National Center and State Collaborative

NCSC Brief

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NCSC's Theory of Action and Validity Evaluation Approach

Introduction

Pervasive low expectations are among the greatest obstacles faced by students with significant cognitive disabilities who participate in alternate assessments based on alternate achievement standards (AA-AAS). There are broadly shared perceptions that these students cannot learn academic content and skills, will not attend college or participate in other post-secondary education options, and will not be contributing members of their communities. Yet, as greater opportunities are provided to them in and beyond school settings, there is a growing body of evidence that these students with significant cognitive disabilities can and do learn academics.[1]

The National Center and State Collaborative (NCSC) leveraged existing research findings and built on examples of promising academic instruction and assessment practices to develop instruction and assessments for students with the most significant cognitive disabilities. NCSC states and organizational partners agreed that an assessment system for students with significant cognitive disabilities should be built on the same goal as for other students: to leave high school ready to meaningfully participate in college, careers, and their communities. With this goal, NCSC created a system of logically-related academic expectations, instructional supports, and assessments based on sound theory and research evidence. Further, NCSC established a Theory of Action for communicating about the system and its components, obtaining feedback during the development process to allow continuous improvements, and evaluating the system.

NCSC's Theory of Action is an essential part of the NCSC system. It helps answer fundamental questions about how the NCSC system is meant to work. Into the future, it can guide evaluation and understanding of how well the system is achieving its ultimate goal as well as identify

[1]Studies showing success include: **Mathematics:** Browder, D. M., Jimenez, B., & Trela, K. (2012). Grade-aligned math instruction for secondary students with moderate intellectual disabilities. *Education and Training in Autism and Developmental Disabilities, 47*, 373-388; Browder, D. M., Trela, K., Courtade, G. R., Jimenez, B. A., Knight. V., & Flowers, C. (2012). Teaching mathematics and science standards to students with moderate and severe developmental disabilities. *Journal of Special Education, 46*, 26-35. **Reading:** Bradford, S., Shippen, M. E., Alberto, P., Houchins, D. E., & Flores, M. (2006). Using systematic instruction to teach decoding skills to middle school students with moderate intellectual disabilities. *Education and Training in Developmental Disabilities, 41*, 333-343; Browder, D. M., Ahlgrim-Delzell, L., Flowers, C., & Baker, J. N. (2012). An evaluation of a multicomponent early literacy program for students with severe developmental disabilities. *Remedial and Special Education, 33*, 237-246; Flores, M. M., Shippen, M. E., & Alberto, P. (2004). Teaching letter-sound correspondence to students with moderate intellectual disabilities. *Journal of Direct Instruction, 4*, 173-188; Ganz, J., & Flores, M. (2009). The effectiveness of direct instruction for teaching language to children with autism spectrum disorders: Identifying materials. *Journal of Autism and Developmental Disorders, 39*, 75– 83.

needed revisions and improvements as the system continues to evolve.

NCSC's Comprehensive System: Designed and Built on a Common Model of Learning

NCSC's system was designed and built to provide high quality resources for educators who work with students who have the most significant cognitive disabilities. These resources support effective academic instruction and improved student achievement. The NCSC resources, which include assessments, evidence-based instructional practices, model curricula, and professional development materials, were designed from the outset on a common understanding of how students with significant cognitive disabilities learn and show what they know. In other words, all resources were based on an articulated common model of learning.

NCSC states and organizational partners articulated the model of learning and identified evidence-based instructional practices as a foundation to the NCSC system.[2] The design of the NCSC curriculum and instructional resources was further informed by existing research and iterative small studies conducted by NCSC to ensure inclusive accessibility and appropriately high expectations for learning.[3] Then, the NCSC assessments were based on the same model of learning as the NCSC classroom resources.[4] Finally, NCSC provided resources for intervention on communicative competence to ensure all students have a way to learn first, and then to show what they know on the NCSC assessment.[5]

[2]See NCSC Brief 3: How do our students learn and show what they know? http://www.ncscpartners.org/Media/Default/PDFs/Resources/NCSCBrief3.pdf

[3]See https://wiki.ncscpartners.org/index.php/Main_Page for NCSC's publicly available curriculum, instruction, and professional development resources.

