

NCSC's Age- and Grade-Appropriate Assessment of Student Learning

All students can learn when given the opportunity to learn, including students who have significant cognitive disabilities and who participate in an alternate assessment based on alternate achievement standards (AA-AAS).

In the past, many students with significant cognitive disabilities were not provided opportunities to learn academic content in mathematics or English language arts (ELA, i.e., reading and writing) beyond simple functional skills. As new understanding of what they can learn when taught has emerged, educators and families have raised their expectations and improved student opportunities to learn. Still, some students enrolled in a grade may just be beginning instruction in academic content while others have already developed substantial academic skills and knowledge from the general curriculum.

Students with significant cognitive disabilities often need adaptations, scaffolds, and supports to access the age- and grade-appropriate general curriculum content in mathematics and ELA. The National Center and State Collaborative (NCSC) has described how students with significant cognitive disabilities learn and make progress in the general curriculum and toward more complex learning while at the same time reducing their need for adaptations, scaffolds, and supports.

NCSC's description is based on research and evidence-based practices to ensure that students

with significant cognitive disabilities can access and make progress in the general curriculum.¹ It provides a model of learning that can guide development of the curriculum and instructional materials. It also provides the foundation for a systematic approach to the assessment of a simple to complex range of student learning.

This Brief highlights the systematic approach taken by NCSC to develop an assessment of learning appropriate for students with significant cognitive disabilities. It describes how its items were created to provide an age- and grade-appropriate assessment of student learning.

Building a Range Of Items

NCSC designed its AA-AAS to capture student performance through two item design features: (1) levels of content complexity, and (2) degrees and types of scaffolds and supports. Through these features, the NCSC assessment design is intentionally based on the same model of learning as the NCSC curriculum, instruction, and professional development resources (see footnote 1). Thus, the summative assessment provides opportunities for students to independently show what they know at varying levels of understanding with use of structured

¹Lee, A., Browder, D. M., Wakeman, S. Y., Quenemoen, R. F. & Thurlow, M. L. (2015, August). *AA-AAS: How do our students learn and show what they know?* (NCSC Brief #3). Minneapolis, MN: University of Minnesota, National Center and State Collaborative.

scaffolds and supports. In this way, the NCSC AA-AAS addresses the targeted content for the age- and grade-appropriate general curriculum, employs methods consistent with evidence-based curricular and instructional materials and classroom assessments, and provides useful information for educators and families.²

Each content target in the NCSC assessment represents the critical curriculum and instruction content for progressing from grade to grade. The items developed to address each content target give students an opportunity to show what they know and can do, whether they are just beginning instruction on the content or have already made a lot of progress. These beginning-to-advanced test questions for each grade-level content target are called a “family of items.” The least complex items provide extensive adaptations, scaffolds, and supports. Other items for the same content target are designed to include more complex content with fewer adaptations, scaffolds, and supports.

Every item includes scripted directions for test administrators to ensure that the item is given to the student as intended, without inadvertently changing what is measured. These directions present specific ways a test administrator can adapt to the student’s mode of communication and unique needs, while ensuring that the student can independently demonstrate the targeted knowledge and skills.

Structure of Item Families

Each item family includes four items for each content target. The items vary from simple to complex, thus measuring students across the range of learning occurring in classroom instruction. Students have the opportunity to attempt the full range of item complexities in the NCSC test design. Most students show that they can perform on some content targets at the

²See <https://wiki.ncscpartners.org> to view NCSC resources to support educators and families.

How NCSC designed items and item directions to adapt to each student’s unique needs

Teachers, parents, and other stakeholders reviewed the assessment design and item features from the very beginning and throughout test development. Built-in supports were included in the assessment design to allow students to use materials they are most familiar with, and to enable students to communicate what they know and can do. Assessment policies were developed to support individualized needs,³ including the identification of accommodations in the student’s IEP consistent with NCSC accommodation policies. In addition, the assessment was designed to work with varied communication modes and systems,⁴ provide optimal testing conditions, and offer assessment features appropriate for individual students.

³See <http://www.ncscpartners.org/Media/Default/PDFs/Resources/Parents/NCSCAssessmentPolicies082415.pdf> to view NCSC Assessment Policies.

