

**Creating Writing Items of Graduated Complexity for  
Students with Significant Cognitive Disabilities**

**NCSC Writing AA-AAS<sup>1</sup>**

Renee Cameto and Kathryn Morrison, SRI International; Charlene Turner, edCount

---

<sup>1</sup>Disclaimer: The contents of this paper were developed as part of the National Center and State Collaborative under a grant from the U.S. Department of Education (PR/Award # H373X100002), Project Officer, Susan.Weigert@ed.gov. However, the content 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.

## **I. Introduction**

Writing is an essential tool for communicating, learning, and assessing the acquisition of content knowledge. Although the demand for acquiring written expression has increased in our advanced technological society, not all students may receive adequate instruction in writing. Rarely have students with significant cognitive disabilities (SWSCD) been given the opportunity to learn basic writing skills, much less be expected to respond to on-demand writing tasks on alternate assessments based on alternate achievement standards (AA-AAS). The education of SWSCD must ensure access to effective writing instruction to broaden their opportunities to express knowledge, thoughts, and attitudes, and to integrate more fully in an ever changing society. College, career, and community readiness for SWSCD requires that students gain competence in written expression.

The No Child Left Behind (NCLB) act of 2001 focused on reading and mathematics achievement and conversely lacked attention on written expression achievement. With a lack of accountability measures, there existed limited instruction and emphasis in writing instruction for SWSCD. However, moving towards an enhanced future for SWSCD, the National Center and State Collaborative General Supervision Enhancement Grant Project (NCSC) applied the lessons learned from the limited extant literature and best practices as well as ongoing research in writing instruction and AA-AAS to develop English Language Arts assessments, including writing, based on the Common Core State Standards (CCSS). The goal of NCSC is to ensure that students with the most significant cognitive disabilities achieve increasingly higher academic outcomes and leave high school ready for post-secondary options. Thus, NCSC is taking a leadership role in addressing the challenge of not only assessing SWSCD on writing skills aligned with the CCSS, but also creating professional development resources that enable educators to deliver effective writing instruction.

A coherent and comprehensive system is required that makes clear the achievement targets, the knowledge and skills targets for instruction, and the measurement targets of an assessment for students who historically have been educationally marginalized and excluded in the development and assessment of written expression. A common understanding by educators and test developers of a model of learning that brings the content and learner together is required to attain these targets.

A shift in accountability focus to writing achievement for SWSCD is a challenge to assessment designers to develop systems that adequately and reliably show what these students know and can do. Indeed, it is the sheer variability in this target population, the assumptions about measuring their achievement, and the variability of design implementation procedures (use of portfolios, checklists, and performance tasks with individual administration) that make traditional approaches to instruction and assessment inapplicable without some reformulation (Gong & Marion, 2006; Ryan, Quenemoen, & Thurlow, 2004).

The NCSC approach is to build assessments as a component of a broader system closely linked to curriculum, instruction and assessments. As part of this system, NCSC partnered with

SRI using a principled approach to design based on evidence-centered design (ECD) literature, aligned with CCSS in writing, to provide a framework for assessment items. Incorporating Universal Design for Learning (UDL) in the approach met the challenge of serving the needs of SWSCD by suggesting flexible materials, techniques, and strategies for instruction and assessment (Dolan, Rose, Burling, Harms, & Way, 2007). The implementation of a principled approach, based upon an ECD process, within the NCSC consortium laid the groundwork for advances in the design of an assessment of writing for SWSCD.

The NCSC project produced almost 90 exemplar item families in English language arts which were in the strands of reading, reading at the word level, and writing. These exemplar item families were used as models for the creation of items for the operational assessment. Twenty eight of the item families were focused on the assessment of writing skills. Writing was assessed via selected- and constructed-response tasks. One constructed-response exemplar item family was created for each grade (3-8 and 11).

This paper presents: (1) a design methodology for improving the validity of inferences about the performance of students with significant cognitive disabilities on large-scale ELA writing assessments; (2) an overview of the ECD and UDL frameworks used to guide the item writing effort; (3) an overview of the graduated complexity approach used to design items at four levels of complexity in writing; (4) the prioritized academic content that is the basis for the assessment framework; and (5) a description of the task templates and refinements related to project item reviews and studies.

## **II. Design Frameworks**

The multidimensional nature of the challenges of AA-AAS for students with significant cognitive disabilities requires solutions based on cross-discipline collaboration. One such melding of expertise is the recent integration of evidence-centered design (ECD) (Mislevy, Steinberg, & Almond, 2003) and universal design for learning (UDL) principles (CAST, 2011) in the development of alternate assessment items of graduated complexity to meet the wide range of cognitive abilities of students taking alternate assessments. This integrated approach was successfully initiated and further developed in two Enhanced Assessment Grant (EAG) projects (Cameto, Haertel, DeBarger, & Morrison, 2010, 2011) and the National Center and State Collaborative (NCSC) General Supervision Enhancement Grant (GSEG). These efforts have laid groundwork and developed capacity for advances in test design for students that exhibit a wide range in abilities.

ECD is changing the design and development of large-scale assessment and instruction systems. Introduced by Mislevy, Steinberg, and Almond (2003), ECD has been implemented at SRI International, Educational Testing Service, and elsewhere. Underlying ECD is the conception of an argument from imperfect evidence (Messick, 1994). ECD's language, representations, and unified perspective guide planning and coordinate the design of assessment systems. The use of ECD addresses the validity argument and enhances the likelihood of construct validity in the assessment.

UDL meets the challenges of diversity among students with a wide range of capabilities particularly those with significant cognitive disabilities by systematically suggesting the use of materials, techniques, and strategies that increase the accessibility of the assessment (Dolan, Rose, Burling, Harms, & Way, 2007). Graduated complexity guidelines systematically create items that address the same content, but provide increased levels of support and/or decreased levels of complexity so that students with different levels of cognitive ability can access the content. The Principled Assessment Design for Inquiry (PADI) online assessment design system facilitates the integration of UDL features, ECD principles, and graduated complexity. This paper first describes the ECD design methodology for improving the validity of inferences about the performance of students. Then the methodology that incorporates UDL into an ECD framework is described. Then the basic principles for creating families of assessment items of graduated complexity associated with the same standard using ECD and UDL principles is described.

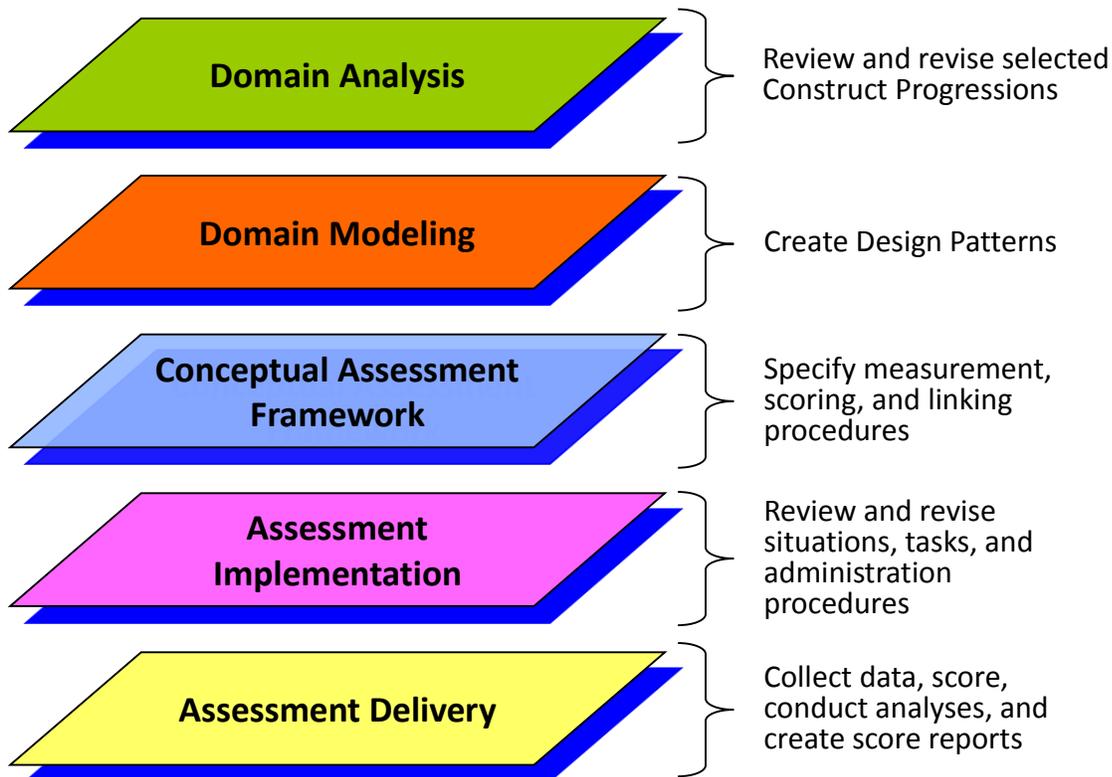
### ***Evidence-Centered Design***

Evidence-centered assessment design was first proposed systematically by Mislevy, Steinberg, and Almond (2003). The conceptualization of validity as an argument and chain of reasoning is operationalized in the ECD process reported here and has been further reflected in the assessment argument specified in the student, evidence, and task models described by Messick (1994). Validity has come to be seen as an explanation rather than a psychometric prediction or correlation. Most importantly, validity is understood as an extended analysis of many kinds of evidence that could be collected and studied during the assessment design, development, and validation phases. The goal of ECD is to develop a coordinated and coherent assessment or assessment system by fleshing out an assessment argument across five layers of work that are presented in Figure 1. Over the past decade, the principles, patterns, examples, common language and knowledge representations for designing, implementing and delivering educational assessment using the processes of ECD have been further elaborated (Mislevy & Haertel, 2006).

#### **Layers in the Design Process.**

Figure 1 presents each of the five layers of ECD as applied to assessment. Reading Figure 1 from the top down, the five layers represent the successive refinement and reorganization—from a general substantive argument to an increasingly specific argument that identifies the elements and processes needed in the operationalization of the assessment. At any point in time the layers can be revisited in an iterative manner as more information is obtained during development of later layers. Different experts may carry out the work at different layers of the design process. The ECD framework provides a common language that facilitates efficient communication among these layers. Each layer is described below in terms of its role in the assessment design process, the key concepts and entities used, and the knowledge representations and tools that are used to achieve each layer's purpose.

**Figure 1. Layers of Evidence-Centered Design for Educational Assessment**



**Domain Analysis.** As the first level, domain analysis marshals substantive information about the content domain. Assessment designers use this substantive information to understand the knowledge, skills, and abilities people use in a domain of interest, the representational forms they use, characteristics of good work, and key features of situations that commonly occur in the domain of interest. This layer of work results in the identification of the standards that need to be assessed. A thorough analysis of the content domain of interest is prerequisite for generating a design pattern which is the product of the work conducted in the next layer of ECD called domain modeling.

**Domain Modeling.** In the domain modeling layer, information identified in domain analysis is organized along the lines of the assessment argument. Assessment designers clarify what is meant to be assessed, and how and why to do so. Design patterns (DPs), as a tool, were developed as part of the original Principled Assessment Designs for Inquiry (PADI) project (see Mislevy, Steinberg, & Almond, 2003) to support work at the domain modeling layer of ECD. DPs help the assessment designer think through the key elements of an assessment argument in narrative form. Key attributes of DPs are further described below in a subsequent section of this paper.

**Conceptual Assessment Framework (CAF).** The technical specifications for operational elements of the assessment are contained in the CAF; these include measurement models,

scoring methods, and delivery requirements. The commonality of data structures and reusability of the CAF models offer opportunities for efficiencies in task design.

**Assessment Implementation.** The fourth layer, assessment implementation, includes activities carried out to prepare for the operational administration for testing examinees. One of the key documents produced at this layer is the Task Template. It is at this layer that exemplar tasks are specified in detail including the task or item directive, assessment materials and presentation environments, identifying appropriate supports and scaffolds that may or may not be employed for all of the tasks in the family of tasks linked to the DP and the standard. Piloting and finalizing scoring rubrics, calibrating items into psychometric models, and training interviewers and scorers follows. Information gained from these activities can be iterated back into the TT to improve the task and refine the assessment argument. Such activities are all in accordance with the assessment arguments foreshadowed in DPs at the domain modeling layer and specified in the CAF.

**Assessment Delivery.** The final ECD layer, assessment delivery, includes presenting tasks to examinees, evaluating performances to assign scores, and reporting the results to provide feedback or support decision making to assessment users including students, parents, teachers, and local and state administrators. See Mislevy and Haertel (2006) for more details about kinds of tools produced by other research projects for the final two layers.

Efficiencies are conferred by ECD's Design Patterns and Task Templates, described above in Domain Modeling and Assessment Implementation layers. Together they identify the constructs and prerequisite knowledge and skills needed to perform successfully on assessment items and the actual item production (Mislevy & Haertel, 2006). In the NCSC project, a principled approach to design based on ECD literature was used; SRI guided and engaged with a range of national experts in a co-design process to develop Design Patterns and Task Templates aligned with Common Core State Standards (CCSS) in mathematics and in ELA. This paper further explicates the approach used to develop the assessment argument and produce exemplar tasks in writing as part of ELA.