[4]In addition to NCSC Brief 3, cited above, see NCSC Brief 6: NCSC's age- and grade-appropriate assessment of student learning. http://www.ncscpartners.org/Media/Default/PDFs/Resources/NCSCBrief6.pdf

[5]See NCSC Brief 4: Promoting communication skills in students with significant cognitive disabilities. http://www.ncscpartners.org/Media/Default/PDFs/Resources/NCSCBrief4.pdf

Thus, the resources are tightly linked to one another as well as to college and career ready academic standards.[6]

NCSC's Theory of Action

NCSC's Theory of Action clarifies NCSC's vision and foundation for its resources and their relation to one another, to college and career ready academic standards, and to the ultimate goal of having all students with significant cognitive disabilities leave high school ready to participate in college, careers, and their communities. A Theory of Action is similar to a logic model that organizes and connects intended goals and the multiple chains of inferences that support those goals. The NCSC Theory of Action is illustrated in Figure 1.

To create its Theory of Action, NCSC used the principles of backward design. The goals of the system were specified first; after that the components and assumptions necessary to achieve those goals were identified.

In the rightmost column of boxes in Figure 1 are the intended long-term outcomes for the NCSC system. They reflect the NCSC goals of greater exposure to grade-level academic curriculum, which in turn contributes to students with the most significant cognitive disabilities achieving increasingly higher academic outcomes; these, in turn, contribute to students with the most significant cognitive disabilities leaving high school ready to participate in college, careers, and community.

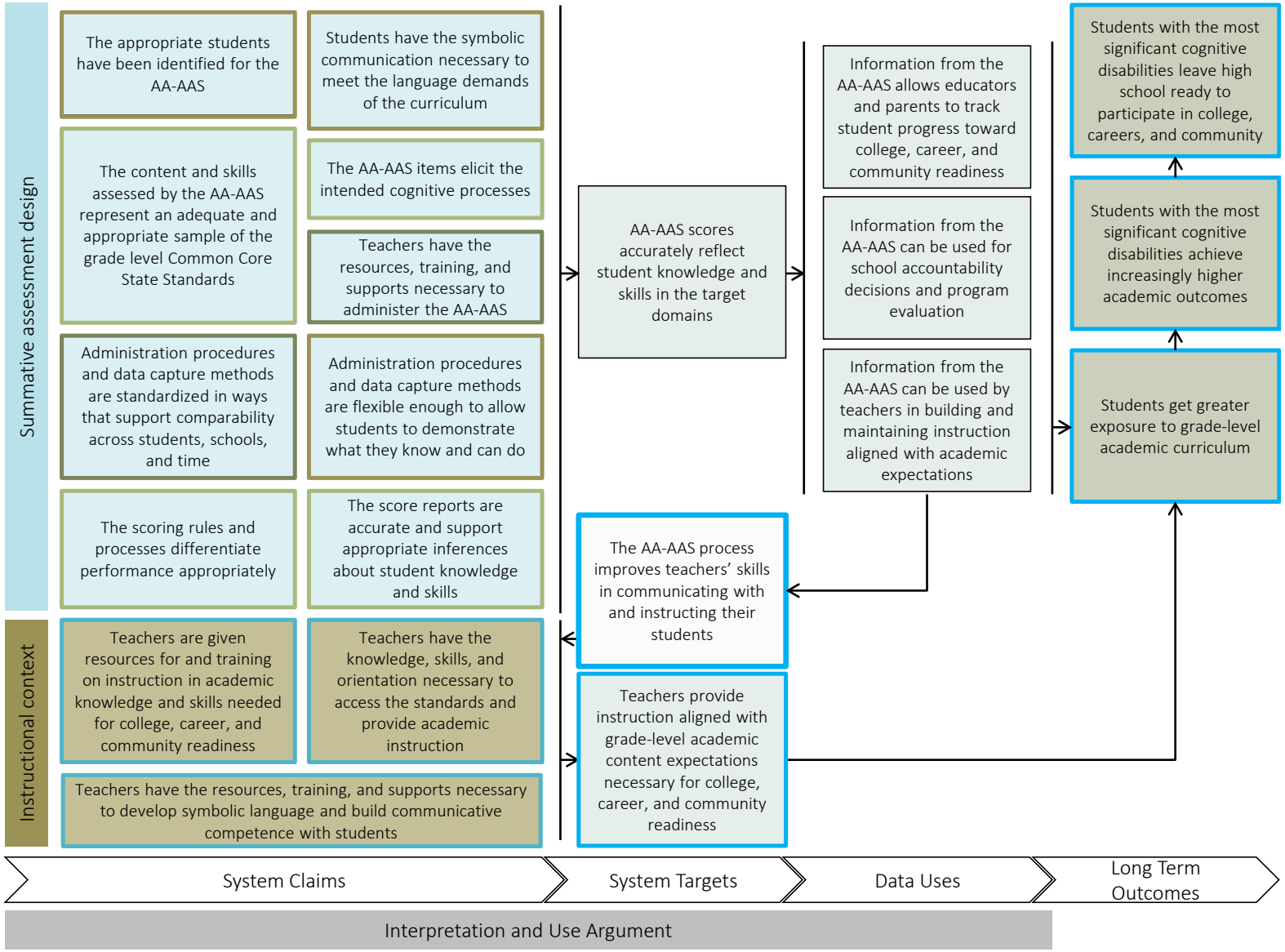
As shown in the second column from the right in Figure 1, the NCSC assessment is intended to support the long-term goals by yielding scores that:

1. allow educators and parents to track student progress toward college, career, and community readiness;

2. can be used for school accountability

[6]See Schema for NCSC resources at https://wiki.ncscpartners.org/index.php/Main_Page

Figure 1. Theory of Action for the NCSC System



decisions and program evaluation; and

3. can be used by teachers in building and maintaining instruction aligned with academic expectations.

By administering the NCSC assessment using scripted directions, teachers have the opportunity to improve their skills in communicating with and instructing their students. Because AA-AAS typically involve interactions between an individual student and the teacher for item presentation and for recording responses, unlike in general assessments, teachers also gain deeper insight into the academic expectations for each student and each student's knowledge and skills. These opportunities enhance and clarify what teachers learn from NCSC assessment scores.

NCSC resources for curriculum, instruction, and professional development also support teachers in providing instruction aligned with grade-level academic content expectations necessary for college, career, and community readiness. The Theory of Action reflects the intended integrity and coherence of the entire system because these instructional expectations are the same content expectations as those that underlie the assessments. This is the essence of the aligned system that NCSC envisioned.

The NCSC Theory of Action was helpful not only for clarifying and communicating about the NCSC system and vision, but also was critical in the evolution of the system and its evaluation. Throughout development, NCSC intentionally gathered a broad array of information related to many of the Theory of Action assumptions. This information guided decisions in a formative manner and helped establish evidence that the system was of high quality and worked as intended. For example, NCSC designed and built its initial assessment items to reflect the content and skills defined in college and career ready standards, then reviewed the quality of that alignment before embarking on item development for pilot testing, field testing, and the operational assessment. This allowed NCSC to identify potential problems and improve item templates or other aspects of the item development system early and efficiently.[7] Thus, the Theory of Action supported continuous reflection and fidelity to goals and components that lead to those goals.

NCSC's Approach to Validity Evaluation

NCSC used its Theory of Action to develop a validity evaluation process modeled on an argument-based approach.[8] In this approach, the Theory of Action encompasses an *Interpretation and Use Argument* and a *Validity Argument*.

The **Interpretation and Use Argument** presents the claims about assessment scores and their intended uses, along with the multiple inferences and assumptions on which the claims rely. The Interpretation and Use Argument guides the evidence collection process.

The **Validity Argument** may be thought of as the persuasive essay built from the *Interpretation and Use Argument*. Using the themes and details that emerge through the evidence collection process that contributes to the *Validity Argument*, an overall judgment can be made about the degree to which the essay supports or refutes the claims and intended uses of the assessment scores.

