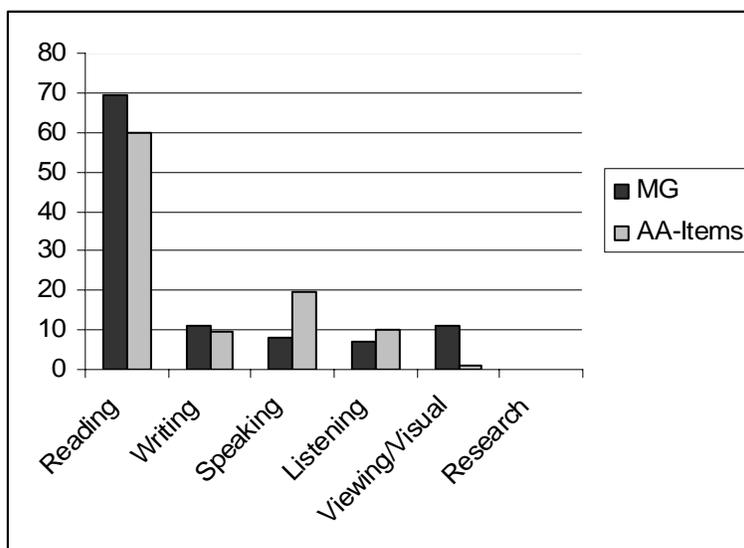


Figure 1. The percentage of MGs and ELA-AA items within the six NCTE standards.

### Math Results

The alignment of the MGs and the Math-AA items to the NCTM standards can be found in Table 4. Both the MGs and Math-AA items had the highest percentage in the Numbers and Operations component, 39.6% and 42.1% respectively. The emphases in the MGs were consistent with the emphases in the Math-AA items.

Table 4: *Alignment of Math Measurement Guidelines and AA Items to NCTM National Standards*

Components	Measurement Guidelines		Math-AA Items	
	N	%	N	%

Numbers and Operations	19	39.6	91	42.1
Algebra	3	6.3	0	0
Geometry	10	20.8	57	26.4
Measurement	12	25.0	45	20.8
Data/Probability	4	8.3	23	10.6

A visual comparison of percentage of MGs and Math-AA items across the five NCTM standards can be seen in Figure 2.

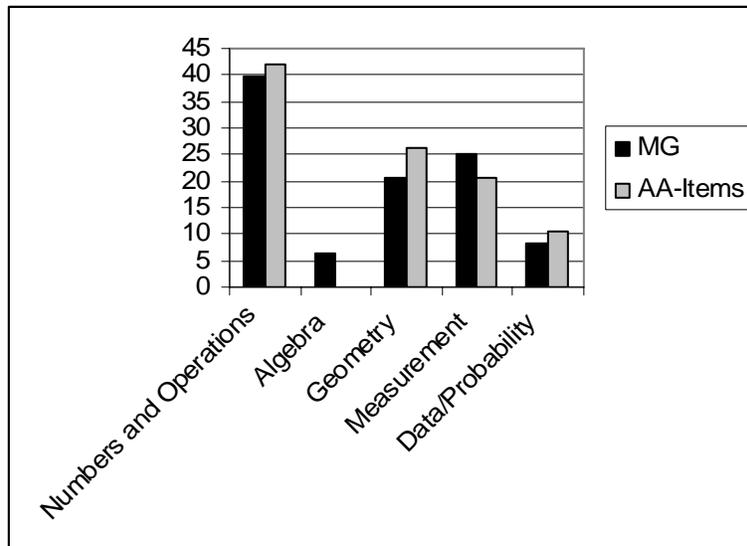


Figure 2. The percentage of MGs and Math-AA items within the five NCTM standards.

### ***Results for Instructional Alignment for Criterion 1***

#### ***Manual***

Two researchers coded the drafted professional development manual *Teaching to the Standards: A Guide for Teachers* using a coding form. It should be noted that this manual was developed for a prior alternate assessment and had not yet been revised to reflect the state’s new thinking about alignment to academic content. The evaluation provided here was conducted to pilot the alignment protocol and to offer the state guidance for the revision of these materials.

Two special education experts examined the extent to which the manual promoted access to the general curriculum. All ten national components or standards of ELA (including five from NCTE and five from the National Reading Panel) except the NRP component of fluency were found in the resource. All five NCTM strands were also represented. There was an outstanding breadth in covering all content domains. Fluency may not be a priority for this population given the emergent literacy level of most of the reading activities; adding a rationale for omitting this component may be appropriate.

**Criterion 2: The content is referenced to the student’s assigned grade level (based on chronological age).**

In the first criterion, the focus was on the match between interpretation of state standards (measurement guidelines), the alternate assessment, and professional development with national strands of content to answer the broad question, “Is it academic?” In this second step, the focus is on the alignment with the state’s own standards to ask the question, “Is it grade level content?” The USDOE Nonregulatory Guidance permits a focus on grade bands versus grade specific content for alternate assessments (August, 2005.)

**2.1 Do the Measurement Guidelines and AA Items Reference the Grade-level Content Standards?**

The ELA and math test specifications provided by the state reported the intended alignment between the MGs, AA items, and grade level content standards and did use a grade band approach<sup>2</sup>. The following results report the intended alignment between the grade level content standards and the MGs and AA items. The number and percentage of ELA and math MGs and AA items that are referenced to the grade-band content standards are reported.

ELA Results

The ELA MGs reference to grade bands 3-5 and 6-8 ELA content standards are reported in Table 5. Most MGs referenced the ELA Curriculum Standards in Reading and no MGs were referenced to the Research Curriculum Standards.

Table 5: Number of MGs Referenced to ELA Curriculum Standards in Grades 3-8

ELA Curriculum Standards	Grades 3-5				Grades 6-8			
	Primary		Secondary		Primary		Secondary	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Reading	33	66	24	80	24	75	1	17
Writing	6	12	3	10	5	16	2	33
Communication	11	22	3	10	3	9	4	67
Research	0	0	0	0	0	0	0	0
Total MGs	50		30		32		6	

*Note.* These are the intended alignment of MGs to Grade-band content standards reported by the state. The quality of alignment is evaluated in criteria 3.

All the ELA-AA items were referenced to grade-band content standards. The numbers of ELA-AA items referenced to the grade-band ELA Curriculum Standards are reported in Table 6. As with the ELA MGs, most of the items referenced Reading.