### ***Instantiation of ECD in the PADI Online Assessment Design System***

In 2001, SRI International and the University of Maryland, University of California at Berkeley, and the University of Michigan collaborated on the design and implementation of an online assessment design system referred to as PADI. PADI drew on new understandings in cognitive psychology and recent advances in measurement theory and technology to create a conceptual framework and supporting software tools for use in the design of assessments. The PADI project developed a set of online assessment resources that support the design of evidence-centered assessments. The online assessment system was designed to support the development of assessments in any content domain, based on any theory of learning (e.g., cognitivist, behaviorist, socio-cultural) and serving any assessment purpose (e.g., large scale, statewide assessments, diagnosis of gaps in learning and formative assessments, benchmark examinations, summative examinations). The conceptual framework that underlies the PADI assessment

system uses a template series that needs to be completed by the assessment designers. The designers are prompted to articulate the student, evidence, and task models that undergird the assessment argument central to the ECD process. When articulated, these models can help establish the claims and warrants that are required in the ECD process. Typically, the design process is engaged in by a team of experts in a range of fields related to the nature of the assessment; this approach is called co-design.

The DP, which is intentionally broad and not technical, enables designers to fill in a template that implicitly contains the assessment argument. Centered around the constructs of interest (referred to as the focal knowledge, skills, and abilities, or focal KSAs), a DP is organized in a way that leads toward the more technical work of designing particular tasks using Task Templates (described below). A Task Template is a more complex and hierarchical data structure populated with definitions of student model variables, work products, evaluation procedures, task model variables, and the like, thereby rendering a general blueprint for a family of assessment tasks. Using template structures makes it possible to create assessment elements and processes that can be reused for different assessment purposes. In this paper, focus is on the Design Patterns and the Task Template as they are used to articulate the task and item specifications associated with a particular DP and the selected construct(s) to be tested (more specifically, the focal KSAs) and to have UDL principles incorporated for more accessible families of tasks and items of graduated complexity.

### *Attributes of PADI Design Patterns*

PADI online assessment captures design rationale in a reusable and generative form in the domain modeling layer of ECD. Fields in the system prompt and help designers think through substantive aspects of an assessment argument in a structure that spans specific content domains, grade levels, and purposes (Mislevy, Steinberg, & Almond, 2003). Assessment designers working with the PADI design system use the web-based interface shown in Figure 2 below. The attributes in Figure 2 are defined following the figure.

**Figure 2. PADI Design Pattern (blank)**

The screenshot shows a web-based form for creating a PADI Design Pattern. The form is titled "Design Pattern | Nu Design Pattern 3629" and includes a navigation bar with "Duplicate", "Home", "Close", and "View (vertical)". The form is organized into several sections, each with a title and a corresponding input field:

- Title:** Design Pattern
- Overview:**
- Educational Standards:**
- Rationale:**
- Focal KSAs:**
- Add'l KSAs: Cognitive Background Knowledge:**
- Add'l KSAs: Perceptual (Receptive):**
- Add'l KSAs: Skill and Fluency (Expressive):**
- Add'l KSAs: Language and Symbols:**
- Add'l KSAs: Cognitive:**
- Add'l KSAs: Executive:**
- Add'l KSAs: Affective:**
- Potential Observations:**
- Potential Rubrics:**
- Potential Work Products:**
- Characteristic Features:**
- Variable Features: Cognitive Background Knowledge:**
- Variable Features: Perceptual (Receptive):**
- Variable Features: Skill and Fluency (Expressive):**
- Variable Features: Language and Symbols:**
- Variable Features: Cognitive:**
- Variable Features: Executive:**
- Variable Features: Affective:**
- I am a part of:** Sample Task Template (Task Family #4010)

- **Title.** The name of the design pattern.
- **Educational Standards.** The CCCs and associated CCSSs.
- **Rationale.** The rationale describes the nature of the Focal KSAs of interest and how they are manifested and articulates the theoretical connection between data to be collected and the claims to be made.
- **Focal Knowledge Skills and Abilities (KSAs).** Focal KSAs are the primary knowledge/skills/ abilities targeted by the DP. These are the competencies of interest that will ultimately be the focus of an assessment.
- **Additional Knowledge Skills and Abilities (Additional KSAs for Cognitive Background and for UDL Categories).** These are the other knowledge/skill/abilities that may be required in a task (Mislevy, Steinberg, & Almond, 2003). Additional KSAs for Cognitive Background Knowledge may include declarative knowledge and prerequisite skills in a content domain. UDL Additional KSAs may include non-construct relevant knowledge and skills that are needed for success on the item/task but not the target of the assessment. For example, for tests of academic subjects, the abilities to “see” and “hear” are typically Additional KSAs. On the other hand, for assessments of sight and hearing, respectively, sight and hearing are likely to be defined as focal KSAs. These distinctions are critical when designing assessments for SWSCD

where their disabilities may involve impairments of sight, hearing, or both (e.g., blind, low vision, color-blind, deaf, hard to hear, deaf-blind). Cognitive issues such as intellectual disability, dyslexia, attention deficit, and executive processing limitations can also be addressed using Additional KSAs. Student deficits in such Additional KSAs can unnecessarily cause unduly low scores among test takers with disabilities. In order to address the needs of students with disabilities in the assessment design process, a UDL framework was integrated with the PADI assessment design system. A description of the UDL framework is presented in the next section.

- **Potential Observations.** Features of the things students say, do, or make that constitute the evidence of correctly displaying the behavior that demonstrates having the focal or target skill.
- **Potential Work Products.** Some possible things one could see students doing or producing that would give evidence about the Focal KSAs.
- **Potential Rubrics.** Scoring schemes that turn students' work products into observable variables (scores).
- **Characteristic Features.** Characteristic features of the assessment are the features that must be present in a situation in order to evoke the desired evidence about the focal KSAs (Mislevy, Steinberg, & Almond, 2003).
- **Potential Variable Features.** Variable features are features that can be varied to shift the difficulty or focus of tasks (Mislevy, Steinberg, & Almond, 2003). Variable features have a particularly significant role with respect to test takers with disabilities and other sub-populations (e.g., speakers of minority language). When the demands of non-construct relevant knowledge and skills that are needed for success on the item/task might preclude successful task performance by a student with disabilities, variable features may be employed to mitigate those demands and thus allow the student to focus their attention on the construct of interest or focal KSA. Considerable attention is placed on manipulating UDL assessment materials as variable features to reduce or eliminate demands of Additional KSAs in which there may be a deficit while making sure (to the extent possible) that demands for focal KSAs have not been changed.

### *Attributes of PADI Task Templates (TT)*

Many of the attributes from the DP are automatically brought forward to the TT (Figure 3) to facilitate referencing them in the same document and to maintain fidelity to the attributes developed in the DP; where this occurs is noted below. Some attributes from the DP are not brought forward. Only the attributes unique to the TT will be described in detail in the text following the figure.

Figure 3. PADI Task Template (blank)

Sample Task Template   Task Family 4015				
Title	[ Edit ] Sample Task Template			
Nu Design Pattern	[ Edit ] Design Pattern			
Educational Standards	[ Edit ]			
Rationale	[ Edit ]			
Grade Level Activities	[ Edit ]			
	Item 4	Item 3	Item 2	Item 1
Depth of Knowledge (DOK)				
Selected Focal KSAs				
Focal KSA Notes				
Selected KSA for Items 1 and 2			Selected KSA for	
KSA for Items 1 and 2 Notes				
Associated AKSAs, Cognitive Background Knowledge				
Potential Observations				
Potential Observation Notes (based on selected KSA)				
Potential Work Products				
Potential Work Product Notes (based on selected KSA)				
Characteristic Features				
Associated Variable Features, Cognitive Background Knowledge	(No entries in DP)	(No entries in DP)	(No entries in DP)	(No entries in DP)
Selected Variable Features: Perceptual				
Selected Variable Features: Skill and Fluency				
Selected Variable Features: Language and Symbols				
Selected Variable Features: Cognitive				
Selected Variable Features: Executive				
Selected Variable Features: Affective				
Item Complexity Notes				
Item Directive				
Correct Answer				
Materials for Teacher/Administrator				
Description of Stimulus Materials				
Notes				

- **Rationale.** Brought forward automatically from the DP.
- **Selected Focal Knowledge Skills and Abilities (KSAs).** Focal KSAs to be addressed in a specific family of tasks are selected and automatically brought forward from the DP.

- **Associated Additional Knowledge Skills and Abilities (Additional KSAs for Cognitive Background Knowledge).** The Additional KSAs for Cognitive Background Knowledge that are associated in the DP with specified Focal KSAs are brought forward from the DP automatically when the Focal KSAs for the TT are identified.
- **Potential Observations.** Potential observations that are associated with the selected Focal KSAs to be addressed in a specific family of tasks are automatically brought forward from the DP when the focal KSAs are selected.
- **Potential Work Products.** Potential work products that are associated with the potential observation(s) are automatically brought forward tasks from the DP based on the Focal KSAs selected to be addressed in a specific family of tasks.
- **Characteristic Features.** Brought forward automatically from the DP.
- **Associated Variable Features: Cognitive Background Knowledge.** Brought forward automatically from the DP. They are further pruned depending on the characteristics of each of the items/tasks developed for the family of tasks.
- **Selected Variable Features: for each of the six UDL Categories.** Brought forward automatically from the DP. They are further pruned depending on the characteristics of each of the items/tasks developed for the family of tasks.
- **Item Complexity and Depth of Knowledge Notes.** Developed during the completion of the TT.
- **Item Directive.** Developed during the completion of the TT. The instructions to the teacher or assessment administrator are provided as to how to present and conduct the task. The instructions include the scripted text to be used and identify which stimulus materials (further described below) to present to the student at specified points in the task. The instruction and scripts vary depending on the complexity level of the task.
- **Correct Answer.** Developed during the completion of the TT. If a selected-response item then the correct response number and text noted. If a constructed-response item then the nature of the information to be included is listed with approaches to scoring. The correct answers vary depending on the complexity level of the task.
- **Materials for Teacher/ Administrator.** Developed during the completion of the TT. The materials a teacher or assessment administration will need to prepare for the task. This does not include materials with which the student will interact (see stimulus materials).
- **Description of Stimulus Materials.** Developed during the completion of the TT. These are the materials with which a student will interact for a task and are specified in the Item Directive. The stimulus materials vary based of the level of complexity of the task.

### *Universal Design for Learning*

Universal Design for Learning (UDL) helps to meet the challenge of diversity in the assessment environment by suggesting flexible or alternative assessment materials, techniques, and strategies to meet the needs of students with accessibility or special needs (Dolan, Rose,

Burling, Harris, & Way, 2007). The flexibility of UDL empowers assessors to meet the varied needs of students and to accurately measure student progress. The UDL framework includes three guiding principles that address three critical aspects of any learning activity, including its assessment. The first principle, multiple means of representation, addresses the ways in which information is presented. The second principle is multiple means of action and expression. This principle focuses on the ways in which students can interact with content and express what they are learning or what they know. Multiple means of engagement is the third principle, addressing the ways in which students are engaged in learning or the assessment content or approach (Rose & Meyer, 2002, 2006; Rose, Meyer, & Hitchcock, 2005). These principles provide structure for the infusion of UDL into assessment design.

**Principle I.** Provide Multiple Means of Representation (the “what” of learning). Students differ in the ways that they perceive and comprehend information that is presented to them. For example, those with sensory disabilities (e.g., blindness or deafness), learning disabilities (e.g., dyslexia), language or cultural differences, communication disabilities, and cognitive disabilities and so forth, may all require different ways of approaching content. Others may simply grasp information better through visual or auditory means rather than printed text or through a combination of means.

**Principle II.** Provide Multiple Means of Action and Expression (the “how” of learning). Students differ in the ways that they can interact with materials and express what they know. For example, individuals with significant motor disabilities (e.g. cerebral palsy), those who struggle with strategic and organizational abilities (executive function disorders, ADHD), those who have language or communication barriers, and so forth, approach learning tasks very differently and will demonstrate their mastery very differently. Some may be able to express themselves well in written text but not oral speech, and vice versa.

**Principle III.** Provide Multiple Means of Engagement (the “why” of learning). Affect represents a crucial component to learning. Students differ markedly in the ways in which they can be engaged or motivated to learn. Some students enjoy spontaneity and novelty, while others do not, preferring strict routine. Some will persist with highly challenging tasks while others will give up quickly.

In reality, there is no one means of representation, expression, or engagement that will be optimal for all students in all assessment situations; providing multiple options for students is essential. This is a critical consideration with SWSCD who often experience challenges in the means of representation, expression and engagement. In addition to the three principles of UDL expressed above which provide general guidance on the infusion of UDL into the assessment, six categories of student needs (perceptual, expressive, language and symbols, cognitive, executive functioning, and affective) that are required for successful performance on assessment tasks, but are not the targets of interest are further explicated.

**UDL Integrated into ECD in the PADI System.** In PADI, all Additional UDL KSAs are programmed into the system in the six categories. These Additional UDL KSAs are considered

in light of the demands of the Potential Observations and offer even more specific guidance to designers about the nature of skills that could be supported to mitigate the negative impact of the Additional UDL KSAs on student performance. In addition, each Additional UDL KSA is linked to a set of potential Variable Features also programmed into PADI that can be instantiated in the task to mitigate the influence of Additional UDL KSAs. Using PADI Design Patterns, the assessment designer is required to consider each possible Additional UDL KSA; they select those that are appropriate to their potential observations. This selection dynamically generates a menu of only the appropriate Variable Features associated with the previously specified Additional UDL KSAs to be considered in the design. This approach is conducted during the development of the DP and further refined during the development of the Task Templates. The process of linking the Additional KSAs to Variable Features supports performance without compromising the measurement of the construct of interest and guards against inappropriate interpretations of the test score.

Achieving fairness by addressing the needs of students with significant cognitive disabilities in assessment through the integration of UDL into ECD is a key goal in the NCSC work. The Standards for Educational and Psychological Testing (APA, AERA, NCME) recognized fairness as a fundamental issue of test validity. The intent to build “fair” assessments is expressed in thoughtfully applying the discipline of ECD in order to provide all students with an opportunity to perform at their best in assessment situations. The systematic infusion of UDL into the assessment design from the very beginning is critical to removing barriers to accessibility. The Standards specifically address the incorporation of UDL as a means for developing tests that are fair to all examinees.