The Theory of Action expands on the assessment focus of the *Interpretation and Use Argument* and the *Validity Argument* to include statements, such as claims and expectations, that ground the assessment system within a context. For NCSC, the context involves the nature of academic classroom instruction, the quality and accessibility of instructional resources and professional development opportunities, and

[7]See Brief 6: NCSC's age- and grade-appropriate assessment of student learning. http://www.ncscpartners.org/Media/Default/PDFs/Resources/NCSCBrief6.pdf

[8]See Kane, M. (2002). Validating high-stakes testing programs. *Educational Measurement: Issues and Practices, 21*(1), 31-41; and Kane, M. (2006). Validation. In R. L. Brennan (Ed.), *Educational measurement* (vol. 4; pp. 17-64). Westport, CT: ACE/Praeger.

policies that govern how students are included in and allowed full access to both the instructional and assessment systems. Evaluation activities then both inform the *Validity Argument* and contribute important formative information to the larger system and may contribute to the interpretation of test scores.

The body of evidence that contributes to the *Validity Argument* can take many forms and generally emerges over several years. It includes evidence to support the conceptual design of the assessment. It also includes evidence of the on-going manifestation of that design in the item and test development processes, test administration, scoring, psychometric analysis of student responses, and score reporting.

For its validity evaluation, NCSC used information gathered over time to determine how well the system represented what was intended and how well the system met its goals for improving student achievement and, ultimately, improving students' success in their post-secondary college, career, and community lives. To support NCSC's claim that its assessment scores accurately reflected student knowledge and skills, NCSC built an evaluation process to test the nine assumptions represented in the NCSC Theory of Action (see assumptions in Table 1).

NCSC's nine assumptions, its claims, and the intended uses of its scores make up the NCSC *Interpretation and Use Argument* that directly guides the NCSC validity evaluation process. Both the assessment-related elements and the elements that relate directly to curriculum, instruction, and professional development are considered in the *Interpretation and Use Argument*.

The curriculum, instruction, and professional development elements (see Table 2) typically are outside what is in the scope of an assessment-targeted validity evaluation process. However, NCSC believed that if we expect teachers to provide instruction aligned with grade-level academic content expectations necessary for college, career, and community readiness, then we must ensure that these assumptions are supported by evidence.

Applying the Argument-Based Validity Evaluation to the NCSC Context

A foundational concept of modern educational and psychological measurement is that tests must be purposely designed to yield scores for specific uses. Validity evidence must provide

Table 1: Nine Assumptions Represented in the NCSC Theory of Action

1. The appropriate students have been identified for the AA-AAS;
2. Students have the symbolic communication necessary to meet the language demands of the curriculum;
3. The content and skills assessed by the AA-AAS represent an adequate and appropriate sample of the grade level Common Core State Standards;
4. The AA-AAS items elicit the intended cognitive processes;
5. Administration procedures and data capture methods are standardized in ways that support comparability across students, schools, and time;
6. Administration procedures and data capture methods are flexible enough to allow students to demonstrate what they know and can do;
7. Teachers have the resources, training, and supports necessary to administer the AA-AAS;
8. The scoring rules and processes differentiate performance appropriately; and
9. The score reports are accurate and support appropriate inferences about student knowledge and skills.

Table 2. Three Assumptions Related to Curriculum, Instruction, and Professional Development

1. Teachers are given resources for and training on instruction in academic knowledge and skills needed for college, career, and community readiness;
2. Teachers have the knowledge, skills, and orientation necessary to access the standards and provide academic instruction; and
3. Teachers have the resources, training, and supports necessary to develop symbolic language and build communicative competence with students.

support that this happens.[9]

The *Standards for Educational and Psychological Testing*[10] confirm the nature of validity in relation to test score interpretations and uses:

> **Standard 1.0**. Clear articulation of each intended test score interpretation for a specified use should be set forth, and appropriate validity evidence in support of each intended interpretation should be provided. (p. 23)

The *Standards* also indicate that test developers and test users should collect and consider evidence from five sources. These sources of evidence guide validity evaluators in making decisions about how to collect validity-related evidence:

1. *Content* – evidence about how well the assessment items and the assessment as a whole reflect the intended content domain.
2. *Cognitive processes* – evidence about how well the assessment items elicit the intended cognitive processes as students encounter, interpret, and respond to items and tasks on the assessment.
3. *Internal structure* – evidence about how well the scores an assessment yields relate to one another in ways that correspond to expected inter-relationships among aspects of the intended content domain.
4. *External relationships* – evidence about how well the patterns of relationships between assessment scores and scores or other data elsewhere correspond to expected relationships between the assessment scores and outside criteria.
5. *Consequences* – evidence about how well decisions and actions based on the assessment scores or in anticipation of the assessment correspond to intended decisions and actions.