Table 6: Number of ELA-AA Items Referenced to ELA Curriculum Standards in Grades 3-8

ELA Curriculum Standards	Grades 3-5				Grades 6-8			
	Primary		Secondary		Primary		Secondary	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Reading	128	77	100	90	95	80	3	38
Writing	22	13	5	5	20	17	4	50
Communication	16	10	6	5	4	3	1	13
Research	0	0	0	0	0	0	0	0

<sup>2</sup> The state content standards are knowledge and skills expected of the general education student population.

Total Items	166	111	119	8
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### Math Results

The Math MGs reference to grade bands 3-5 and 6-8 math content standards are reported in Table 7. Most MGs are referenced to the Numbers and Operations content standards but all the content standards are referenced by some of the Math MGs.

Table 7: *Number of MGs Referenced to Math Curriculum Standards in Grades 3-8*

Math Curriculum Standards	Grades 3-5				Grades 6-8			
	Primary		Secondary		Primary		Secondary	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Numbers	17	39	4	44	15	37	2	100
Algebra	6	14	2	22	5	12	0	0
Geometry	8	18	2	22	7	17	0	0
Measurement	9	20	1	11	11	27	0	0
Data/Probability	4	9	0	0	3	7	0	0
Total MGs	44		9		41		2	

All the Math-AA items were referenced to grade-band content standards. The numbers of Math-AA items referenced to the grade-band Math Curriculum Standards are reported in Table 8. As with the Math MGs, most of the items referenced Numbers and Operations with all content standards having some items referenced.

Table 8: *Number of Math-AA Items Referenced to Math Curriculum Standards in Grades 3-8*

Math Curriculum Standards	Grades 3-5				Grades 6-8			
	Primary		Secondary		Primary		Secondary	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Numbers	67	34	17	40	58	31	10	100
Algebra	27	14	10	24	21	11	0	0
Geometry	42	21	10	24	37	20	0	0
Measurement	40	20	5	12	55	29	0	0
Data/Probability	23	12	0	0	17	9	0	0
Total Items	199		42		188		10	

### ***Instructional Alignment Related to Criterion 2: Links to Grade Level State Standards***

For criterion 2, the reviewers considered whether the information provided in the professional development manual promoted clear links to state standards. The drafted manual addressed curriculum standards for ELA and math at the PreK-2 levels only. Information for teachers on classroom activities and IEP guidance about creating the link for this grade band was included in the manual. However, no measurement guidelines or assessment standards were included in this document. Without this information, teachers of students with significant cognitive disabilities may have difficulty knowing how to prioritize instruction within grade level content.

**Criterion 3: The achievement expectation is linked to the grade level content, but differs in depth or complexity; it is not grade level achievement. It may focus on prerequisite skills or those learned at earlier grades, but with applications to the grade level content. When applied to state level alternate assessments, these priorities are accessible to IEP planning teams.**

Using the content experts coding, statistics for categorical concurrence, depth of knowledge, range-of-knowledge correspondence, and balance of representation are reported (Webb, 1997). In addition, 2X2 matrices of content by depth of knowledge are provided to describe the MGs and AA items content by cognitive demand.

ELA Results

Some of the ELA MGs were not aligned to the intended grade level Curriculum Standards (MG # 32, 33, 34, 35, 40, 43, 44, 45, 46, 48, and 50) and were excluded from further analyses.

*Categorical Concurrence.* The number of ELA-AA items (both primary and secondary hits) is reported in Table 9. Three (i.e., Reading, Writing, and Communication) of the four categories have at least six items resulting in a categorical concurrence rate of .75 for both grade bands. No items were aligned to the Research category. While this analysis reflects the entire set of ELA-AA items, it should be noted that not all students are assessed using all items because of administration procedures for determining entry points and ceilings.

Table 9: *ELA-AA Items Aligned to Grade Band Curriculum Standards (Primary + Secondary Hits)*

	Grades 3-5 <i>N</i>	Grades 6-8 <i>N</i>
Reading	228	98
Writing	27	24
Communication	22	6
Research	0	0

*Note.* The number of items includes both primary and secondary hits<sup>3</sup>.

*Cognitive Demand.* The level of cognitive demand required to respond to ELA-AA items, ELA MGs, and the grade-band content standards are reported in Table 10 and Figure 3. The lowest level of cognitive demand requires attending to the presentation of instruction or an AA item; at the highest end, students would need to analyze or evaluate information in order to respond. In this analysis, levels of cognitive demand in ELA-AA items and MGs were positively skewed (i.e., there were more items and MGs at the lower end of the scale) and the grade-band cognitive demand is negatively skewed (more at high end of the scale) suggesting that the MGs and AA items have a lower cognitive demand than the grade-band standards. This finding is as would be expected for alternate assessments based on alternate achievement standards.

Comparing the cognitive demand for the ELA MGs and ELA-AA items indicate 35% of the items were below the targeted content standards, 40% at the targeted standards, and 24% above the targeted standards. This satisfied Webb’s criterion of having at least 50% of the items at or above the level of the standards. Thus the state met a twofold test for cognitive demand: (a) the cognitive demand for the ELA-AA and ELA MGs reflect achievement that is different than grade level (lower cognitive demand than state standards) while also (b) showing a match between the level of complexity targeted (ELA MG) and the level assessed (ELA-AA).

Table 10: *Cognitive Demand for ELA-AA, ELA MGs, and ELA Curriculum Standards*

ELA-AA Items	MG	CS Grades 3-5	CS Grades 6-8
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<sup>3</sup> A hit is defined as an expert agreeing with the alignment between the educational components.