Much of the practice of ECD is focused on the identification of sources of construct-irrelevant variance that can result in faulty interpretations of scores or student performance. Assessment design choices that are not carefully examined can contribute to the development of test items that employ unfamiliar language and syntax, that involve poorly understood social and cultural item contexts and task stimuli, as well as modes of representations that are systematically biased against sub-groups with limited access to those modalities. Fairness in the assessment situation requires that task contexts be equally familiar, appropriate, and accessible to all students. Articulation of task models from the beginning of the assessment design process reduces the likelihood that items and tasks will be developed that are biased against particular groups.

The practice of ECD makes the assessment designer aware of the many kinds of Additional KSAs that can contribute to faulty inferences about students’ assessment performances. Two broad types of Additional KSAs are considered: (1) cognitive background (sometimes referred to as prerequisite knowledge) and (2) student needs (perceptual, expressive, language and symbols, cognitive, executive processing, and affective). As mentioned earlier in this paper, the student’s needs are identified based on principles of UDL. These needs, if not addressed in the testing situation, can result in a student’s poor performance even though she may possess the knowledge

and skills of interest. For the population of students with significant cognitive disabilities with very heterogeneous learning needs, the NCSC work includes the differentiation of separate tasks or items with varying levels of UDL supports assessing the same focal construct.

In applying the ECD process, first, the focal KSAs that compose the construct or target skill being assessed are expressed. Next, the knowledge and skills that are required to successfully complete an item, but are not the target of the assessment, are identified and labeled as Additional KSAs. Then, the influence of these Additional KSAs on a student’s assessment performance is reduced by identifying Variable Features that can be designed into the assessment. These variable features are used to provide non-construct relevant supports. This ECD process guides designers in the application of UDL principles as they consider ways to recruit interest, sustain effort, and provide options for self-regulation, support perception of the test item or allow for a range of response modes depending on the capabilities of the student. Aids to understanding non-construct relevant vocabulary or symbols could be provided or graphic organizers or response templates can be considered. Table 1 presents examples for each of the six UDL categories of Additional KSAs and the design choices of Variable Features that could be selected to provide supports for alternate modes for perceiving assessment item stimuli, allow for a range of response modes depending on student need, limit unnecessary sources of cognitive load, provide access to non-construct relevant definitions, sustain effort and consider content that is age appropriate and engaging as well as appropriate for different cultural, socioeconomic, ethnic, disability, and gender groups.

**Table 1: Categories of UDL and Example Additional KSA and Variable Features**

<b>UDL Category</b>	<b>Additional KSA</b>	<b>Variable Feature/Support</b>
Perceptual (Receptive)	Ability to perceive linguistic components of the situation or task	Delivery mechanisms by which the situation/task is perceived (e.g., use of pictures, teacher gestures)
Skill and Fluency (Expressive)	Ability to communicate response	Response mode options (e.g., perform a task, respond verbally, use pictures, select from a group)
Language and Symbols	Ability to understand English vocabulary and syntax	Use pre-taught rather than new vocabulary and symbols
Cognitive	Ability to recall and use information presented in a task (working memory)	Provide reminders to reduce short-term memory load
Executive	Ability to plan and sequence	Use picture checklists and/or graphic organizers to support executive processing
Affective	Ability to engage (e.g., task-specific motivation)	Provide a variety of stimuli (e.g., objects, stories)

For example, potential assessment item features for perceptual needs could include variable font size, screen contrast, magnification or zoom, read aloud, or text to speech. For expressive needs, assessment item features could include such modalities as assistive technologies or computer adaptations. Language and symbol use can be supported by multiple representations of symbols, linguistic labels for symbols, illustrations for key variables or text, and definitions of non-construct-relevant terms. Supports for cognitive functioning could include response templates, use of context to heighten salience, highlighting of key terms and ideas (bold and underline), multiple representations (data in a table, graph, and text; illustrations of variables), and support for memory transfer (automatic transfer of student response to new problem situations). Supports for executive functioning could be breaking tasks into manageable units, providing representations of progress on a task, and encouragement to “stop and think” before answering. Engagement can be supported by the use of scenarios or real work contexts, using age-appropriate materials. By implementing these UDL variable features in support of the additional knowledge, skills, and abilities, the focal construct of the item rather than issues of accessibility can be the focus of the assessment.

The comprehensive list of Additional KSAs and associated Variable Features are located in Appendix A. This process of linking the Additional KSAs to variable features supports performance without compromising the measurement of the construct of interest guards against inappropriate interpretations of the test score.

Variable features, articulated in domain modeling, can take the form of the very same scaffolds that are the critical feature of instruction, used to ensure that instructional content is accessible to students. For example, use of multiple representations in instruction can help make instructional concepts salient (Ainsworth, 2006) and might also be used in an assessment design to ensure that focal or target KSAs are the primary focus of a task, rather than Additional KSAs. Similarly, vocabulary support, demonstrations of processes, and contrasting cases might be used in both instructional and assessment contexts. Taken together, the set of variable features defined in domain modeling represent the wide range of needs present in classrooms and, ultimately, in the assessment context.

ECD provides a set of tools and vocabulary to model the domain of interest, effectively modeling many aspects of the instruction that would be used in a domain. By combining the ECD and UDL frameworks, assessment designs can be linked to, if not embody, the day-to-day instructional contexts of students and address the range of student needs among students with significant cognitive disabilities. The integration and application of ECD and UDL in assessment design increases the likelihood that items and tasks will be well aligned with content standards and targeted constructs and accessible to student with diverse abilities.

### ***Design Frameworks Conclusion***

Evidence-centered design (ECD) is a recommended approach for the development of educational assessments and can be applied to a range of content standards and assessment types. The rigorous, multilayer design process central to ECD allows designers to consider

systematically the content, task, and learner characteristics that influence student performance. ECD provides a foundation for assessments that states can use to address the validity of their assessment systems. An ECD-based model integrated with UDL was the approach selected by NCSC for mathematics and English Language Arts including writing. This model was especially well suited to the design and development of one of the Race to the Top assessments for students with significant cognitive disabilities. The alternate assessments based on alternate achievement standards developed by individual states prior to the Race to the Top initiatives often lacked fidelity to rigorous assessment practice (Cameto, Knokey, Nagle, Sanford, Blackorby, Sinclair, & Riley, 2009). The use of a model based on ECD and UDL provided the foundation for the design and development of an alternate assessment that adheres to the same industry standards expected of assessments of students in the general population. A strength of ECD integrated with UDL is the support it provides for the development of items and tasks for all students that focus on construct-relevant content, minimize the impact of construct-irrelevant variance, and take into account appropriate accessibility options. This approach has the potential to bring greater respect for the assessment of a population of students often considered untestable. The following sections elaborate on the design and development of the NCSC AA-AAS and provide examples across the grades of how assessment items and tasks were designed that were both accessible to a broad range of students and rigorous.

### **III. Assessment Framework Related to Writing**

#### ***Goals of Learning and the NCSC Assessment Framework***

NCSC partners share a commitment to the development of a comprehensive system of supports that assumes that students with significant cognitive disabilities (SWSCD) are able to show learning of academic content and that learning is valued for these students. The project understands that this system of comprehensive supports will underpin a necessary shift to higher standards for achievement supported by improved teaching and learning practices for students participating in alternate assessment and their teachers. Setting a high standard for achievement is fair only after SWSCD are provided with the necessary high quality educational opportunities to learn prioritized academic content incorporating appropriate supports so that students are ready for a range of post-secondary options (Kearns et al., 2010).

The criterion of least dangerous assumption as presented by Anne Donnellan in 1984, a respected researcher in special education, states, “The criterion of least dangerous assumption asserts that in the absence of conclusive data educational decisions should be based on assumptions which, if correct, will have the least dangerous effect on the student.” (142). A reassertion of this assumption by Jorgenson (2005, Fall) states that when a student with a significant disability does not perform well in school, it should be assumed that this student is competent and able to learn and the quality of instruction should be questioned. Not assuming competence of a SWSCD could lead to fewer educational opportunities and fewer choices as an adult.

The project's goals of teaching and learning and the assessment framework, which includes mathematics and ELA (reading and writing), reflect this criterion of the "least dangerous assumption" by addressing grade-appropriate, rigorous academic standards and supporting high expectations in academic achievement for SWSCD. The project also upholds that the provision of professional resources and training for teachers are essential to achieve these goals.

Written expression is a fundamental and essential skill for all students. To gain competence and range in writing ability, students must have early and frequent opportunities to write. It is especially important that students get off to a good start in writing. Waiting until later grades to address literacy problems that have their origins in the primary grades is not particularly successful (Slavin, Madden, & Karweit, 1998). As students move toward the middle school grades, the teaching of writing becomes more complex, as it no longer revolves around a single teacher at each grade level. According to Pennington et.al., (2014), a troubling fact is that "writing deficits have been consistently more pronounced for students with disabilities" (p. 396). As a result, these students are likely to face restricted access to post-secondary options afforded to their peers. Teachers need to devote instructional time for students with disabilities to develop their capacity to write for different purposes early on in a student's educational experience.

NCSC content and special education experts and state partners examined existing writing definitions, the writing process, the limited body of extant research, and the CCSS in order to establish a writing definition. The project prioritized the establishment of a definition of writing and a writing claim in order to clearly articulate the expectation of writing and assessment.

### *NCSC Writing Definition*

The NCSC Project focused on developing a "working" definition of writing that would reflect an appropriate expectation of writing instruction throughout a student's educational experience and would be adaptable to the way in which SWSCD may produce writing:

**Writing (different text types and production):** Generating a permanent product to represent and/or organize ideas or thoughts so messages can be interpreted by someone else when the writer is not present. Symbols (e.g., picture symbols, objects) that represent and assistive technology that produce text may be used.

NCSC used a principled approach, based on an ECD process, in translating content to test items. This approach includes identifying potential claims about what constitutes student proficiency, and eligible content and the kinds of situations (i.e., items) which allow students to produce evidence for the claim. In order to build a foundation for college, career, and community readiness, students learn that to write purposely and clearly is an essential communication skill for self-determination and self-expression and to broaden post-secondary options.

### *NCSC Writing Claim*

Writing allows individuals to offer opinions, show content knowledge, and convey experiences. The value of acquiring writing skills cannot be understated and thus, the NCSC

claim identifies priority targets for the instruction and assessment of writing consistent with this value:

**NCSC Writing Claim:** The student can write effectively by generating a permanent product to represent and organize ideas, drawing evidence from literary or informational text or other media sources across genre types applying grammatical strategies and conventions of standard English.

The traditional views of what defines “writing” and how students communicate ideas, opinions, and experiences through the creation of permanent products needs transformation. In addition to alternative pencils and software, students with significant disabilities may benefit from expressing ideas through pictures, sentence frames that incorporate multiple choice words or pictures, matching, dictating, written words, a switch, or an augmentative communication device to generate ideas (Bruce & Conlon, 2005). The conversion of the NCSC writing claim into statements of writing assessment evidence must reflect this expanded definition of writing and expressive communication.

A review of early practices on teaching writing to students with severe disabilities by Katims (2000) revealed that most writing instruction has been functional in nature; students learned to write for a specific purpose such as making lists, addressing envelopes, or writing checks. Katims furthermore stated that students also need the opportunity to learn expressive writing. NCSC’s review of the literature in the area of teaching writing skills to SWSCD included studies that addressed research questions related to this area. Data obtained from research studies with individuals with autism indicated that simultaneous prompting and computer-assisted instruction were effective in improving the story-writing and narrative writing skills of these students (Pennington et al., 2011; Pennington et al., 2014).

Utilizing the project’s writing definition, claim, and review of most current research, NCSC developed writing assessment items based on grade-level topics and content which allow students of varying ability to demonstrate what they know and can do, and are accessible to students with varying communication skills and modes. For assessment scores to appropriately reflect students’ knowledge and skills, the assessment items must be able to provide evidence to support four key assumptions: 1) the content the assessment items intend to measure is aligned with content standards/measurement targets; 2) decisions about how students participate in assessments are made and carried out appropriately; 3) the assessment must be designed in a way that allows students to demonstrate their knowledge and skills; and 4) scoring rubrics and processes must recognize multiple response forms and differentiate performance accurately and appropriately (Herrera, 2013).

The NCSC project developed selected-response and constructed-response items at grades 3-8 and grade 11 to measure a range of students’ writing abilities. The selected-response items target understanding of the application of specific writing skills for a purpose and specific text type. The constructed-response items target students’ ability to craft an original piece of written expression for a specific text type and topic. The development of a measurement tool that allows

students to demonstrate communicative intent in the production of a permanent product and the qualitative and quantitative evaluation of that product is the focus of this paper.

***Overview of the NCSC Writing Assessment Constructed-Response Items and Analytic Rubrics***

The NCSC writing constructed-response (CR) items provide an opportunity for students to generate a permanent product to communicate ideas, experiences, information or arguments. Consistent with the expectations of the CCSS, the NSCS writing assessments ask students to demonstrate a range of writing skills and applications that reflect an increased sophistication in their ability to organize and develop ideas and apply language skills from year to year. To be an effective writer, one must learn and be able to effectively use a variety of separate skills to create a coherent piece of text. In addition to the mechanics of writing, children must learn to develop effective composition skills (Graham & Harris, 2003).

The CR items incorporate stages of the writing process (e.g., prewriting to generate ideas, writing, revising/editing) presented by a test administrator through a series of structured steps and embedded supports. The CR item aligns to a focal knowledge, skill, and ability (Focal KSA) articulated in the DP and TT. The Focal KSA is stated as the prioritized CCC related to the CCSS Production and Distribution of Writing Anchor Standard and is associated with a specific text type (Narrative, Informative/Explanatory, Argument) by grade.