NCSC identified four questions to provide a structure for considering its validity evidence (see Table 3). These questions indicate what anyone who wishes to use the NCSC assessment scores in academic settings must answer, both to support and defend their intended uses and to answer questions that teachers, administrators, parents, students, and other stakeholders may pose.

If the four questions can be answered strongly in the affirmative, based on sufficient evidence collected from the five sources identified in the *Standards*, then NCSC's primary claim is supported. In other words, the NCSC scores provide information that reflects what students know and can do in relation to academic expectations defined in its academic content and achievement standards.

[9]Professional expectations for the evidence needed to support the use of test scores for specific purposes have changed over time.

[10]American Educational Research Association, American Psychological Association, and National Council on Measurement in Education. (2014). *Standards for Educational and Psychological Testing.* Washington, DC: American Educational Research Association.

Table 3. Questions that Provide Structure for Considering NCSC's Validity Evidence

1. **Content Coherence:** To what extent has the assessment and its operational system been designed to yield scores that reflect students' knowledge and skills in relation to the academic expectations defined in the standards?
2. **Comparability:** To what extent does the assessment system operate as intended (e.g., administration, scoring, analyses, reporting) so that scores may be compared across students, sites, and time?
3. **Accessibility and Fairness:** To what extent do students take the assessment under conditions that allow them to demonstrate what they know and can do in relation to the academic expectations defined in the standards?
4. **Consequences:** To what extent do the process and outcomes of the assessments contribute to improvements in teachers' capacity to provide academic instruction and to select and use appropriate communications strategies?

Conclusion

NCSC's validity evaluation process already has yielded vital information about the quality of the NCSC resources and their uses in classrooms and schools as well as at the district and state levels. Information collected from the validity evaluation is being used to communicate to state and local educators about the purpose of the NCSC system and its development. In addition, NCSC states are using the validity evaluation information to support score interpretations and uses within their states. These uses include monitoring student progress toward college, career, and community readiness, making school accountability decisions and conducting program evaluations, and building and maintaining instruction aligned with academic expectations. NCSC states are also using information from the NCSC validity evaluation in their peer review evidence that each state must submit to the U.S. Department of Education.[11]

In the months and years to come, NCSC states will continue to build on the foundation established during the initial development and first administration phases of the NCSC assessment. New and additional evidence must be gathered and reviewed on an on-going basis as instructional and assessment contexts mature and as the students who move through these contexts have greater opportunities to learn. Over time, this evidence will improve the field's understanding of how to support the goal of having all students with significant cognitive disabilities leave high school ready to participate in college, careers, and their communities.

The NCSC validity evaluation process and the information it yields will not only help to answer current questions, but also point to specific areas for advancement in instructional and assessment practices into the future for students with the most significant cognitive disabilities. Thus, the NCSC validity evaluation process will continue to evolve as long as the system, its purposes and uses, and the students who engage with NCSC resources continue to evolve.

[11]Each state must submit a package of evidence about its state assessment system for review by peers to ensure that its assessment system meets the requirements of the Elementary and Secondary Education Act (see http://www2.ed.gov/admins/lead/account/saa.html#Standards_and_Assessments_Peer_Review_)

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The NCSC state partners participating in the spring 2015 NCSC operational assessment are: Arizona, Arkansas, Connecticut, District of Columbia, Idaho, Indiana, Pacific Assessment Consortium, Maine, Montana, New Mexico, Rhode Island, South Carolina, South Dakota, and US Virgin Islands. As of spring 2015, additional states are members of the NCSC Consortium, representing varying levels of participation. They are: California, Delaware, Florida, Louisiana, Maryland, New York, Oregon, Pennsylvania, Tennessee, and Wyoming.

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