	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Attention	15	6.4	1	1.4	0	0	0	0
Memorize/Recall	99	42.3	21	29.2	7	2.7	7	2.5
Performance	34	14.5	7	9.7	28	10.6	9	3.2
Comprehension	42	17.9	18	25.0	42	16.0	27	9.6
Application	29	12.4	14	19.4	93	35.4	120	42.6
Analysis/Synthesis/Evaluation	15	6.4	11	15.3	93	35.4	119	42.2

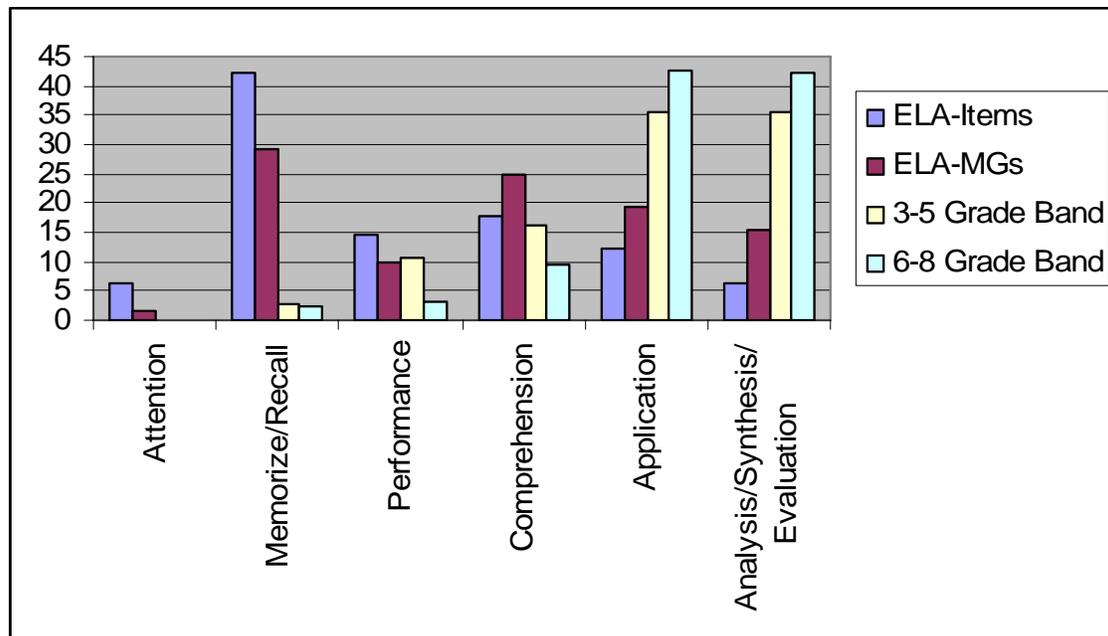


Figure 3. The percentage of emphasis at each level of cognitive demand for ELA.

A matrix of proportions of cognitive demand by National content standards of the ELA MGs and a matrix of the ELA-AA items are reported in Tables 11 and 12.

Table 11: *Proportions of ELA MGs, by NCTE Content and Level of Cognitive Demand*

	Attention	Memorize/Recall	Perform	Comprehen.	Apply	Analyze, synthesize, evaluate
Reading	.00	.28	.00	.18	.11	.11
Writing	.00	.00	.04	.00	.06	.01
Speaking	.00	.00	.04	.01	.03	.00
Listening	.01	.01	.01	.04	.00	.00
Viewing/Visual	.00	.00	.00	.01	.00	.03
Research	.00	.00	.00	.00	.00	.00

The alignment value between the two matrices was .65 on a scale from 0 to 1.0 (based on SEC alignment index<sup>4</sup>).

<sup>4</sup> SEC Alignment Index =  $1 - \frac{\sum(X-Y)}{2}$ , where X is the MG matrix and Y is the Item matrix.

Table 12: *Proportions of ELA-AA items, by NCTE Content and Level of Cognitive Demand*

	Attention	Memorize/Recall	Perform	Compre- hend	Apply	Analyze, synthesize, evaluate
Reading	.03	.22	.08	.15	.11	.06
Writing	.00	.03	.06	.00	.01	.00
Speaking	.02	.03	.00	.00	.00	.00
Listening	.00	.13	.00	.03	.00	.00
Viewing/Visual	.00	.02	.00	.00	.00	.00
Research	.00	.00	.00	.00	.00	.00

A comparison of the emphasis in the grade-level ELA content standards (as measured by the number of performance indicators in a content standard) and the ELA MGs and AA items was examined. The number and proportion of performance indicators at each grade level and the content standards are reported in Table 13 & Figure 4. In grade bands 3-5 and 6-8 of the Curriculum Standards, Reading and Communication are emphasized over Writing and Research. Reading is emphasized to the greatest extent across the MGs and AA items.

Table 13: *Proportions of ELA Emphasis in Expectations for the General Education Population and Students with Significant Cognitive Disabilities*

	Reading	Writing	Communi	Research
<i>Expectations for General Education Population</i>				
ELA Standards 3 <sup>rd</sup> -5 <sup>th</sup> *	.41	.16	.31	.11
ELA Standards 6 <sup>th</sup> -8 <sup>th</sup> *	.32	.19	.36	.13
<i>Expectations for Students with Significant Cognitive Disabilities</i>				
MGs	.67	.14	.19	0
AA items (3 <sup>rd</sup> -5 <sup>th</sup> )	.81	.10	.09	0
AA items (6 <sup>th</sup> -8 <sup>th</sup> )	.79	.17	.04	0

\*Proportions are based on the number of performance indicators under each content standard.

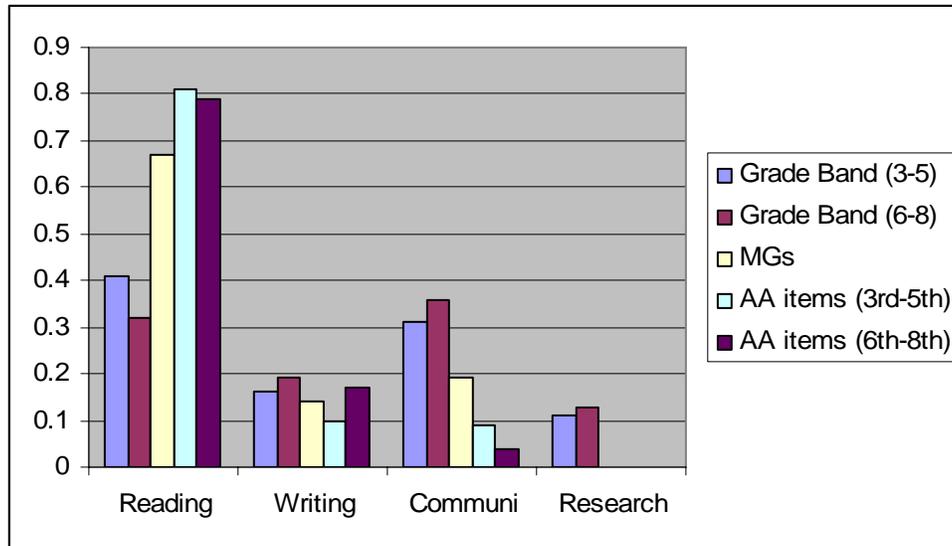


Figure 4. The proportions of ELA emphasis within MGs, AA items, and Curriculum Standards.