Utilizing an understanding of the heterogeneity of the student population participating in an AA-AAS, different versions of the items were written systematically with varying complexity, a variety of supports, and nuances of expectations of the final product that align to the same standard for a grade level. The item structure follows a logical sequence of steps including organization of ideas, idea development, review of writing and revision, and reading aloud of the product by the test administrator resulting in the student production of a permanent product. Table 2 provides examples of prioritized assessment targets for three grades.

**Table 2: Example NCSC Prioritized Assessment Targets**

<b>CCR Anchor Standard and Text Type</b>	<b>CCSS</b>	<b>Prioritized CCC</b>
Production and Distribution of Writing (Narrative)	W.3.4 With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.	3.WL.o1 With guidance and support from adults, produce a clear, coherent, permanent product that is appropriate to the specific task, purpose (e.g., to entertain), or audience.
Production and Distribution of Writing (Informative/Explanatory)	W.7.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	7.WI.o1 Produce a clear coherent permanent product that is appropriate to the specific task (e.g., topic), purpose (e.g., to inform), and audience (e.g., reader).
Production and Distribution of Writing (Argument)	W.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	1112.WP.f1 Produce a clear coherent permanent product that is appropriate to the specific task, purpose (to persuade), and audience.

For each grade, the set of developed writing items assess expectations of writing specific for that grade related to the production of a text type (e.g., Argument). The combination of task and scoring rubric instantiate the specifications for content, breadth, and depth related to grade-level writing expectations. Grade and text type analytic rubrics define the expectations related to the writing traits of content/ideas, information/organization, and grammar/mechanics.

The scoring rubric specifies the required evidence associated with each score level thus providing a clear “picture” of the meaning of the assigned score in each of the three traits. At all grades, the scoring rubric traits are linked to grade specific CCSS writing standards. For example, in grade 3, the rubric evaluates student written products according to the expectations of CCSS W.3.3 a – d (Common Core State Standards for English Language Arts & Literacy in History/Social Studies, 2010).

**W.3.3** Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

- a. Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally.
- b. Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations.
- c. Use temporal words and phrases to signal event order.
- d. Provide a sense of closure.

#### **IV. Graduated Complexity**

In order to allow the greatest number of SWSCD to demonstrate what they know and can do via the constructed-response writing items, each exemplar item family was comprised of four items of decreasing complexity: Item 4 (most complex), Item 3 (less complex), Item 2 (less complex than Item 3), and Item 1 (least complex). Each exemplar item family was presented in a TT. Guidelines for graduated complexity of items 1-4 were developed and implemented in the design phase of the project. The guidelines were used to systematically create items that are aligned to the same standard, but provide increased levels of support and/or decreased levels of complexity so that students with different levels of cognitive ability could access the content.

While the guidelines prescribed how the items in a family should be varied, they did not call for variation in how the principles of ECD and UDL were applied. For example, items at all levels used engaging and grade-appropriate content and illustrations to support response choices. Items at all levels used simplified language and limited the use of technical language to minimize cognitive load. Instead, the graduated complexity guidelines addressed features related to the content such as the scope of the written product students were asked to create and the types of supports they received for construct-related features of the items.

Mirroring the comprehensive nature of the writing standards in the CCSS, each constructed-response item was designed to allow the collection of data on multiple expectations of student writing, which are based on the CCSS and corresponding grade-specific CCCs. Creating assessment items that addressed this broad set of skills and abilities but were accessible to SWSCD was a complex task. However, assessing these standards together in a single item is more authentic than assessing them individually and is similar to general education writing assessments. In order to create these comprehensive items, an overarching focal KSA made up of several subparts which represent the grade- and text-specific expectations of student writing was created and used as the basis for development of exemplar item families.

For example, to create an authentic writing experience in grade 7, the constructed-response item asks students to apply a variety of strategies to write and revise informative/explanatory text that include introducing a topic, organizing ideas, developing a topic using information and details, using transition words for coherence, and providing a conclusion that follows from and supports the information or explanation presented. Students are also asked to apply standard English conventions. Table 3 shows an example of the CCSS, CCC, and Essential Understanding, and the Student Expectations for the grade 7 constructed-response item.

**Table 3: Example CCSS, CCC, Essential Understanding and Writing Expectations**

CCSS	CCC	Essential Understanding
<p><b>W.7.4</b> Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>	<p><b>7.WI.o1</b> Produce a clear coherent permanent product (e.g., generate responses to form paragraph/essay) that is appropriate to the specific task (e.g., topic), purpose (e.g., to inform), or audience (reader).</p>	<p>Given a specific purpose, produce a permanent product (e.g., select text appropriate to the purpose, identify descriptive sentences, and select a concluding statement):</p>
<b>CCSS-Based Writing Expectations for Informative/Explanatory Text</b>		
<p><b>W.7.2a</b> Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.</p>		
<p><b>W.7.2b</b> Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.</p>		
<p><b>W.7.2d</b> Use precise language and domain-specific vocabulary to inform about or explain the topic.</p>		
<p><b>W.7.2f</b> Provide a concluding statement or section that follows from and supports the information or explanation presented.</p>		
<p><b>L.7.1</b> Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p>		
<p><b>L.7.2</b> Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p>		

The guidelines for graduated complexity addressed multiple areas including the types of supports provided (e.g., sentence starters), the scope of the writing produced by students (e.g., phases of writing included, number of points addressed in student essay), and the nature of the student response required (e.g., constructed-response, selected-response). Table 4 lists the graduated complexity guidelines applied during item development at all grades to create items of graduated complexity.

**Table 4: Guidelines for Graduated Complexity**

Area	Guidelines			
	Item 4	Item 3	Item 2	Item 1
Complexity of focal content	Aligned to FKSA	Aligned to FKSA	Aligned to FKSA	Aligned to Essential Understanding
Writing stages included	Planning, writing, and revision phases	Planning, writing, and revision phases	Planning, writing, and revision phases	Writing and revision phases
Topic development options	Limit the number of options presented during planning phase of tasks (e.g., character choices [open-ended], content choices [select one of three causes, select three of five effects])	Limit the number of options presented during planning phase of tasks (e.g., character choices [open-ended], content choices [select one of three causes, select two of four effects]) Break large task into smaller pieces (e.g., write about one event then write about another event)	Limit the number of options presented during planning phase of tasks (e.g., character choices [select from two options], content choices [select one of two causes, select one of two effects]) Break large task into smaller pieces (e.g., write about one event then write about another event)	Limit the number of options presented during planning phase of tasks (e.g., character choices [character assigned], content choices select one of two sentences that is about cause and effect)
<b>Response</b>	<b>Constructed-response</b>			<b>Selected-response</b>
Supports	Provide graphic organizer for planning phase Provide response template for writing phase Provide non-construct relevant reminders about writing mechanics (e.g., capitalization, punctuation, complete sentences) Provide construct-related definitions Provide exemplar text (grades 3 - 5)	Provide graphic organizer for planning phase Provide response template for writing phase Provide non-construct relevant reminders about writing mechanics (e.g., capitalization, punctuation, complete sentences) Provide construct-related definitions Provide exemplar text (grades 3 - 5) Vary complexity and length of exemplar text	Provide graphic organizer for planning phase Provide response template for writing phase Provide non-construct relevant reminders about writing mechanics (e.g., punctuation, complete sentences) Provide construct-related definitions Provide exemplar text (grades 3 - 5) Vary complexity and length of exemplar text Provide sentence starters for writing phase	Provide sentences with visual supports to construct a story

Along with the specific CCC/Essential Understanding assigned to each grade, the expectations of student writing to be addressed in each grade were also specified before the constructed-response writing items were created. The type of text was also specified and reflects an increase in complexity as the grade level progresses. In grades 3-5, students created narrative text, in grades 6-8, informative text, and in grade 11, argument. In all grades, TT items 4, 3, and 2 included writing and revision phases; item 1 only included a writing phase. In the following paragraphs, examples of how the specific writing expectations were put into practice in each grade are presented. The examples are drawn from the TT for each grade. These TTs served as item specifications for the creation of additional items.

In grade 3, the specific writing expectations addressed included establishing a situation and organizing a logical event sequence. Items 4, 3, and 2 all provided students with a “mentor text” which was read to students before they were asked to write their own story. The story was about an imaginary character’s adventure. Students were asked to write about a time they or another character went on an adventure. Graduated complexity was instantiated in “establishing a situation” as follows:

- Item 4: Students were stepped through the process of establishing a situation by identifying who and what their story was about. They were given the choice of writing a story with themselves as the main character or creating a character (Next, you will write the beginning of YOUR story. In the beginning you need to describe [yourself/character name]. Remember, when you describe a character you write what the character looks like...). Additional steps regarding establishing the situation were also included (Now, in this box write about the kind of adventure [you/character name] will have).
- Item 3: Students were stepped through the process of establishing a situation by identifying who and what their story was about and were provided with examples (from the mentor text described above) throughout the item. They also were given the choice of writing a story with themselves as the main character or creating a character (First, tell about [yourself/character name]. Remember to write what the character looks like. In the story we just read, [description of the main character from the mentor text is read to the student].) Additional steps regarding establishing the situation were also included (Now, you will write about the kind of adventure [you/character name] will have. In the story you just read, [reference from mentor text is read to student]. Write about the kind of adventure [you/character name] will have in this box).
- Item 2: Students were stepped through the process of establishing a situation by identifying who and what their story was about and were provided with sentence starters. Students were given only two options for the character in their story (You or a boy [named provided]... Now that you have picked the character, you can start to write your story. In the story we just read, [description of the setting from the

mentor text is read to the student]. Tell where your adventure takes place. Finish this sentence: One day I went to...).

- Item 1: The character and situation of the story were provided for students; students selected text with accompanying pictures that described the story elements (You are going to write a story. Your story is about [a provided character and setting]. You will tell more about the character and the setting. Which sentence tells about [the provided character] and where the story takes place?)

In grade 4, the specific elements to be addressed included those from grade 3 (establishing a situation and organizing a logical event sequence) and two new elements: describing scenes, objects or people, and developing characters personalities. As in grade 3, students were provided with a mentor text in items 4, 3, and 2. Students were asked to write a story about something they or another character wanted and what was done to get it. Graduated complexity was instantiated in “describing scenes, objects or people” as follows:

- Item 4: At the beginning of the item, students were instructed to include details in their story and later in the item students received reminders to do so (In YOUR story, you will include two events and details about those two events... Next, you will write the beginning of YOUR story. Remember, in the beginning of a story, you need to write about who is in the story and what that person wanted... Write the beginning of YOUR story in this box... Next, you will write about two events that happened in YOUR story. Remember, when writing about an event you tell about what happened, when it happened, and where it happened... Write the events of YOUR story in this box.)
- Item 3: At the beginning of the item, students were instructed to include details in their story and later in the item, students received reminders to do so; students were provided with examples (from the mentor text described above) throughout the item. (In YOUR story, you will include two events and tell about those two events... Next, you will write the beginning of YOUR story. Remember, in the beginning of a story, you write about who is in the story and what the story is about. In the story we just read, [reference from mentor text is read to student]. Write the beginning of YOUR story in this box... Next, you will write about two events that happened in YOUR story. Remember, when writing about an event you tell about what happened, when it happened, and where it happened. In the story we just read, one event was [reference from mentor text is read to student]. Write the first event of YOUR story in this box.)
- Item 2: Students received reminders to include details in their story, examples of including details from the mentor text, and sentence starters (Next, write what you did to get [what student wanted]. Remember, when writing about what you did, you can write about what happened, when it happened, and where it happened. In the

story we just read, [reference from mentor text is read to student]. Finish this sentence: “To get [what student wanted], I...”)

- Item 1: Students select the sentence that includes details that help a reader imagine the story (In the story, [topic of story is read to student]. Which of these sentences helps you imagine [topic of story is read to student]?)

In grade 5, the specific elements to be addressed included those from grades 3 and 4 (establishing a situation, organizing a logical event sequence, describing scenes, objects or people, and developing characters personalities) and a new element: using dialogue to develop experience and events or show the response of characters to situations. As in the earlier grades, students were provided with a mentor text in items 4, 3, and 2. Students were asked to write a story about going to a new place. Graduated complexity was instantiated in “using dialogue” as follows:

- Item 4: At the beginning of the item, students were instructed to include dialogue in their story and later in the item, students received reminders to do so (In YOUR story... you will also need to include a conversation between the characters in your story... In the story we read, [character from mentor text] had a conversation with her new friend. Who else will be in YOUR story? Remember, in YOUR story [you/character name] and the other character in your story will have conversations with each other... Next, you will write about two events that happen in YOUR story... Remember to include a conversation between [you/character name] and the other character in the story. Write the events of YOUR story in this box and include what the characters say to each other.)
- Item 3: At the beginning of the item, students were instructed to include dialogue in their story and later in the item students received reminders to do so and examples of how this was done in the mentor text (In YOUR story... You will also need to have the characters in your story talk to each other... Who else will be in YOUR story? Remember, in YOUR story [you/character name] and the other character in your story will talk to each other... Now you will write the next event of YOUR story. In this event, your characters need to talk to each other. In the story we just read, [reference from mentor text is read to student]. Write the next event of YOUR story in this box. Remember to have your characters talk to each other. )
- Item 2: At the beginning of the item, students were instructed to include dialogue in their story and later in the item students received reminders to do so, were given examples of how this was done in the mentor text, and were provided with sentence starters (You will have two characters in YOUR story and they will talk to each other... Next you will choose the other character. In the story we just read, [main character from mentor text] is the main character and [other character in mentor text] is the other character. They talk to each other. What is the name of the other character in YOUR story?... At [New Place], you talked to [Other Character]. In

the story you just read, [reference to conversation in mentor text]. What did you say to [Other Character]? Finish this sentence: I said to [Other Character]...)