⁴Students with significant cognitive disabilities who do not use oral speech may instead use augmentative and alternative communication (AAC) methods, including gestures, signs, pictures, and eye-gaze (see NCSC Brief 4, <http://www.ncscpartners.org/Media/Default/PDFs/Resources/NCSCBrief4.pdf>). Approximately 10% of students with significant cognitive disabilities communicate primarily through cries, facial expressions, or change in muscle tone; they do not yet have clear use of objects/textures, regularized gestures, pictures, or signs for communication. For these students, NCSC’s comprehensive *Communication Tool Kit* promotes their communication skills so that they can access and make progress in the general curriculum and show what they know on assessments based on that curriculum. The NCSC *Communications Tool Kit* is available at: https://wiki.ncscpartners.org/index.php/Main_Page (scroll down to *Communications Tool Kit* link).

higher item complexity, while on other content targets they perform at a lower item complexity. By using this systematic approach to ensure a range of items is available to each student, the NCSC AA-AAS provides opportunities for every student to show what they know.

Mathematics Item Families

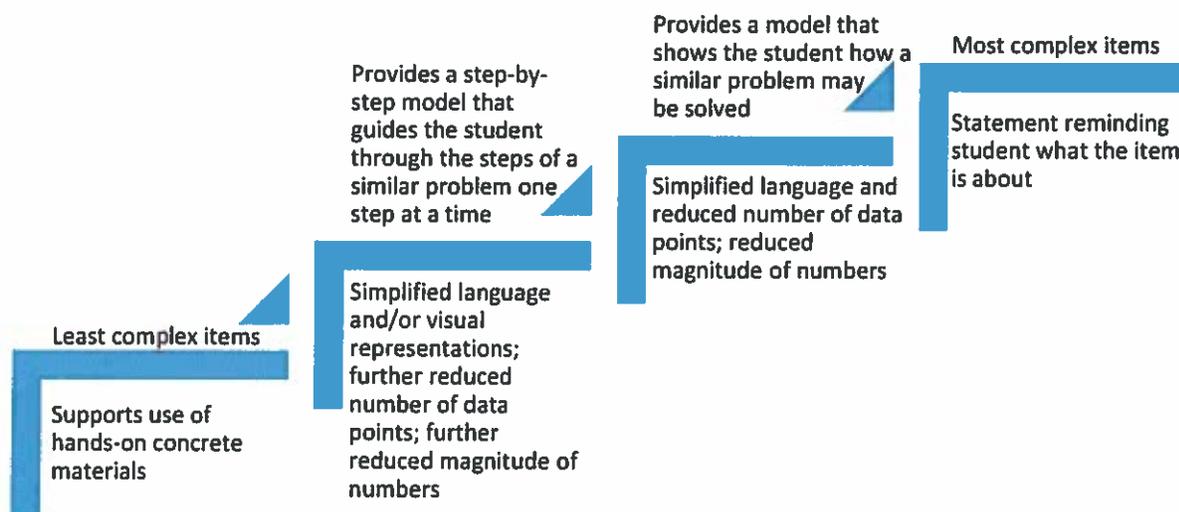
The mathematics content covered by the NCSC AA-AAS in the elementary grades concentrates on whole number operations and relations, spatial relations, and measurement. In the middle and high school grades, the NCSC AA-AAS mathematics content concentrates on problem solving and reasoning. These targets reflect mathematics skills needed for post-secondary education, workplace success, community involvement, and lifelong learning. They include, for example, solving a prediction problem to indicate how likely it is to rain, using a linear equation to indicate how much money is left to spend, or developing a coordinate plane to find the shortest path.

NCSC's item development approach for the mathematics AA-AAS ensured the availability of a range of supports for students within each family of items (e.g., providing definitions, demonstrations, or graphic organizers similar to

those in instructional materials). Thus, the four items measuring each content target covered a range of complexity for that content target, permitting sampling of an appropriate range of items for the assessment. Item design features included real world applications of the targeted skills and knowledge to provide high interest context and to reflect evidence-based practices in instruction. Figure 1 shows the general item design features that vary across the family of items for each content target, with items on the left in the figure being the least complex and those on the right being the most complex.