*Balance of Representation*<sup>5</sup>. The balance of the MGs and ELA-AA items across the grade-level content standards was examined. Webb indicates that values above .70 are acceptable. There was an acceptable level of balance between the ELA-AA items and the MGs (.87). This suggests that the ELA-AA items are balanced across the targeted knowledge and skills (ELA MGs). The balance of the MGs across 3-5 grade-band ELA content standards was .74, suggesting an acceptable balance of the MGs and 3-5 grade-band standards. For the 6-8 grade-band ELA standards and MGs, the balance was .65, which is slightly below the acceptable level of .70 according to Webb’s criterion. The ELA-AA items were not balanced across the 3-5 and 6-8 grade-band standards, .60 and .53 respectively.

*Range of Knowledge*. The range of knowledge refers to the breath or span of knowledge required by the MGs and AA items and matched to grade-band content standards. The following table reports the number of ELA MGs and ELA-AA items per content standard. At least 50% of the content standards under each academic domain have at least one MG or AA item except for the Research strand, resulting in a 75% range of knowledge (see Table 14). Webb recommends 100% range of knowledge.

Table 14: Number of ELA MGs and ELA-AA items aligned with specific Content Standards

ELA Strand	Curriculum Standard	N MGs (3-5)	AA Items (3-5)	N MGs (6-8)	AA Items (6-8)
Reading	1.1 The student will integrate various cues and strategies to comprehend what he or she reads.	14	82	7	61
	1.2 Analysis of Texts-The student will use knowledge of the purposes, structures, and elements of writing to analyze and interpret various types of texts.	7	26	7	26

<sup>5</sup> The formula used to compute the balance of representation index is the following  

$$Balance = 1 - \left( \sum_{i=1}^k \left| \frac{1}{O} - \frac{I_k}{H} \right| \right) / 2$$
, where  $O$  is the total number of objectives hit (i.e., item has been judged to be aligned) for the content standard,  $I_k$  is the number of items hit corresponding to objective  $k$ , and  $H$  is the total number of items hit for the content standard.

ELA Strand	Curriculum Standard	N MGs (3-5)	AA Items (3-5)	N MGs (6-8)	AA Items (6-8)
Writing	1.3 Word Study and Analysis: The student will use knowledge of graphophonics and word analysis to determine the meaning of unfamiliar words and to read texts with understanding.	9	15	4	8
	2. 1 The Writing Process-The student will apply a process approach to writing.	3	12	3	12
	2.2 Writing Purposes: The student will write for a variety of purposes.	1	6	1	6
	2.3 Responding to Texts-The student will respond to texts written by others.	2	0	1	2
	2.4 Legibility-The student will create legible texts.	0	0	0	0
Communication	3.1 Communication: Speaking-The student will use speaking skills to participate in large and small groups in both formal and informal situations.	6	10	1	0
	3.2 Communication: Listening-The student will use listening skills to comprehend and analyze information he or she receives in both formal and informal situations.	4	1	1	1
	3.3 Communication: Viewing-The student will comprehend and analyze information he or she receives from nonprint sources.	1	3	1	3
Research	4.1 Selecting a Research Topic-The student will select a topic for exploration.	0	0	0	0
	4.2 Gathering Information and Refining a Topic-The student will gather information from a variety of sources.	0	0	0	0
	4.3 Preparing and Presenting Information- The student will use a variety of strategies to prepare and present selected information.	0	0	0	0

*Note.* Range of Knowledge correspondence is the percent of content standards with at least 50% of the objectives with one hit.

### Math Results

All of the Math MGs were aligned to the intended grade level Curriculum Standards and are included in the following analysis.

*Categorical Concurrence.* The number of Math-AA items (both primary and secondary hits) is reported in Table 15. All five of the categories had at least six items resulting in categorical concurrence of 100% for both grade bands.

Table 15: *Math-AA Items Aligned to Grade-Band Content Standards (Primary + Secondary Hits)*

	AA-Items Grades 3-5	AA-Items Grades 6-8
	<u>N</u>	<u>N</u>
Numbers	84	68
Algebra	37	21
Geometry	52	37

Measurement	45	55
Data/Probability	23	17

*Note.* The number of items includes both primary and secondary items.

*Cognitive Demand.* The cognitive demand rating for the Math-AA items, Math MGs, and the grade band content standards are reported in Table 16 and Figure 5. The same trend was noted for the math cognitive demand as was seen for ELA. Cognitive demand for Math-AA items and Math MGs were positively skewed (i.e., more items at the lower end of the scale) while the cognitive demand seen in Curriculum Standards in grades 3-5 and 6-8 is negatively skewed (more items at the higher end of the scale), suggesting that the MGs and AA items have a lower cognitive demand than the grade band Curriculum Standards. Comparing the cognitive demand for the Math MGs and Math-AA items indicate that 57% of the items were below the cognitive demand of the targeted standards, 33% at the targeted standard, and 10% above the targeted standards. This did not satisfy Webb’s criteria of having at least 50% of the items at or above the level of cognitive demand of the standards, but did satisfy the state requirement that 50% of the items should be at or *below* the targeted standards.