- Item 1: Students select the sentence that includes dialogue appropriate to the story.

In the middle school grades, students were asked to write informative/explanatory text with varied informative elements selected for each grade. The specific elements to be addressed were the use of strategies such as comparison/contrast (grade 6), cause/effect (grade 7), or problem/solution (grade 8) to organize ideas and information about a given topic using fictional and/or non-fictional events. In items 4, 3, and 2, students were walked through the process of drafting content for their text; in item 1, students selected sentences for their text. In addition to the writing and revision phases used in elementary school, middle school items 4, 3, and 2 also included a planning phase. Graphic organizers were provided for the planning phases and response templates for the writing and revision phases. Unlike the elementary school items, in middle school mentor text was not provided.

In grade 6, graduated complexity was instantiated for the assigned elements as follows:

- Item 4: Students were asked to pick ONE activity (from THREE options) they do in two locations, TWO activities (from FOUR options) they only do in one location, and TWO activities (from FOUR options) they only do in another location (PLANNING PHASE: First, pick one activity you do [at two locations]. I will read the activities to you. [Options read to students.] Now that you have picked the activities, you will write details about them. You do not need to write complete sentences here, you only need to list your ideas... WRITING PHASE: Now that you have planned your essay, you can start to write.... REVISION PHASE: Now I will read your essay to you. Then if you want to, you can add to or change your essay.)
- Item 3: Students were asked to pick ONE activity (from THREE options) they do in two locations, ONE activity (from THREE options) they only do in one location, and ONE activity (from THREE options) they only do in another location (Student instructions were the same as in item 4 but students were required to compare and contrast fewer activities)
- Item 2: Students were asked to write about ONE activity (from TWO options) they do in two locations, ONE activity (from TWO options) they only do in one location, and ONE activity (from TWO options) they only do in another location; students were also provided with sentence starters (PLANNING PHASE: In your essay, you will compare and contrast activities you do [reference to locations]. First, you will plan your essay. Which activity would you like to write about? Pick one activity you ONLY do at [first location]. [Options read to students.] Now that you have picked the activities, you can add details. You do not need to write complete sentences here, you only need to list your ideas... WRITING PHASE: You will use your notes and this response template to help you write your essay. Remember, you

will compare and contrast activities you do [in two locations]. First, you will write your introduction... The introduction is started for you. Finish this sentence: In this essay, I will compare and contrast... REVISION PHASE: Now I will read your essay to you. Then if you want to, you can add to or change your essay.)

- Item 1: Students select sentences for their writing that compare and contrast two things (Choose the sentence for the beginning of your essay. This will be your introduction. Remember, your introduction should tell what you will compare and contrast. Which sentence tells what you will compare and contrast? [Options read to students.]

In grade 7, graduated complexity was instantiated for the assigned elements as follows:

- Item 4: Students were asked to write about ONE thing (from THREE options) that might cause [given event] and THREE possible effects (from FIVE options) of [given event]. (PLANNING PHASE: First, pick something that can cause [given event]. Which cause would you like to write about? [Options read to students.] Now that you have picked the cause and effects of [given event], you will add more information about them. You do not need to write complete sentences here, you only need to list your ideas... WRITING PHASE: Now that you have planned your essay, you can start to write... REVISION PHASE: Now I will read your essay to you. Then if you want to, you can add to or change your essay.)
- Item 3: Students were asked to write about ONE thing (from THREE options) that might cause [given event] and TWO possible effects (from FOUR options) of [given event] (Student instructions were the same as in item 4 but students were required to write about fewer effects of being late)
- Item 2: Students were asked to write about ONE thing (from TWO options) that might cause [given event] and ONE possible effect (from TWO options) of [given event]; students were also provided with sentence starters (PLANNING PHASE: In your essay, you will write about [given event] and what might happen because someone is [given event]. First, pick something that can cause [given event]. Which cause would you like to write about? [Options read to students.] Now that you have a cause and effect of [given event], you will add more information about them. You do not need to write complete sentences here, you only need to list your ideas... WRITING PHASE: You will use your notes and this response template to help you write your essay. Remember, you will write about [given event] and what happens because [of given event]. First, you will write your introduction... The introduction is started for you. Finish this sentence: In this essay, I will write about the cause and effect of... REVISION PHASE: Now I will read your essay to you. Then if you want to, you can add to or change your essay.)

## QUALITY AND IMPACT OF ITEMS, PRODUCTS, AND PROCEDURES

- Item 1: Students select sentences for their writing that show cause and effect (Choose the sentence to begin your essay. This will be your introduction. Remember, your introduction should tell the reader what cause and effect they are going to read about. Which sentence tells the reader what cause and effect they are going to read about? [Options read to students.]

In grade 8, graduated complexity was instantiated for the assigned elements as follows:

- Item 4: Students were given the problem they were to write about and asked to pick THREE possible solutions (from FIVE options) (PLANNING PHASE: Most problems have many possible solutions. Here are some possible solutions to the problem. Pick three of these to write about in your essay. [Options read to students.] Now that you have the problem and solutions, you will add more information about them. You do not need to write complete sentences here, you only need to list your ideas... WRITING PHASE: Now that you have planned your essay, you can start to write... REVISION PHASE: Now I will read your essay to you. Then if you want to, you can add to or change your essay.)
- Item 3: Students were given the problem they were to write about and asked to pick TWO possible solutions (from FOUR options) (Student instructions were the same as in item 4 but students were required to write about fewer solutions to the problem.)
- Item 2: Students were given the problem they were to write about and asked to pick ONE possible solutions (from TWO options); students were also provided with sentence starters (PLANNING PHASE: You are going to write an essay about a problem and one way to solve the problem... First, you will plan your essay. You can use this graphic organizer to plan what you will write. Here is the problem you will write about... Now that you have the problem and a solution, you will add more information about them. You do not need to write complete sentences here, you only need to list your ideas... WRITING PHASE: You will use your notes and this response template to help you write your essay about a solution to a problem. Remember, the problem is... First, write your introduction. The introduction is started for you. Finish this sentence: In this essay, I will write about how to solve the problem of... REVISION PHASE: Now I will read your essay to you. Then if you want to, you can add to or change your essay.)
- Item 1: Students select sentences for their writing that show problem/solution (Choose the sentence for the introduction of your essay. Remember the introduction should tell what the problem is. Which sentence tells what the problem is? [Options read to students.]

In high school, students were asked to write an argument. The argumentative elements for grade 11 (the grade selected for the writing item family) were providing examples, offering

reasons for assertions, and presenting a case with the “pros” (supporting ideas) and “cons” (opposing ideas) incorporating relevant examples, facts, and details. In all items, students were instructed to write a persuasive essay. In items 4, 3, and 2, the term “persuasive essay” was defined; in item 1, instead of using the term “persuasive essay”, the term was described (an essay to convince someone that students should go on more field trips). In items 4, 3, and 2, students were read an example of an argument, given a choice of two topics for their essay, and walked through the process of drafting content for their text; in item 1, students were not given an option for their essay topic and selected sentences for their text. Items 4, 3, and 2 included planning, writing, and revision phases. Graphic organizers were provided for the planning phases and response templates for the writing and revision phases. Item 1 only included writing and revision phases and only included response templates. Graduated complexity was instantiated for the assigned elements as follows:

- Item 4: Students were asked to select FOUR reasons (from SIX options) to include in the planning phase and then select the THREE most convincing reasons to include in their essay (PLANNING PHASE: Now you will write a persuasive essay. You can either write about [options read to students]. Which topic do you want to write about? ... First, you will pick reasons why students should [topic selected by student]... Now that you have selected the reasons, you will add more information about them. Remember you are trying to convince the reader that [topic selected by student]. You do not need to write complete sentences here, you only need to list your ideas... WRITING PHASE: Now that you have decided which three reasons to include in your essay, you can start to write... REVISION PHASE: Now I will read your essay to you. Then if you want to, you can add to or change your essay.)
- Item 3: Students were asked to select THREE reasons (from FIVE options) to include in the planning phase and then select the TWO most convincing reasons to include in their essay (Student instructions were the same as in item 4 but students were required to write about fewer reasons to support their argument)
- Item 2: Students were asked to select TWO reasons (from FOUR options) to include in the planning phase and then select ONE reason to include in their essay; students were also provided with sentence starters (PLANNING PHASE: Now you are going to write a persuasive essay. You can either write about [options read to students]... First, you will pick reasons why students [topic selected by student]. Here are some reasons. I will read them to you then you will pick two reasons to write about... Now, you will add more information about them. Remember you are trying to convince the reader that [topic selected by student]. You do not need to write complete sentences here, you only need to list your ideas... WRITING PHASE: You can use this response template to help you write your essay about [topic selected by student]. The first box is for the introduction... The introduction for your essay is started for you. Write the rest of your introduction here. Finish this sentence: I think [topic selected by student]. In this essay... REVISION PHASE:

We will go over each of the sentences in your essay to see if you want to make any changes.)

- Item 1: Students select sentences to complete a persuasive essay (A reason is used to convince someone. Which of these is a reason that will convince someone [topic read to student]? [Options read to students.]

## **V. Empirical Studies**

### ***NCSC Research Studies to Evaluate Writing Items***

NCSC conducted studies as part of the NCSC assessment development process to collect qualitative and empirical data to guide writing item development for the operational test. Researchers used data to evaluate student performance, to gather teacher feedback for the writing items and item directives, and the scoring of the CR items. In this section, the purpose, methodology, and findings of two studies, the Writing Task Template Tryout Study and the Writing Evaluation Study (WES), are discussed briefly and suggested areas for refinement of the CR items are summarized.

#### ***Task Template Tryout Study***

NCSC conducted a writing task template tryout in two partner states from October 2013 to December 2013 in an effort to understand (a) how students and teachers interact with items, (b) if the items are measuring the intended construct, and (c) to inform future item development. The participating states allowed for a general comparison between a state that had an existing writing alternate assessment and a state that did not have a writing alternate assessment.

Of the 29 teachers and 61 students who participated in the writing task template tryouts, researchers asked teachers to administer one selected-response item (SR) and one constructed-response item (CR) to each student. Researchers required teachers to administer only two items to prevent learning effects and minimize student workload. Researchers varied the complexity levels by teacher and student to ensure as much coverage of the task templates as possible by assigning items of different complexity levels to students based on the teacher-provided ability estimate for each student. Researchers conducted teacher focus groups to gather data on teacher perceptions on areas of student interaction, teacher administration, and general item feedback at the conclusion of the study.

A general summary of the research findings indicated that teachers in both states agreed that the writing items represented a continuum of complexity. Teachers reported that the complexity of the selected-response items was easier than the complexity of the constructed-response items and that students found the selected-response items easier than the constructed-response items. Teachers also reported that the item directives were helpful, but lengthy. As students were not administered multiple CR items, this study could not evaluate student interactions across items of graduated complexities. However, the following study as described below, accomplished this purpose.

### ***Writing Evaluation Study***

NCSC collected evidence during the spring of 2014 Writing Evaluation Study (WES) to inform (a) revision and refinements of the directions for administration and item supports, (b) scoring of the writing items, and (c) flagging items for possible revision. The participating teachers and students represented a subset of those who participated in the NCSC Pilot 1 Reading test from 13 partner states. All teacher participants were volunteers and thus the resulting sample may not have been representative of the total teacher or assessed student populations.

Of the 233 participating students, researchers assigned each to one of three groups based on information provided prior to recruitment in combination with information provided by the test administrator. At each grade level, the three group assignments were: 1) four less difficult CR items and four less difficult SR items, 2) four moderately difficult CR and four moderately difficult SR items, or 3) one CR and one SR item at each of the four difficulty levels. Researchers directed TAs to administer the writing items within a form in a specified order.

A general summary of the responses collected from administration logs, focus groups, and an end of test survey indicated that most TAs in all three groups responded that the Directions for Test Administration (DTA) gave enough information for test administration and that enough direction was provided to a student to complete the items. There was also strong agreement that the SR and CR items were of high quality and that students were more familiar with and benefitted from the supports in the SR items as compared to the CR items. Feedback related to suggestions for the WES items or the WES administration indicated that most TAs thought the test content was too difficult, that additional supports may be helpful, and that the directions, items, sample mentor texts or essays were too “wordy.”

Feedback also indicated that there was an increase in difficulty of items across the levels. With respect to the writing students produce under the best available instructional conditions and how this compares with what was observed on the assessment, TAs responded that writing instruction involved picture symbols, modeling, and making choices and that students are receiving instruction using word banks, graphic organizers, and webs. They also indicated that some students are writing their names and a smaller number of students are working on writing sentences and stories using conventions. TAs responded that students had difficulty with understanding the purpose of revising and editing and student fatigue occurred given the amount of time required to complete these steps, which resulted in errors.

### ***WES Range Finding***

Range finding of the WES writing CR item student responses occurred in June, 2014. A purpose of range finding was to determine an initial score for every student response. Range finding participants also identified Anchor Sets to use as exemplars and Training Sets to serve as training materials for scorers.

Participants consistently noted that students were able to produce a range of writing products for all levels of tasks with varying levels of support at all grades. A follow-up meeting provided an opportunity for participants to discuss their observations and provide feedback about the item content and structure based upon student work. During this meeting, participants proposed suggestions to improve the directions for test administration, student prompts, and stimulus materials. With respect to the rubrics, participants suggested clarifying the alignment between expectations and scoring criteria to support consistent application of the rubrics to student products.