Mathematics item family example. The most complex item might be "A student will calculate the perimeter of a rectangle." A less complex item could include a demonstration of how to calculate perimeter using a calculator and formula. Some students might demonstrate the mathematical skill by completing a step-by-step process. For those students with significant cognitive disabilities who have limited numeracy skills due to limited instruction on age- and grade-appropriate content, each item family includes an item focused on the essential understanding of the content target. For example, an item may require a student to identify an illustration of the perimeter of a rectangle. In this case, the essential understanding is the concept

Figure 1. Systematic Approach to Building a Range of Items to Assess Each Mathematics Content Target



that perimeter is the distance around a two-dimensional shape.

ELA Item Families

The ELA content covered by the NCSC AA-AAS measures reading foundational skills, writing, vocabulary, and comprehension of varied text types that are age- and grade-appropriate. Each content target is assessed through a family of four items reflecting varying levels of complexity and availability of adaptations, scaffolds, and supports.

Early literacy instruction includes letter-sound relationships and how to sound out words, which is a foundational skill to access text. Thus, in grades 3 and 4, the NCSC AA-AAS **reading items** include the assessment of early decoding skills (e.g., independently identifying a grade-level word). These items allow for responses that are either verbal (e.g., the student reads each word aloud) or non-verbal (e.g., the student identifies each word from a list of picture options). Words are presented from simple to more difficult. Some items provide a model of how to read a word and others provide words paired with a related visual to support a student's response.

Writing items in the NCSC AA-AAS assess students' developing writing skills. They focus on different types of writing—narrative, explanatory, and argument—at different grade levels. As for other content, these are developed with a family of four items that range in complexity, permitting sampling of an appropriate range of items for each content target.

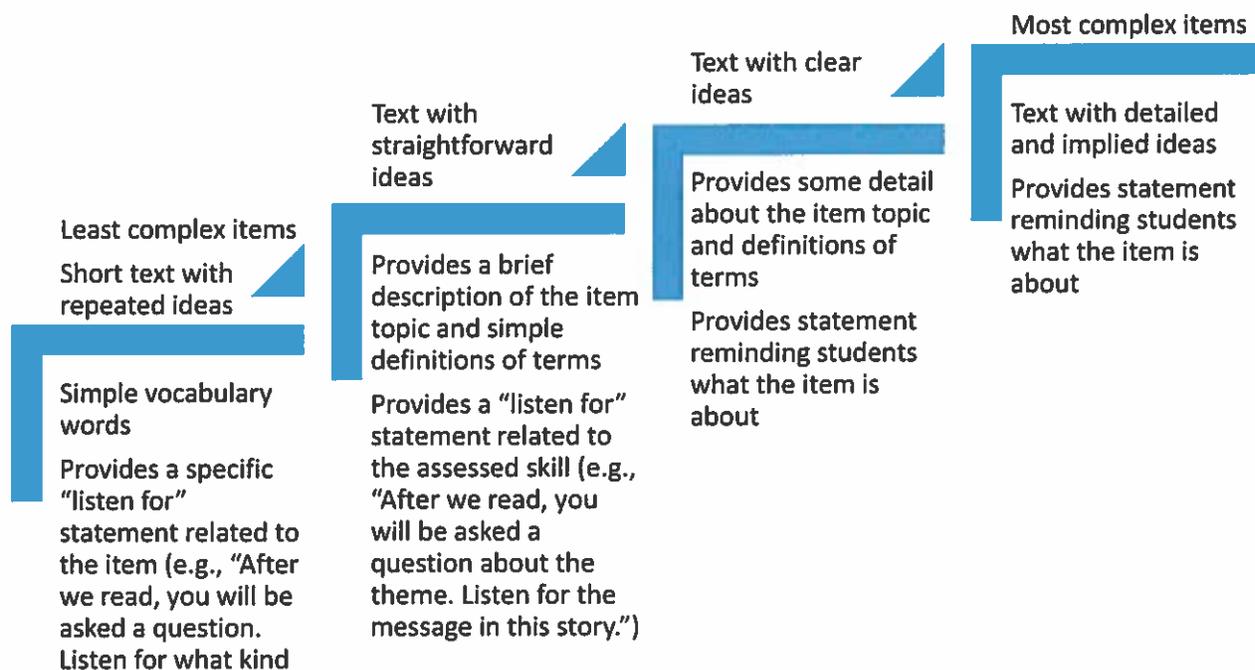
In addition to foundational reading skills and writing, the NCSC AA-AAS **reading items** assess students' developing use of vocabulary and reading skills using both grade-appropriate literature and informational texts in grade-appropriate contexts. Across grades 3-8 and high school, the literature content focuses on beginning comprehension skills (such as describing characters in a story) as well as