Table 16: *Cognitive Demand for Math-AA, Math MGs, and Math Curriculum Standards*

	Items		MG		CS Grades 3-5		CS Grades 6-8	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Attention	4	1.9	0	0	0	0	0	0
Memorize/Recall	112	51.9	11	22.9	27	11.3	5	3.1
Performance	43	19.9	7	14.6	15	6.3	2	1.2
Comprehension	16	7.4	1	2.1	51	21.3	23	14.3
Application	15	6.9	13	27.1	88	36.7	63	39.1
Analysis/Synthesis/Evaluation	26	12.0	16	33.3	59	24.6	67	41.6

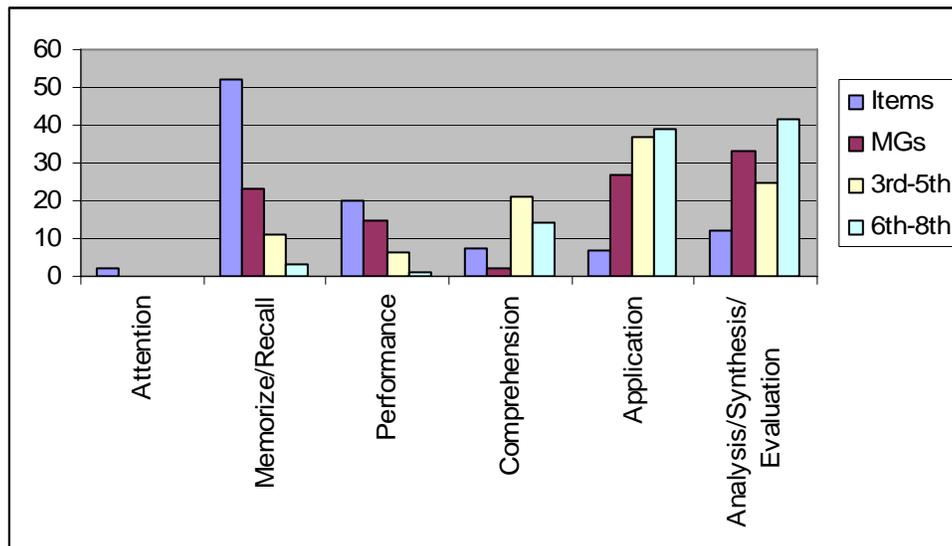


Figure 5. The percentage of emphasis at each level of cognitive demand for math.

Information about the relative emphases of Math MGs and Math-AA items by NCTM strand and levels of cognitive demand is reported in Tables 17 and 18 and Figure 6. The Math MGs tend to emphasize Numbers and Operations, Geometry, and Measurement to a greater extent than Algebra and Data Analysis/Probability, with the greatest expectation for cognitive demand at the memorize/recall, performance, application, and analysis levels.

Table 17: *Proportions of Math MGs, by NCTM Strand and Level of Cognitive Demand*

	Attention	Memorize/ Recall	Perform	Compre- hend	Apply	Analyze, synthesize, evaluate
Numbers and Operations	.000	.083	.083	.000	.104	.125
Algebra	.000	.021	.000	.000	.021	.021
Geometry	.000	.042	.000	.000	.104	.063
Measurement	.000	.083	.063	.000	.021	.083
Data/Probability	.000	.000	.000	.021	.021	.042

The content reflected in the Math-AA items also emphasized Numbers and Operations, Geometry, and Measurement. However, expectations for cognitive demand were clustered primarily at the memorize/recall and performance levels, with less emphasis on higher-order thinking skills. The alignment index between the Math MGs and AA-items was .53 on a scale from 0 to 1.0.

Table 18: *Proportions of Math-AA Items, by NCTM Strand and Level of Cognitive Demand.*

	Attention	Memorize/ Recall	Perform	Compre- hend	Apply	Analyze, synthesize, evaluate
Numbers and Operations	.005	.204	.079	.028	.046	.060
Algebra	.000	.000	.000	.000	.000	.000
Geometry	.009	.176	.060	.000	.009	.009
Measurement	.005	.120	.037	.028	.014	.005
Data/Probability	.000	.019	.023	.019	.000	.046

A comparison of the content emphasis in the grade-level math content standards (as measured by the number of performance indicators in a content standard) and the Math MGs and AA items was examined. In grades 3-5, the content emphasized in AA items was somewhat less than grade level expectations for Numbers and Data/Probability, while Measurement was emphasized to a greater degree. In the 6th - 8th grade band, AA items emphasized Numbers more than the general education expectations, while emphasizing Algebra, Geometry, and Data/Probability to a lesser extent than the general education expectations. The Math MGs placed greater emphasis on Measurement and less emphasis on Data/Probability compared with the general expectations in either grade band.

Table 19: *Proportions of Math Emphasis in Expectations for the General Education Population and Students with Significant Cognitive Disabilities*

	Numbers	Algebra	Geometry	Measurement	Data/Prob
<i>Expectations for General Education Population</i>					
Math Standards 3 <sup>rd</sup> -5 <sup>th</sup> *	.37	.10	.19	.17	.16
Math Standards 6 <sup>th</sup> -8 <sup>th</sup> *	.26	.16	.23	.16	.19
<i>Expectations for Students with Significant Cognitive Disabilities</i>					

*Disabilities*

MGs	.34	.14	.21	.20	.12
AA items (3 <sup>rd</sup> -5 <sup>th</sup> )	.31	.11	.20	.29	.09
AA items (6 <sup>th</sup> -8 <sup>th</sup> )	.37	.10	.19	.17	.16

\*Proportions are based on the number of performance indicators under each content standard.

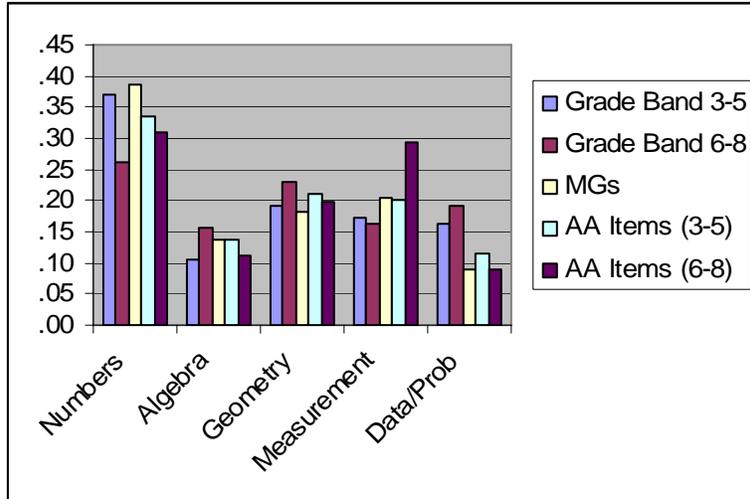


Figure 6: The proportions of Math emphasis within MGs, AA items, and Curriculum Standards.