## **Refined Task Families**

### ***Implications of NCSC Studies and Range Finding***

The assessment designers and developers intentionally employed an ECD-based approach paired with UDL to create assessment tasks that accurately evaluate the knowledge, skills, and abilities of SWSCD on a writing test aligned to the CCSS. According to Marion and Pellegrino (2006), “Assessment tasks should be designed to best fit the students and how they learn and not with an eye toward some arbitrary sense of standardization” (p.53). The ongoing studies related to the quality of the NCSC writing CR items elaborated the challenge of reaching the goal of accurately measuring student learning in written expression while meeting the varied needs of a heterogeneous group of students. The NCSC content leads continuously address new sources of data, information, and research to reach this goal.

Students who participated in the Task Template Tryout Study and the WES produced a range of responses for all levels of tasks with varying levels of support. This yielded valuable data and information to the NCSC Project to improve the overall quality of the writing CR items to ensure that the items allow students with varying learner characteristics, communication modes, and abilities to demonstrate their knowledge and skills and to differentiate performance accurately and appropriately.

The results from these studies informed content experts on the accessibility of the items, the appropriateness of the content for each grade level, and the complexity of the items tiers for students of various ability levels. With regard to the administration of the items, the results were used to improve the Directions for Test Administrators (DTAs) by reducing their length and improving their clarity, reduce redundancies in the student directives, adjustment of format and content of the stimulus materials, and improved alignment of the language of the items to classroom practices. Lastly, NCSC content leads revised rubrics and associated scoring materials based upon the provided feedback from the WES Range Finding participants. Also, a pre-Range Finding protocol was developed to support future Range Finding events to follow subsequent administration of the CR items. Further detail about the CR item refinements and rationale for each are found in Appendices B, C, and D.

## **VI. Conclusion and Next Steps**

Educational measurement of academic content for SWSCD is a complex enterprise which requires frequent monitoring, questioning, and intentional examination of results to achieve accurate scoring and interpretation. The results of assessments can have long lasting consequences on students' future opportunities to learn, work, and interact in their communities and to integrate more fully in an ever changing society. With respect to writing as well as other assessed content areas, what is measured and the interpretation of assessment results should set in motion a paradigm shift in teachers and policymakers that creates a pathway by which students have greater exposure to grade-level academic content, achieve high academic outcomes, and leave high school ready for a range of post-secondary options.

Educators must have the same expectations for students with significant disabilities who, like other students, need to leave high school with the ability to participate meaningfully and communicate effectively in a complex and diverse society. For students with significant cognitive disabilities to be able to meet the CCSS writing standards, they will need a focused curriculum, and teachers will need evidence-based instructional methods to address the students' individual needs.

Changes in student outcomes rely on the provision of opportunities for learning by both students and their teachers of challenging, grade-level content and the examination of how well assessments measure achievement of this content by SWSCD. The NCSC project has taken significant steps to design an innovative, principle-designed writing assessment for an AA-AAS as part of a coherent and comprehensive system. NCSC engaged in and employed ECD, UDL, and the use of graduated complexity to make these innovations possible to design the writing assessment from the very beginning, through conceptualization and item construction, field-testing, item reviews, and evaluation. The objective was to create writing assessments that present an accurate measure of the knowledge, skills, and abilities of the diverse population of students participating in the AA-AAS.

The research-to-practice approach undertaken by the project addressed the complex challenges inherent in developing a writing AA-AAS and a comprehensive system of professional development and resources. This approach continues to be relevant and necessary to improve and validate the assessment conceptual framework and remove barriers based on our increased understanding of the students who participate in the AA-AAS. Furthermore, these results should propel assessment developers and researchers to ask new questions and conduct new investigations.

Appendix A: Comprehensive List of Additional KSAs and Associated Variable Features

Additional KSAs	Variable Features
<p><b><u>Perceptual (Receptive)</u></b></p> <ul style="list-style-type: none"> <li>• AP1. Ability to perceive the linguistic components of the stimulus material and question (e.g., through print, objects, audio, Braille) (P1, P2, P3)</li> <li>• AP2. Ability to perceive images in the stimulus material and question (e.g., through print, objects, holistic description, Braille) (P1, P2, P3)</li> <li>• AP3. Ability to perceive physical objects required for the task (e.g., see physical objects used to relate a story) (P1, P2)</li> </ul> <p><b><u>Skill and Fluency (Expressive)</u></b></p> <ul style="list-style-type: none"> <li>• AS1. Ability to communicate response (e.g., respond verbally, by using pictures, by making a selection from a group) (S1, S2, S3, S4, S5, S6)</li> <li>• AS2. Ability to compose or express a response in text (e.g., by writing, using Braille) (S1, S2, S3, S4, S5, S6)</li> <li>• AS3. Ability to manipulate physical materials (e.g., dexterity, strength and mobility) (S1, S2, S3, S4, S5, S6)</li> <li>• AS4. Ability to manipulate digital/electronic equipment (S1, S4, S5, S6)</li> <li>• AS5. Knowledge of how to use physical materials or digital/electronic equipment (e.g., familiarity) (S5, S6)</li> </ul> <p><b><u>Language and Symbols</u></b></p> <ul style="list-style-type: none"> <li>• AL1. Ability to recognize text, symbols, or images (L2, L4, L5, L8, L9, L10, L11)</li> <li>• AL2. Ability to decode text, symbols, or images (L1, L2, L3, L4, L5, L8, L9, L10, L11)</li> <li>• AL3. Ability to comprehend text, symbols, or images (L1, L2, L3, L4, L5, L6, L7, L8)</li> <li>• AL4. Ability to understand English vocabulary and syntax (L2, L3, L4, L5, L7, L8)</li> </ul>	<p><b><u>Perceptual (Receptive)</u></b></p> <ul style="list-style-type: none"> <li>• P1. Delivery mechanisms by which the question is perceived (e.g., read aloud verbatim/read aloud paraphrase, pictures, large print, printed text, Braille, text, symbols, concrete objects, description of objects or images, text to speech, signing, auditory amplification, CCTV – close circuit TV, to increase size of font, vary contrast, etc.)</li> <li>• P2. Supports for the use of equipment required for the task (e.g., communication board, CD player)</li> <li>• P3. Delivery parameters for oral presentation of material (e.g., speed of reading, volume, amount of expression used, student ability to pause, stop, and/or repeat information read aloud)</li> </ul> <p><b><u>Skill and Fluency (Expressive)</u></b></p> <ul style="list-style-type: none"> <li>• S1. Response mode options (e.g., pointing, speech and verbalization, writing, signing, switch or other assistive device/augmentative communication device, eye gaze, for lowest functioning students – predictable behavioral response, tolerate assistance – e.g., hand over hand)</li> <li>• S2. Supports for composing a response in text (e.g., speech to text, written by teacher, keyboarding)</li> <li>• S3. Supports for manipulating physical materials (e.g., use of Velcro, size of materials, teacher manipulation of materials)</li> <li>• S4. Supports for manipulating digital/electronic equipment (e.g., pointers, teacher manipulation of equipment, spoken commands, stylus for input, larger keyboard/buttons, adaptive mouse)</li> <li>• S5. Practice tutorials with unfamiliar physical materials or digital/electronic equipment</li> <li>• S6. Practice with familiar equipment</li> </ul> <p><b><u>Language and Symbols</u></b></p> <ul style="list-style-type: none"> <li>• L1. Level of abstraction required of student (e.g., concrete objects, images, text)</li> <li>• L2. New vs. pre-taught vocabulary and symbols</li> <li>• L3. Embedded support for vocabulary and symbols (e.g., technical and non-technical glossary, hyperlinks/footnotes to definitions, illustrations, background knowledge)</li> <li>• L4. All key information in the dominant language (e.g., English) is also available in prevalent first languages (e.g., Spanish)</li> <li>• L5. All key information in sign language for students who utilize this mode of communication</li> </ul>

QUALITY AND IMPACT OF ITEMS, PRODUCTS, AND PROCEDURES

Additional KSAs	Variable Features
<p><b><u>Cognitive</u></b></p> <ul style="list-style-type: none"> <li>• AC1. Ability to attend to stimuli (DOK level 1) (C37, C38, C39, C40, C41, C42, C43, C44, C45, C46)</li> <li>• AC2. Ability to recall related background knowledge (DOK level 2) (C5, C6, C7, C8, C9, C10, C11, C12)</li> <li>• AC3. Ability to perform (e.g., answer questions, solve simple problems) (DOK level 3) (C11, C12, C13, C19, C20, C29, C30, C33)</li> <li>• AC4. Ability to comprehend (e.g., provide an explanation) (DOK level 4) (C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19)</li> <li>• AC5. Ability to apply information (e.g., organize information) (DOK level 5) (C13, C14, C15, C16, C17, C18, C19, C20, C21)</li> <li>• AC6. Ability to analyze, synthesize, or evaluate information (DOK level 6) (C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31)</li> <li>• AC7. Ability to understand the meaning of an example (C16, C24)</li> <li>• AC8. Ability to process multi-step problems (C13, C14, C15, C20, C22, C23, C24, C25, C26, C27, C28, C31, C32, C34, C35)</li> <li>• AC9. Ability to recall and use information presented in a task/item (working memory) (C32, C33, C34, C35, C36)</li> <li>• AC10. Ability to understand the structure of “organizers” used to present information or to scaffold responses (e.g., understand meaning of headers, subtitles, etc. in text) (C11, C21, C24, C29, C30)</li> </ul>	<ul style="list-style-type: none"> <li>• L6. Use of multiple representations (e.g., physical models, demonstrations, acting out scenarios)</li> <li>• L7. Alternate syntactic levels (simplified text)</li> <li>• L8. Highlight essential elements, words, or phrases</li> <li>• L9. Digital text with automatic text to speech</li> <li>• L10. Digital Braille with automatic Braille to speech</li> <li>• L11. Read language and symbols aloud</li> </ul> <p><b><u>Cognitive</u></b></p> <ul style="list-style-type: none"> <li>• <b>C1. Depth of knowledge of the content – SELECTED IN EVERY DESIGN PATTERN AND TASK</b></li> <li>• <b>C2. Complexity of the content (e.g., length of story, number of supporting details included, richness of context) – SELECTED IN EVERY DESIGN PATTERN AND TASK</b></li> <li>• C3. Item/task format (selected response vs. constructed response, performance, etc.)</li> <li>• C4. Adjustable levels of challenge (teacher able to adjust)</li> <li>• Options for supporting background knowledge:             <ul style="list-style-type: none"> <li>○ C5. Pre-teach background content (pre-teach definitions of unfamiliar words or concepts unrelated to the standard; pre-teach means teaching a student for the first time the definition of a word or concept that is included in the narrative of a test item but not part of the construct being measured)</li> <li>○ C6. Provide analogies and examples</li> <li>○ C7. Provide hyperlinks to multi-media</li> <li>○ C8. Provide links to related information</li> <li>○ C9. Provide links to familiar materials</li> <li>○ C10. Provide concept maps</li> <li>○ C11. Remind student of prior experiences</li> <li>○ C12. Remind student of materials or activities used to teach foundational reading/English language arts skills</li> </ul> </li> <li>• Options for supporting critical features, big ideas, and relations:             <ul style="list-style-type: none"> <li>○ C13. Provide graphic organizers</li> <li>○ C14. Outline information</li> <li>○ C15. Highlight information</li> <li>○ C16. Provide alternative forms of key concepts</li> <li>○ C17. Provide multi-media glossaries</li> <li>○ C18. Provide translation tools</li> <li>○ C19. Provide modeled prompts (on non-construct relevant content)</li> </ul> </li> </ul>

QUALITY AND IMPACT OF ITEMS, PRODUCTS, AND PROCEDURES

Additional KSAs	Variable Features
<ul style="list-style-type: none"> <li>• AC11. Ability to understand the purpose of highlighted features in text or illustrations (C21, C25)</li> </ul> <p><b><u>Executive</u></b></p> <ul style="list-style-type: none"> <li>• AE1. Ability to set goals and expectations (E1, E4, E5)</li> <li>• AE2. Ability to monitor goals and progress (E1, E2, E3, E4, E5)</li> <li>• AE3. Ability to plan and sequence (E1, E4, E5)</li> <li>• AE4. Ability to self-regulate and reflect during problem solving (E1, E2, E3, E4, E5)</li> </ul> <p><b><u>Affective</u></b></p> <ul style="list-style-type: none"> <li>• AA1. Ability to engage (e.g., task-specific motivation) (A1, A2, A3, A4, A5, A6, A7, A8, A11, A12, A13, A14, A15)</li> </ul>	<ul style="list-style-type: none"> <li>○ C20. Provide a response template</li> <li>○ C21. Remind student of the function of tools/features designed to aide comprehension and processing of information (e.g., highlighting, graphic organizers, captions, and headings)</li> <li>• Options for guiding exploration and information processing:               <ul style="list-style-type: none"> <li>○ C22. Provide multiple entry points</li> <li>○ C23. Allow viewing of stimuli from previous stages and parts</li> <li>○ C24. Use familiar materials</li> <li>○ C25. Use consistent signals/cues</li> <li>○ C26. Provide sequential highlighting</li> <li>○ C27. Chunk information into smaller elements</li> <li>○ C28. Mask part of the information</li> <li>○ C29. Provide modeled prompts (on non-construct relevant content)</li> <li>○ C30. Provide a practice item or task</li> <li>○ C31. Provide a guide or checklist for prioritization of steps in multi-step problems</li> </ul> </li> <li>• Options for supporting memory and transfer:               <ul style="list-style-type: none"> <li>○ C32. Note-taking</li> <li>○ C33. Mnemonic aids</li> <li>○ C34. Locate items near relevant text</li> <li>○ C35. Reread question/stimulus</li> <li>○ C36. Present items as a discrete unit or embed in a scenario</li> </ul> </li> </ul> <p><b><u>Executive</u></b></p> <ul style="list-style-type: none"> <li>• E1. Prompts and scaffolds to estimate effort, resources, and difficulty</li> <li>• E2. Prompts, scaffolds, and questions to monitor progress, to “stop and think”, and for categorizing and systematizing</li> <li>• E3. Representations of progress (e.g., before and after photos, graphs and charts)</li> <li>• E4. Guides, checklists, graphic organizers, and/or templates for goal setting, prioritizing, breaking long-term objectives into reachable short-term goals, self-reflection, and self-assessment</li> <li>• E5. Adjust levels of challenge and support (e.g., adjustable leveling and embedded support, alternative levels of difficulty, alternative points of entry)</li> </ul> <p><b><u>Affective</u></b></p> <ul style="list-style-type: none"> <li>• Teacher options for providing supports for attention and engagement:               <ul style="list-style-type: none"> <li>○ A1. Cover up part of text so student isn’t overwhelmed</li> <li>○ A2. Prompt student to engage/re-engage</li> <li>○ A3. Provide verbal/gestural prompts</li> </ul> </li> </ul>