more advanced comprehension skills (such as analyzing the development of theme). For informational text, the content focuses on, for example, identifying the purpose of charts and diagrams as well as integrating information from multiple sources of information.

The NCSC ELA literacy model focuses on *understanding* text, with age- and grade-appropriate text read aloud to the student through technology or a human reader. Texts in the NCSC AA-AAS were written across a range of complexity to provide an opportunity for students with different acquired reading skills to answer text-based questions. The texts represent a range of complexity in their reading level, length, and vocabulary. The related items also include a range of provided supports and scaffolds (e.g., introduction to the text, rereading, pictures, prompts for what to listen for, and definitions). Thus, students who are able to comprehend simplified text, students who are able to comprehend longer, adapted grade-level texts, and students who need a blend of text across the range, all can demonstrate their learning. Figure 2 shows the general item design features that vary across the family of items for each content target, with items on the left in the figure being the least complex and those on the right being the most complex.

ELA item family example. The most complex item might be "Using informational text, a student interprets a diagram to identify animals that eat only plants." Some students might need less complex text and additional supports to demonstrate their comprehension skills. For example, a statement might be read aloud to the student prior to re-reading a part of a text. For example, the student might hear: "We read about a forest food web. We are going to read part of the text and look at the diagram again. Then you will be asked a question. Listen for which animals eat only plants." For those students with significant cognitive disabilities who have limited literacy skills due to limited instruction on academic content, each item family includes

Figure 2. Systematic Approach to Building a Range of Items to Assess Each ELA Content Target



an item focused on the essential understanding of the content target. For example, an item may require a student to identify a diagram presented in the text. In this case, the essential understanding is identification of a diagram or chart.

Lessons from the NCSC Model of AA-AAS Item Development

Students with significant cognitive disabilities provide assessment designers with the opportunity to apply research on student learning to develop systems that adequately and reliably show what they know and can

do.⁵ NCSC's item and assessment development approach connects evidence-based practices in curriculum, instruction, and assessment. It creates a coordinated whole that supports thoughtful educational planning and decision making.

Students with significant cognitive disabilities can be successful when supported by a coherent, consistent, and aligned system of standards-based curriculum, evidence-based instruction, well-designed classroom assessments, and end-of-year assessments that are built on a common understanding of how these students learn academic content and show what they know.

⁵Browder, D., Spooner, F., Ahlgrim-Delzell, L., Flowers, C., Algozzine, B., & Karvonen, M. (2004). A content analysis of the curricular philosophies reflected in states' alternate assessment performance indicators. *Research and Practice for Persons with Severe Disabilities*, 28, 165–181.

NCSC Brief #6

November 2015

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Herrera, A. W., Turner, C. D., Quenemoen, R. F., & Thurlow, M. L. (2015, November). *NCSC's age- and grade-appropriate assessment of student learning* (NCSC Brief #6). Minneapolis, MN: University of Minnesota, National Center and State Collaborative.

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NCSC includes five partner organizations (National Center on Educational Outcomes – NCEO – at the University of Minnesota; National Center for the Improvement of Educational Assessment – Center for Assessment, University of North Carolina at Charlotte, University of Kentucky, and edCount, LLC). NCSC is supported by a cooperative agreement with the U.S. Department of Education, Office of Special Education Programs (H373X100002, Project Officer: Susan.Weigert@ed.gov). The contents of this Brief do not necessarily represent the policy of the U.S. Department of Education, and no assumption of endorsement by the Federal government should be made.

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