*Balance of Representation.* The balance indices for math were: (a) .91 between 3-5 standards and Math MGs 3-5, (b) .77 between 6-8 and Math MGs 6-8, (c) .95 between Math MGs 3-5 and Math-AA items, (d) .91 between Math MGs 6-8 & Math-AA items, (e) .87 between 3-5 and Math-AA items, and (f) .88 between 6-8 and Math-AA items. All these values met an acceptable level for Balance of Representation, according to Webb’s criterion.

*Range of Knowledge.* The number of Math MGs and Math-AA items across the content objectives (i.e., levels nested within content strand) are reported in the following table. At least 50% of the content standards under each content strand had at least one MG or AA item, resulting in 100% range of knowledge for both the MGs and AA items (see Table 20).

Table 20: Number of Math MGs and AA items aligned with specific Content Standards

Content	Expectations	MG		Items	
		3-5	6-8	3-5	6-8
Numbers and Operations	1	13	9	60	34
	2	2	2	0	8
	3	6	6	24	16
	4	0	0	0	0
Algebra	1	4	2	29	13
	2	2	2	8	8
	3	0	0	0	0
	4	2	1	0	0
Geometry	1	7	3	32	19
	2	2	1	20	10
	3	0	0	0	0

	4	1	0	3	8
Measurement	1	6	29	2	16
	2	4	16	9	39
	3	0	0	0	0
	4	0	0	0	0
Data/Probability	1	3	17	2	11
	2	0	0	0	0
	3	0	0	0	0
	4	1	6	1	6

*Note.* The expectations vary across grade-bands.

### ***Aligning Instruction to Criteria 3: Complexity and Breadth of Coverage of Content***

#### ***Manual***

In this third criterion, the consideration is breadth and complexity of coverage of the grade level content reflected in instruction. The examples given in the manual were grade level content for PK-2 and did differ from grade level achievement. However, because the manual only addressed one grade band, further analysis could not be conducted.

#### ***Alignment of Teacher-Reported Instruction in ELA and Math***

Each teacher completed Part II of the Curriculum Indicators Survey in ELA and math based on instruction for just one of their students. Each teacher first identified several students in their class with various levels of symbolic communication. Using a purposeful sampling strategy designed to maximize variability in student communication levels across the grade span, one teacher completed the survey for a student at the awareness level, two each completed the survey for students at the pre-symbolic and early symbolic levels, and the remaining three teachers responded about a student at the symbolic communication level. Teachers rated the intensity of coverage of specific items, and the highest performance expectation (level of cognitive demand) of that student during the academic year. The academic content experts coded the CIS topics according to NCTE and NCTM standards, and to Curriculum strands in ELA and math. Thus, results reported in this section reflect alignment at a coarse grain (i.e., CIS topic to strand), not at a fine grain (i.e., CIS items to specific objectives).

*ELA.* The CIS responses revealed that in ELA, the majority of instructional emphasis was on Reading, followed by Communication (see Table 21). In general, teachers identified a greater emphasis on the lower levels of cognitive demand as the highest performance expectation for the target student in 2005-06.

**Table 21: Percent of ELA instructional time reported, by Curriculum Strand and level of cognitive demand**

	Attention	Memorize/R ecall	Perform	Compre- hend	Apply	Analyze, synthesize, evaluate
Reading	35	12	20	3	5	
Writing	1	0.5	0.7	1	0.6	
Communication	15	2	2.5		0.5	
Research	1					

To understand the alignment between instruction and the ELA-AA items, the proportion of instructional emphasis in each cell (converted from the table above) was compared with the proportional coverage of the ELA-AA items rated by experts (see Table 22). Information was aggregated at the strand level consistent with Curriculum Standards. Positive numbers in the table below indicate greater emphasis in instruction than on the alternate assessment. For instance, teachers' self-reported coverage of reading at the attention level was approximately 34 percentage points greater than the emphasis seen in the ELA-AA items on that topic and at that level of cognitive demand. While the ELA-AA had no items listed as primarily linked to the Research strand, there was a small amount of instructional coverage of that topic at the attention level. The overall alignment index, calculated based on the Surveys of Enacted Curriculum method, was .35 for the ELA matrix. The matrix may range from 0 to 1.0, with a higher number indicating a greater degree of overall alignment.

Table 22: *Discrepancy between AA ELA and teacher-reported ELA instruction, by Curriculum Strand and level of cognitive demand (CIS – AA)*

	Attention	Memorize/Recall	Perform	Comprehend	Apply	Analyze, synthesize, evaluate
Reading	.34	-.21	.16	-.10	-.02	-.06
Writing	.01	-.05	-.06	.01	-.03	-
Communication	.13	-.05	-.02	-.06	-.04	-.02
Research	.01	-	-	-	-	-

*Note.* - Indicates no coverage on CIS or AA

*Math.* The procedures used to determine ELA topic coverage were also applied to mathematics coverage, with topics categorized according to the five strands in the Math Curriculum Standards. Again, the majority of instructional time was devoted to the lowest level of cognitive demand, with content emphases on numbers and operations and on measurement (see Table 23).

Table 23: *Percent of mathematics instructional time reported, by math strand and level of cognitive demand*

	Attention	Memorize/Recall	Perform	Comprehend	Apply	Analyze, synthesize, evaluate
Numbers & Operations	26	5	16	2	2	
Algebra	6	2	1	1	1	
Geometry	4	2			2	
Measurement	16		4			
Probability	4		4			

In comparing instructional coverage with the math AA, there were slight discrepancies (.05 or less) in many of the cells. Larger differences were seen in Numbers & Operations; in the lower cognitive levels within the Measurement strand; and in the Geometry strand (see Table 24). The overall alignment index was 0.28, on a scale from 0 to 1.0.

Table 24: *Discrepancy between AA math and teacher-reported math instruction, by Math strand and level of cognitive demand (CIS – AA)*

	Attention	Memorize/Recall	Perform	Comprehend	Apply	Analyze, synthesize, evaluate
Numbers & Operations	.26	-.15	.08	-.01	-.03	-.06
Algebra	.06	.02	.01	.01	.01	-
Geometry	.03	-.16	-.06	-	.01	-.01
Measurement	.16	-.12	0	-.03	-.01	-
Probability	.04	-.02	.02	-.02	-	-.05

*Note.* - Indicates no coverage on CIS or AA

**Criterion 4: There is some differentiation in achievement across grade levels or grade bands.**

**4.1. Is there some differentiation in achievement across grade levels or grade bands? Or, how will students show growth across grade levels/bands?**

Tasks and items for the AAs were placed by the test developer in order of complexity and not according to content strand, in order to facilitate administration of a series of increasingly difficult tasks and appropriately challenge all students. In these analyses, differences in cognitive demand and National Academic Content strands among the levels of AA item complexity (as defined by the three levels of booklets) were examined.