QUALITY AND IMPACT OF ITEMS, PRODUCTS, AND PROCEDURES

Additional KSAs	Variable Features
<ul style="list-style-type: none"> <li>• AA2. Ability to persist and sustain effort (A1, A2, A3, A4, A5, A6, A7, A8, A11, A12, A13, A14, A15)</li> </ul>	<ul style="list-style-type: none"> <li>○ A4. Provide feedback to support engagement</li> <li>○ A5. Provide supports to reduce student frustration (e.g., noise reduction, extended test taking time, contingencies, number of items administered at one time)</li> <li>○ A6. Provide varied levels of challenge and support</li> <li>○ A7. Provide optimal student positioning (positions which encourage alertness, not recumbent)</li> <li>○ A8. Administer assessment at optimal time of day for student engagement</li> <li>• Task options for engagement (task refers to the assessment items, stimulus “story”, and materials):               <ul style="list-style-type: none"> <li>○ A9. Provide students with choices for personal control of age-appropriate content when construct is not impacted (e.g., choice of topic or theme) <b>MAY NOT BE APPLICABLE FOR STATEWIDE ASSESSMENTS</b></li> <li>○ A10. Provide students with choices for personal control of task context when construct is not impacted <b>NOT MAY NOT BE APPLICABLE FOR STATEWIDE ASSESSMENTS</b></li> <li>○ A11. Enhance relevance, value, and authenticity of tasks</li> <li>○ A12. Heighten salience</li> <li>○ A13. Variety of stimuli</li> <li>○ A14. Vary amount of context supporting tasks (e.g., discrete tasks vs. scenarios)</li> <li>○ A15. Item/task format (selected response vs. constructed response, performance, etc.)</li> </ul> </li> </ul>

**Appendix B: Examples of Writing Constructed-Response Item Refinements and Rationale**

Area	SRI Task Template	NCSC CR Item Refinements	Rationale for Refinement
Administration Mode	<ul style="list-style-type: none"> <li>Response templates and stimulus materials are printed.</li> </ul>	<ul style="list-style-type: none"> <li>Response templates are delivered in paper and computer administration modes; all stimulus materials are printed.</li> </ul>	<ul style="list-style-type: none"> <li>Provides flexibility in administration mode to support a wider range of student responses that mirror instruction and may reduce student fatigue</li> </ul>
Mentor text (Grades 3 - 5, Narrative Text) and Example Essay (Grade 11, Argument)	<ul style="list-style-type: none"> <li>Reading complexity guidelines used to develop reading passages are applied.</li> <li>The text or essay is read aloud to present an example of the structure of the text type and writing expectations.</li> <li>A statement introduces the mentor text, “You are going to write a story,” or the example essay, “You are going to write a persuasive essay.”</li> <li>The title of the passage is provided to the student before the mentor text is read.</li> <li>The purpose of a persuasive essay is provided to the student before the example essay is read aloud.</li> </ul>	<ul style="list-style-type: none"> <li>The complexity and length of text are reduced.</li> <li>The content of the text is reduced to mirror the student writing expectations.</li> <li>The topic of the student writing is stated explicitly and is included in the statement that introduces the mentor text or example essay.</li> <li>A brief “summary” of the text is provided before the text is read (e.g. First I am going to read you a story about a girl named ___ who ___.)</li> <li>The purpose of the persuasive essay is provided as well as the topic of the essay and a statement of the claim the author makes.</li> </ul>	<ul style="list-style-type: none"> <li>Reduces amount of verbal cognitive load before the student writes and the amount of information to comprehend prior to writing.</li> <li>Parallels the content of the mentor text or the example essay to the writing expectations without extraneous detail.</li> <li>Provides explicit information to orient the student to the topic of permanent product.</li> <li>Orients the student to the topic of the text to stimulate interest and set a purpose for reading the text relative to the expected writing.</li> <li>Provides a purpose for reading the text and a “listen for” with respect to the argument the author makes to convince the reader; provides non-construct relevant information to support student understanding and production of an argument.</li> </ul>

QUALITY AND IMPACT OF ITEMS, PRODUCTS, AND PROCEDURES

Area	SRI Task Template	NCSC CR Item Refinements	Rationale for Refinement
Steps in creating a written product in Grades 6-8 & 11	<ul style="list-style-type: none"> <li>The steps associated with the process are not presented to the student before the student begins writing.</li> </ul>	<ul style="list-style-type: none"> <li>The steps (process) in creating the product (e.g. “First, you will plan your essay. Next, you will...” ) are presented with the associated stimulus materials to the student before the student begins writing.</li> </ul>	<ul style="list-style-type: none"> <li>Orients the student to the process and materials used to generate a product; approach may mirror writing instruction and thus the student may be better prepared to write based on familiarity with the way in which the product is generated.</li> </ul>
Introduction of informative / explanatory writing tasks (grades 6, 7, and 8)	<ul style="list-style-type: none"> <li>The first statement presented to the student states the text structure (e.g., cause and effect) to which the student will produce a written product followed by a definition of the text structure and an example; then, the student is presented with the topic of the essay.</li> </ul>	<ul style="list-style-type: none"> <li>The first statement presented to the student states the text structure <b>and</b> a specific topic to which the student will produce a written product; next, the steps of writing are provided followed by the definition of the text structure and an example.</li> </ul>	<ul style="list-style-type: none"> <li>Defines the specific topic at the beginning of the item to orient the student to the purpose of the essay using the stated text structure.</li> </ul>
References to mentor text or example essay	<ul style="list-style-type: none"> <li>Sections of the text are referenced throughout the item directive to provide examples/models for the student.</li> </ul>	<ul style="list-style-type: none"> <li>Sections of the text are referenced less frequently to provide examples/models for the student; a restatement of the topic is often included in the item directive.</li> </ul>	<ul style="list-style-type: none"> <li>Reduces transitions between presented text and item directives; reduces verbal cognitive load; and increases clarity in focus of writing by referring to the topic of the writing more frequently rather than referencing back to specific language in the provided texts.</li> </ul>

QUALITY AND IMPACT OF ITEMS, PRODUCTS, AND PROCEDURES

Area	SRI Task Template	NCSC CR Item Refinements	Rationale for Refinement
Remember statements	<ul style="list-style-type: none"> <li>The stimulus material containing examples of standard English conventions and a corresponding remember statement are presented each time after the direction to write (e.g., the beginning of the story).</li> <li>Remember statements often follow the directive indicating where and what to write.</li> </ul>	<ul style="list-style-type: none"> <li>Reduction in the presentation and repetition of remember statements (e.g., correct use of standard English conventions); the stimulus material containing examples and a corresponding remember statement is presented two times (i.e., before the student is given the first direction to write and during the editing step; therefore, there are fewer remember statements associated with each step.</li> <li>In more instances, the remember statements precede the directive indicating where and what to write.</li> </ul>	<ul style="list-style-type: none"> <li>Reduces administration time, the amount of information presented verbally, and redundancies; the availability of the stimulus material containing the examples for reference throughout the administration allows the student to use this resource when writing, which could mirror instructional strategies; the student can respond directly when the direction to write is provided, therefore, generation of a response following the directive to write is not interrupted as frequently.</li> <li>Presents the direction to write and what to write directly before the student writes which provides clarity and less delay between the delivery of the writing expectation and the opportunity to write.</li> </ul>
Provision of response options	<ul style="list-style-type: none"> <li>Response options (e.g., effects related to a cause; reasons to support a claim) are provided to the student.</li> </ul>	<ul style="list-style-type: none"> <li>The student is provided with the opportunity to generate ideas before lists are provided from which the student makes selections.</li> </ul>	<ul style="list-style-type: none"> <li>Allows student to use background knowledge to generate a response which may promote engagement, interest, and a more authentic response.</li> </ul>
Transition Words	<ul style="list-style-type: none"> <li>A list of transition words is read to the student and the purpose for their use in writing is stated (e.g., "...helps readers connect...")</li> </ul>	<ul style="list-style-type: none"> <li>A stimulus material containing an example sentence containing the transition word is presented to the student; the specific transition word(s) and how it helps the reader are explicitly stated.</li> </ul>	<ul style="list-style-type: none"> <li>Provides a non-construct relevant, concrete example of the use of a transition word.</li> </ul>
Drafting and revising	<ul style="list-style-type: none"> <li>A drafting and a revising step are included as steps; the student is directed to make revisions on a draft response template from which a final response is written on a final response template if revisions have been made to the draft.</li> </ul>	<ul style="list-style-type: none"> <li>A drafting and a revising step are included; however, the student is provided with a single response template to complete both steps; the student makes revisions and edits to the original, generated text.</li> </ul>	<ul style="list-style-type: none"> <li>Reduces administration time and student fatigue and potential for copying errors on a final response template; also reduces the possibility that the student may not include intended revisions or edits to the final product.</li> </ul>

QUALITY AND IMPACT OF ITEMS, PRODUCTS, AND PROCEDURES

<b>Area</b>	<b>SRI Task Template</b>	<b>NCSC CR Item Refinements</b>	<b>Rationale for Refinement</b>
Final Response and revising	<ul style="list-style-type: none"> <li>During the revising step, the student is presented with a final response template and is directed to write the revised sections only on a final response template.</li> </ul>	<ul style="list-style-type: none"> <li>During the revising step, the student does not use an additional template to write a final response.</li> </ul>	<ul style="list-style-type: none"> <li>Reduces potential for copying errors and the possibility that the student may not include intended revisions or edits to the final product; when the TA reads back the final product, it is read from a single response template vs. reading the final response between a draft and final response template, which may interrupt the continuity and flow of reading the final response.</li> </ul>

**Appendix C: Examples of Writing Constructed-Response Stimulus Material Refinements and Rationale**

Area	SRI Task Template	NCSC Stimulus Material Refinements	Rationale for Refinement
Character Cards/ Narrative Less Complex CR Item	<ul style="list-style-type: none"> <li>Two options are provided to select a character: self or a provided name of a character.</li> </ul>	<ul style="list-style-type: none"> <li>The option to select a character other than self is to select ‘someone else’; then, the student provides a name for the character which is recorded on a stimulus material for reference by the student.</li> </ul>	<ul style="list-style-type: none"> <li>Promotes engage and interest when the student can determine the name of the main character.</li> </ul>
Draft and Final Response Template	<ul style="list-style-type: none"> <li>Two response templates are included in the stimulus materials; one for drafting and one for the final response.</li> </ul>	<ul style="list-style-type: none"> <li>One response template is included in the stimulus materials.</li> </ul>	<ul style="list-style-type: none"> <li>Reduces amount of material preparation/manipulation by the TA; eliminates student copying, potential for copying errors, and lessens student fatigue; also allows the TA to read the final product from a single response template.</li> </ul>
Response Templates	<ul style="list-style-type: none"> <li>The response templates include labeled sections related to the development of a story or essay (e.g., beginning, middle, and end; introduction, body, conclusion).</li> <li>In grades 6-8 &amp; 11 for the more complex CR responses, the response template is one and one-half pages in length.</li> </ul>	<ul style="list-style-type: none"> <li>The response templates do <b>not</b> include labeled sections related to the development of a story or essay.</li> <li>In grades 6-8 &amp; 11 for the more complex CR responses, the response template is two full pages in length; administration directions suggest the use of paper typically used during instruction as appropriate</li> </ul>	<ul style="list-style-type: none"> <li>Allows for continuity in the production of text and resembles authentic writing, which does not include labeled sections; the item directives include language related to the sections of the text to indicate to the student the focus of the writing.</li> <li>Removes a ceiling on the amount of writing as perceived by the student based on the allotted space; provision of paper used during instruction may promote student responding due to familiarity.</li> </ul>
Questions to support revision	<ul style="list-style-type: none"> <li>Questions related to revising each section of the text are included on stimulus cards that are printed and presented (e.g., “Is there anything you want to add or change about how you described...”); the questions are unmasked as the TA moves through the directive.</li> </ul>	<ul style="list-style-type: none"> <li>Questions related to revising are embedded in the teacher directions and are not presented as stimulus materials</li> </ul>	<ul style="list-style-type: none"> <li>Reduces the number of stimulus materials and subsequently TA preparation time and the amount of materials requiring manipulation during the administration of the item; reduces transition between stimulus materials and directions to revise so that the student remains focused on the written work.</li> </ul>

**Appendix D: Examples of Writing Constructed-Response Test Administrator Item Directive Refinements and Rationale**

Area	SRI Task Template	NCSC Test Administrator Item Directive Refinements	Rationale for Refinement
Steps in creating a written product	<ul style="list-style-type: none"> <li>Steps are labeled as a part and number (e.g., Part 1, Part 2) in most instances.</li> </ul>	<ul style="list-style-type: none"> <li>Each step is labeled to indicate its focus (e.g., revising, editing, read story).</li> </ul>	<ul style="list-style-type: none"> <li>Orients specifically the TA to the focus/objective of each step prior to providing directives to the student; TA can anticipate the demands on the student, and determine if a break in the administration would be appropriate to maximize student performance.</li> </ul>
Student Response in Narrative (less complex CR Item)	<ul style="list-style-type: none"> <li>A different set of item directives and stimulus materials are provided if the student writes about self or a provided character.</li> </ul>	<ul style="list-style-type: none"> <li>The same set of item directives and stimulus materials are provided if the student writes about self or someone else; the sentence starters are adjusted to allow for the selection of “self” or other character (e.g., replaced “First, I ___” with “First, ___”</li> <li>The student is directed to use “I” when writing about self</li> <li>If the student selects a main character other than self, the name of the character is recorded by the TA on a stimulus card which the student can refer to during the administration of the item.</li> </ul>	<ul style="list-style-type: none"> <li>Reduces TA preparation time and the amount of materials to be manipulated during the administration of the item.</li> <li>Clarifies the use of a pronoun.</li> <li>Provides the name of the character for the student to reference when generating the story.</li> </ul>
Student response (more complex and less complex CR items)	<ul style="list-style-type: none"> <li>Student is directed to write a response (e.g., an activity, a reason) and then after the student responds, the TA provides direction to write the next part of story or essay.</li> </ul>	<ul style="list-style-type: none"> <li>The student is provided with the opportunity to write a response; however, if no response is provided, the TA provides possible responses based on knowledge of the student from which the student can select; if the student does not select a response, the TA is directed to select a response.</li> </ul>	<ul style="list-style-type: none"> <li>Allows the administration of the item to continue if the student does not initially provide a response; the TA can provide a response that is familiar to the student to which the student can add details or elaborate.</li> </ul>

QUALITY AND IMPACT OF ITEMS, PRODUCTS, AND PROCEDURES

Area	SRI Task Template	NCSC Test Administrator Item Directive Refinements	Rationale for Refinement
Revising and editing steps	<ul style="list-style-type: none"> <li>Revising and editing are combined into a single step in the item; specific item directives/questions are provided to guide the student to make revisions to different sections of the student writing.</li> </ul>	<ul style="list-style-type: none"> <li>The revising and editing steps are presented as two distinct steps; specific item directives/questions related first to revision are followed by re-presenting the examples of standard English conventions during the editing step.</li> </ul>	<ul style="list-style-type: none"> <li>Enables the student to focus separately on two different steps with clear expectations of each step: revising (i.e., adding and changing the written response) and editing (i.e., correcting use of standard English conventions).</li> </ul>
Revising step	<ul style="list-style-type: none"> <li>The TA reads the entire story/essay to the student and tells the student that changes can be made.</li> <li>The student is presented with an opportunity to revise each section of the writing as written on a draft response template and then rewrite revised sections onto a final response template.</li> <li>After questions are presented to help the student decide if changes are needed, the section of the text is read.</li> </ul>	<ul style="list-style-type: none"> <li>The student does not rewrite the revised sections onto a final response. The original student generated response and the revisions are made on a single response template.</li> <li>The section of text to which the student may make revisions is read <b>before</b> the student is presented with questions related to revising; also, a teacher directive refers the student to the completed graphic organizer and reminds the student to use information written on it to ensure inclusion of all notes (e.g., details, evidence, facts) in the response.</li> </ul>	<ul style="list-style-type: none"> <li>Reduces amount of administration time; the response does not need to be “copied” to a final response template which reduces potential “copying” errors; reduces student fatigue.</li> <li>Provides the student with a general cue to listen for whether or not revisions are necessary when a section is read followed by a more specific question based on that section to illicit revisions the student deems necessary.</li> </ul>
Record of revisions and edits	<ul style="list-style-type: none"> <li>If the student says no to making revisions, the TA checks a 'No Changes' box in the space for that section on the draft response template. The TA is directed to move to the next section of the writing. If the student says yes, the TA checks the 'Changes Made' box in the space for that section on the draft response template.</li> <li>In all grades, the TA directs the student to make changes to that section of the writing on the final response template by copying over</li> </ul>	<ul style="list-style-type: none"> <li>A draft or final response template is not included; the ‘No Changes’ box is removed from the provided template. The ‘Changes Made’ box is removed from the provided template.</li> <li>In grades 3 – 5, if the student says yes, the TA writes the changes on the response template as indicated by the student. In</li> </ul>	<ul style="list-style-type: none"> <li>The student is not required to visually and physically attend to and transfer responses across materials; reduces amount of record keeping required by the TA.</li> <li>Eliminates copying of text and administration time; reduces the amount of writing for the student</li> </ul>

QUALITY AND IMPACT OF ITEMS, PRODUCTS, AND PROCEDURES

Area	SRI Task Template	NCSC Test Administrator Item Directive Refinements	Rationale for Refinement
	sentences that will stay the same and making changes to the revised sentences.	grades 6-8 and grade 11, the student is directed to write the changes on the response template.	and increases accurate recording of revisions in grades 3 – 5.
Final Reading of Student Product	<ul style="list-style-type: none"> <li>• If the student has made changes to only some of the sections of the essay, the TA rereads the final story or essay from both the draft and the final response templates reading the sections in order using the draft version for sections with no changes and the final version for sections with changes.</li> <li>• The TA rereads the student product and the student is not allowed to make further edits during or after the final reread step.</li> </ul>	<ul style="list-style-type: none"> <li>• The TA presents a single response template and reads the final story or essay.</li> <li>• The TA rereads the student product, (including revisions and annotations) one time and the student is allowed to make further edits during or after the final reread.</li> </ul>	<ul style="list-style-type: none"> <li>• Allows for continuity and appropriate pacing of text read aloud; ensures that the final story is read in the correct order as the TA does not have to read across two response templates; may support the student’s ability to identify places where additional revision is necessary.</li> <li>• Provides an additional opportunity to revise based on the presentation and rereading of the response, which may result in improved scores.</li> </ul>

QUALITY AND IMPACT OF ITEMS, PRODUCTS, AND PROCEDURES

Area	SRI Task Template	NCSC Test Administrator Item Directive Refinements	Rationale for Refinement
<p>Interpretation of student response and presentation of assessment materials</p>	<ul style="list-style-type: none"> <li>• Design patterns include statements related to additional KSAs related to Language and Symbols and Skill and Fluency (Expressive):               <ul style="list-style-type: none"> <li>○ Ability to comprehend text, symbols, images or objects;</li> <li>○ Ability to recognize text, symbols, tactile images, images or objects.</li> <li>○ Ability to manipulate digital/electronic equipment (e.g., assistive technology).</li> <li>○ Ability to communicate response. (e.g., respond verbally, with sign language, by using pictures, by making a selection from a group, by using eye gaze or other method of response to indicate selection).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• In addition to the Test Administration Manual and grade-specific Directions for Test Administration, additional administration materials provide TAs with guidelines for 1) annotation of student writing which could include words, pictures, symbols or objects; 2) use of Augmentative and Alternative Communication (AAC) for administration and documentation of student responses of the CR items; and 3) use of strategies to promote accessibility through the preparation and presentation of assessment-related materials for students who are blind, deaf, or deaf-blind.</li> </ul>	<ul style="list-style-type: none"> <li>• Promotes accurate interpretation and scoring of student responses; ensures that TAs have guidance on to utilize strategies specific to students with varied characteristics and response modes and that are familiar to students based on instruction.</li> </ul>

## References

- Ainsworth, S. (2006). DeFT: A conceptual framework for considering learning with multiple representations. *Learning and Instruction*, 16(3), 183-198.
- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (1999). *Standards for educational and psychological testing*. Washington, DC: AERA.
- Bruce, S., & Conlon, K. (2005). Colby's daily journal: A school-home effort to promote communication development. *TEACHING Exceptional Children Plus*, 2(1), Article 3.
- Cameto, R., Haertel, G., DeBarger, A., & Morrison, K. (2010). *Applying evidence-centered design to alternate assessments in mathematics for students with significant cognitive disabilities (Alternate assessment design—mathematics technical report 1: Project overview)*. Menlo Park, CA: SRI International. Retrieved from [http://alternateassessmentdesign.sri.com/documents/AAD\\_M\\_TechRpt1.pdf](http://alternateassessmentdesign.sri.com/documents/AAD_M_TechRpt1.pdf)
- Cameto, R., Haertel, G., DeBarger, A., & Morrison, K. (2011). *Alternate assessment design—English language arts/reading technical report 1: Project overview. Applying evidence-centered design to alternate assessments in English language arts/reading for students with significant cognitive disabilities*. Menlo Park, CA: SRI International. Retrieved from [http://alternateassessmentdesign.sri.com/documents/AAD\\_ELATechRpt1\\_Final\\_12\\_5\\_11.pdf](http://alternateassessmentdesign.sri.com/documents/AAD_ELATechRpt1_Final_12_5_11.pdf)
- Cameto, R., Knokey, A.-M., Nagle, K., Sanford, C., Blackorby, J., Sinclair, B., & Riley, D. (2009). *National Profile on Alternate Assessments Based on Alternate Achievement Standards. A Report From the National Study on Alternate Assessments (NCSE 2009-3014)*. Menlo Park, CA: SRI International.
- CA: SRI International.CAST. (2011). *Universal design for learning guidelines version 2.0*. Wakefield, MA: Author. Retrieved from <http://chefmom.sheknows.com/>
- Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects. (2010). National Governors Association Center for Best Practices, Council of Chief State School Officers, from <http://www.corestandards.org/ELA-Literacy/W/3/3/d/>
- Dolan, R. P., Rose, D. H., Burling, K., Harms, M., & Way, D. (2007, April). *The Universal Design for Computer-Based Testing Framework: A structure for developing guidelines for constructing innovative computer-administered tests*. Paper presented at the National Council on Measurement in Education Annual Meeting, Chicago, IL. Retrieved, from.
- Donnellan, Anne (1987). The criterion of the least dangerous assumption. *Behavioral Disorders*, 9, 141-150.

- Gong, B., & Marion, S. (2006). Dealing with flexibility in assessments for students with significant cognitive disabilities. Minneapolis: MN: University of Minnesota, National Center on Educational Outcomes. Retrieved from <http://www.cehd.umn.edu/NCEO/onlinepubs/Synthesis60.pdf>
- Graham, S., & Harris, K. R. (2003). Students with learning disabilities and the process of writing: A meta-analysis of SRSD studies. In L. Swanson, K. R. Harris, & S. Graham (Eds.), *Handbook of learning disabilities* (pp. 323–344). New York, NY: Guilford Press.
- Herrera, B. (2013, April). Changing traditional item review processes to review ECD-based items. Paper presented at the American Educational Research Association (AERA) Annual Meeting, San Francisco, CA.
- Jorgenson, C. (2005, Fall). The least dangerous assumption: A challenge to create a new paradigm. *Disability Solution: A publication of Creating Solutions, A Resource for Families & Others Interested in Down Syndrome & Developmental Disabilities, Creating Solutions*, 6(3).
- Katims, D. S. (2000). Literacy instruction for people with mental retardation; Historical highlights and contemporary analysis. *Education and Training in Mental Retardation and Developmental Disabilities*, 35, 3-15.
- Kearns, J., Kleinert, H., Harrison, B., Sheppard-Jones, K., Hall, M., & Jones, M. (2010). What does ‘college and career ready’ mean for students with significant cognitive disabilities? . Lexington, KY: University of Kentucky. Retrieved from [http://beta.fresnounified.org/dept/sss/ccss/Documents/Career\\_College\\_Readiness\\_for\\_SpeD.pdf](http://beta.fresnounified.org/dept/sss/ccss/Documents/Career_College_Readiness_for_SpeD.pdf)
- Marion, S. F., & Pellegrino, J. W. (2006). A validity framework for evaluating the technical quality of alternate assessments. *Educational Measurement: Issues and Practice*, 25(4), 47-57.
- Messick, S. (1994). The Interplay of evidence and consequences in the validation of performance assessments. *Educational Researcher*, 23(2), 13-23. doi: 10.3102/0013189X023002013
- Mislevy, R. J., & Haertel, G. D. (2006). Implications of evidence-centered design for educational testing. *Educational Measurement: Issues and Practice*, 25(4), 6-20.
- Mislevy, R. J., Steinberg, L. S., & Almond, R. G. (2003). On the structure of educational assessments. *Measurement: Interdisciplinary Research and Perspectives*, 1(1), 3-62. doi: 10.1207/S15366359MEA0101\_02
- Pennington, R. C., Ault, M. J., Schuster, J. W., & Sanders, A. (2011). Using simultaneous prompting and computer-assisted instruction to teach story writing to students with autism. *Assistive Technology Outcomes and Benefits*, 7(1), 24-38.

- Pennington, R. C., Collins, B., Stenhoff, D. M., Turner, K., & Gunselman, K. (2014). Using simultaneous prompting and computer-assisted instruction to teach narrative writing skills to students with autism. *Education and Training in Autism and Developmental Disabilities*, 49(3), 396-414.
- Rose, D. H., & Meyer, A. (2002). *Teaching every student in the Digital Age: Universal design for learning*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Rose, D. H., & Meyer, A. (2006). *A practical reader in universal design for learning*. Cambridge, MA: Harvard Educational Press.
- Rose, D. H., Meyer, A., & Hitchcock, C. (2005). *The universally designed classroom: Accessible curriculum and digital technologies*. Cambridge, MA: Harvard Education Press.
- Ryan, J. M., Quenemoen, R. F., & Thurlow, M. (2004). *I say potato, you say potato: The assessment-speak gao between general and alternative assessment experts*. Minneapolis, MN: National Center on Educational Outcomes. Retrieved from
- Slavin, R., Madden, N., & Karweit, N. (1998). *Effective programs for students at risk: Conclusions for practice and policy*. In R. Slavin, N. Karweit, & N. Madden (Eds.), *Effective programs for students at risk* (pp. 21–54). Boston, MA: Allyn & Bacon.