ELA Results

For ELA-AA items, there was a significant difference among the three levels of booklets and the cognitive demand of the items ( $F=26.04, p<.001$ ) (see Table 25). Post hoc analyses (i.e., Bonferroni) indicated that the differences were between all groups. This suggests that the lowest set of booklets had the lowest level of cognitive demand, the middle booklets had a higher mean than the lowest, and the highest set of booklets were statistically higher than the two other booklets.

Table 25: *ELA-AA Items Cognitive Demand Means and Standard Deviations for the Three Levels of Booklets.*

	<i>N</i> Items	<i>M</i>	<i>SD</i>
Lowest	86	2.35	1.01
Middle	71	3.18	1.36
Highest	77	3.77	1.41

Differences by booklet level by ELA content strands for the ELA-AA items are reported in the Table 26. There was a relationship between the booklet level and the content strand [ $\chi^2(N = 10) = 23.86, p = .008$ ]. The lowest level had fewer reading items than the two higher levels. The highest level had fewer Listening items than the two lowest levels.

Table 26: *Percentage of ELA-AA Items by Booklet Level and Content Strands.*

	Lowest	Middle	High
Reading	40.7	61.1	57.5
Writing	11.6	8.3	7.5
Speaking	23.3	8.3	25.0
Listening	20.9	19.4	6.3
Viewing/Visual	2.3	0.0	0.0
Research	0.0	0.0	0.0

### Math Results

There was a statistically significant difference among the booklet-level on the cognitive demand for the Math-AA items,  $F(2, 213) = 8.31, p = .001$  (see Table 27). Post hoc analyses indicated that the differences were between the lowest level and the two higher levels.

Table 27: *Math-AA Items Cognitive Demand Means and Standard Deviations for the Three Levels of Booklets.*

	N	M	SD
Lowest	73	2.55	1.13
Middle	66	3.02	1.31
Highest	77	3.47	1.64

Differences in booklet level by math content strands for the Math-AA items are reported in Table 28. There was a relationship between the booklet level and the content strand [ $\chi^2(N=6) = 58.5, p < .001$ ]. The higher level booklets had more items that aligned to probability and the lower level booklets had more geometry items.

Table 28: *Percentage of Math-AA Items by Booklet-level and Content Strands.*

	Lowest	Middle	High
Numbers & Operations	46.6	47.0	33.8
Algebra	0.0	0.0	0.0
Geometry	41.1	24.2	14.3
Measurement	12.3	28.8	22.1
Probability	0.0	0.0	29.9

It should be noted that while the assessment does provide the opportunity for students to show progress across grades by performing more difficult items in future years, there is not yet information on what specific level of achievement might be considered proficient at the earlier versus later grades.

## ***Alignment of Instruction to Criterion 4: Progress Across the Grade Levels***

### **Manual**

The professional development materials, currently in revision, do not yet give teaching examples of how a state standard is addressed with increased expectations across grade bands. For example, teachers may need examples of how the skills expected for a student listening to a story in the elementary grades may differ from the skills expected of middle school student.

**Criterion 5: The focus of achievement promotes access to the activities, materials, and settings typical of the grade level but with the accommodations, adaptations, and supports needed for individualization.**

### ***5.1 Do tasks used for assessment and instruction promote access to activities, materials, settings typically used for the student's grade level?***

The state provided access to materials for several tasks in the alternate assessment. In general the alternate assessment has been developed to be grade/ age neutral so that the same assessment can be used to track progress across years. All alternate assessment items were found to be age appropriate for either elementary or older students (i.e., none were early childhood materials; none were restricted to elementary interests of children).

In contrast, in instruction teachers need to know how to adapt the content of the grade level to students' current skill levels. The professional development manual did not illustrate how to take a grade level activity/material and adapt it for students with significant cognitive disabilities. For example, the manual might illustrate how to take an 8<sup>th</sup> grade novel and adapt the story for students listening comprehension level. There was some information on teaching in inclusive settings.

On the teacher survey (CIS), specific content items were not linked to grade band Curriculum Standards. However, teachers indicated a grade level or grade band from which materials, activities, and contexts were adapted for all academic content taught. While the eight students on whom survey responses were based were assigned to grades 2-12, teachers primarily reported adapting materials from the PreK-2 grade band. In math, one teacher reported some pre-vocational curriculum materials. While this emphasis on PreK-2 may illustrate the effectiveness of earlier professional development (i.e., teachers learned how to adapt from the manual that emphasized PreK-2 standards), the use of K-2 materials with students in higher grade levels may lead to misalignment of instruction with alternate assessments and MGs.

**Criterion 6: The focus of achievement maintains fidelity with the content of the original grade level standards (content centrality) and when possible, the specified performance (category of knowledge).**

### ***6.1 How close is the content in the task to the content reflected in the state standard?***

The ELA and Mathematics experts reviewed each AA task/item and the state performance indicator, as indicated by the state, being assessed and rated the content (no link, far link, and near link) and performance centrality (no, some, yes). The percentages and numbers of AA tasks/items within each of the content and performance centrality categories are reported. A list of AA items not rated in the highest category for content or performance centrality is provided.

### **ELA Results**

The ELA content rated the quality of the alignment between the ELA MGs and the grade-level content standards. The number of MGs with either a far or near link by the grade-level is reported in Table 29. Most of the MGs were aligned with 3<sup>rd</sup> and 6<sup>th</sup> grade content standards. This maybe an artifact of the method used in the test specification. In this analysis, if the test specification stated that the higher grade-level standard was the same as an earlier, no credit was given to the high grade-level standards.

Table 29: *Number of ELA MGs Aligned to Grade-level Curriculum Standards*

Content Centrality	3rd	4th	5th	6th	7th	8th
Far Link	5	0	0	3	0	2
Near Link	35	12	9	23	1	4

The alignment of the ELA-AA items to the MGs is reported in the following table. Of the 248 ELA-AA items, 221 (89%) were aligned to the specified MGs.

Table 30: *Content Centrality of ELA-AA Items to ELA MGs*

Aligned	Total
No	8
Yes	221
Standard not found*	5

\*Standard listed in test specification does not exist in MGs

Concerning the performance centrality of the ELA-AA items to the MGs, the results are in Table 31. Most of the items (73.5%) had a similar performance level as stated in the MGs and 25% of the ELA items had at least some of the performance level stated in the MG. The items which do not require the same level of performance (cognitive demand) as the MGs are reported in the table below.

Table 31: *Performance Centrality of ELA-AA Items to ELA MGs*

Performance	N	%
No	3	1.3
Some	56	25.1
Yes	164	73.5

### Math Results

The alignment of the Math MGs to the grade-level content standards is reported in Table 32. Only one Math MG lacked adequate content centrality; the majority of the Math MGs had a near link, with most of the near links reported at a larger proportion at the higher grades. For example, of the 31 items for 3<sup>rd</sup> grade, 87% had a near link and for the 6<sup>th</sup> grade, 57% had a near link. This suggests that the quality of the Math MG alignment was better for the 3<sup>rd</sup> grade content standards than for other grades.

Table 32: *Number of Math MGs Aligned to Grade-level Curriculum Standards*

Content Centrality	3rd	4th	5th	6th	7th	8th
No Link	0	0	0	0	1	0
Far Link	4	7	1	9	7	4
Near Link	27	13	1	12	5	5

All 216 Math-AA items were aligned to the Math MGs, with 10 items having far links and 206 (95%) items having near links. Two hundred and six items had the same performance level as the MG with only 10 items having only some of the same performance level.

### ***Instructional Alignment to Criterion 6: Content and Performance Centrality***

No information is given in the professional development manual about content and performance centrality. A useful resource on this topic can be found on the NAAC website ([www.naacpartners.org](http://www.naacpartners.org)). In this resource, teachers are shown how to look at an instructional objective and ask “Is it plumb?” and “Is it square?” with the state standard it is meant to address. The teacher survey (CIS) did not address this criterion.

### **Criterion 7: Multiple levels of access to the general curriculum are planned so that students with different levels of symbolic communication can demonstrate learning.**

#### ***7.1 Does the assessment reflect multiple levels of access to the general curriculum for students at different levels?***

The AAs were rated using four levels of symbolic communication (see Table below for definitions of the levels). The lowest level of symbolic communication a student could use and still respond to the item was rated. Four symbolic levels were used to define accessibility of alternate assessment items, Awareness, Presymbolic, Early Symbolic, and Symbolic. A description of each of these levels is reported in Table 33.

**Awareness:** Has no clear response and no objective in communication  
**Pre-symbolic:** Communicates with gestures, eye gaze, purposeful moving to object, sounds  
**Early Symbolic:** Beginning to use pictures or other symbols (less than 10) to communicate within a limited vocabulary  
**Symbolic:** Speaks or has vocabulary of signs, pictures to communicate. Recognizes some sight words, numbers, etc.

Figure 7. *Definitions of four symbolic levels.*

The results of the number and percentage of ELA and math AA items by the symbolic level are reported in Table 34. An overwhelming majority of the items were symbolic, 73.6% for ELA and 69.0% for math. As the symbolic level decreased, the number of items decreased. Although biased toward the symbolic level, it should be noted that this assessment included items for students at all symbolic levels and thus provided multiple levels of access.

Table 33: Level of Symbol Use for ELA and Math AAs Items

	Awareness		Presymbolic		Early Symbolic		Symbolic	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
ELA	9	3.9	21	9.1	31	13.4	170	73.6
Math	4	1.9	14	6.5	49	22.7	149	69.0

#### ***Alignment of Instruction to Criterion 7: Multiple Levels of Access***

The professional development manual differentiated access at three levels- one called access, one below grade level, and one at grade level. The focus of this alignment study was on alternate achievement, so the activities suggested for access and below grade level were evaluated further. These teaching activities did include examples that could be accessed by students at all symbolic levels.

## APPENDIX A: TERMINOLOGY

<b>Balance of representation</b>	<p>The extent to which items are evenly distributed (or distributed across some priority) across the content standards and the objectives under the content standards</p> <p>The formula used to compute the balance of representation index is</p> $Balance = 1 - \left( \sum_{i=1}^k \left  \frac{1}{O} - \frac{I_k}{H} \right  \right) / 2,$ <p>where <math>O</math> is the total number of objectives hit (i.e., item has been judged to be aligned) for the content standard, <math>I_k</math> is the number of items hit corresponding to objective <math>k</math>, and <math>H</math> is the total number of items hit for the content standard.</p>
<b>Categorical concurrence</b>	<p>The consistency of categories of content in the standards and assessments. The criterion of categorical concurrence between standards and assessment is met if the same or consistent categories of content appear in both the assessment and the standards.</p>
<b>Cognitive demand</b>	<p>In this study, modification Bloom's taxonomy was used to determine the cognitive domain.</p>
<b>Content centrality</b>	<p>The quality of the match between the content of each test question and the content of the related standards. After a senior reviewer has matched test items to the test blueprint, reviewers examine each item (in the blueprint) to determine whether it assesses the academic content well, partially, or not at all. These judgments go deeper than the one-to-one correspondence used in the blueprint.</p>
<b>Measurement guidelines</b>	<p>The detailed description of what was expected of students with significant cognitive disabilities.</p>
<b>Performance centrality</b>	<p>The degree of the match between the type of performance (cognitive demand) presented by each test item and the type of performance (e.g., select, identify, compare, analyze, represent, use) described by the related standard. Reviewers analyze each test item to determine whether the type of performance the item requires match the demand expected by the standard, and whether it does so well, partially, or not at all.</p>
<b>Range of Knowledge</b>	<p>The correspondence criterion examines the alignment of assessment items to the multiple objectives (3<sup>rd</sup> level of the pyramid) within the content standards. Range-of-knowledge correspondence is used to judge whether a comparable span of knowledge expected of students by a standard is the same as, or corresponds to, the span of knowledge that students need in order to correctly answer assessment items.</p>