Smarter Balanced Assessment Consortium: Accessibility and Accommodations Framework

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Executive Summary

The overarching goal of the Smarter Balanced Assessment Consortium (Smarter Balanced) is to provide every student with a positive and productive assessment experience, generating results that are a fair and accurate estimate of each student's achievement. The Accessibility and Accommodations Framework (Framework) presented in this document contributes to the attainment of that goal by removing obstacles to accurate measurement that frequently confront English language learners (ELLs), students with disabilities, ELLs with disabilities, and other students with special assessment needs. The Framework is based on the available research base, as well as lessons learned from nearly a decade of testing under the No Child Left Behind Act. In addition, like other features of the Smarter Balanced assessment model, the Framework helps move assessment into its next generation through use of the many digital tools and features that are part of new, computer-based test delivery systems.

The Smarter Balanced Framework is based on a conceptual model developed through a collaboration of education stakeholders. Components of the Framework's conceptual model are presented graphically as an inverted triangle that is divided into two parts by a vertical line to show that students' needs will be met in two ways: by digital accessibility tools and features that are embedded in the test delivery system, and through locally provided accommodations. The triangle is further divided by horizontal lines to create three sections that decrease in size from top to bottom, to represent the proportion of test takers who will benefit most from the accessibility features available in each section. These levels are described as follows:

- Universal tools are access features that are available to all students based on student preference and selection.
- Designated supports for the Smarter Balanced assessments are those features that are available for use by any student for whom the need has been indicated by an educator or team of educators (with parent/guardian and student input as appropriate).
- Accommodations are changes in procedures or materials that increase equitable access during the Smarter Balanced assessments by generating valid assessment results for students who need them and allowing these students to show what they know and can do. Smarter Balanced states have identified accommodations for students for whom there is documentation of the need for the accommodations on an Individualized Education Program (IEP) or 504 accommodation plan.

The Guidelines organize universal tools, designated supports, and accommodations into two sub-categories: those embedded in the test administration system and those provided locally (non-embedded).

Through this Framework, the Consortium intends to meet the needs of all students, including ELLs, students with disabilities, and ELLs with disabilities. The only exception will be the approximately 1% or fewer students who may need alternate assessments based on alternate achievement standards. With the addition of digital accessibility tools and features, and because the Smarter Balanced approach to providing accessibility options is unrestrictive, the Consortium hopes to improve the assessment experience for students who currently use accommodations and translations, and to extend the benefits of these improvements to a broader group of students.

The Accessibility and Accommodations Framework

Introduction

The Smarter Balanced Assessment Consortium (Smarter Balanced) assessment system is designed to provide a valid, reliable, and fair measure of student achievement of the Common Core State Standards. The validity and fairness of measures of student achievement are influenced by many factors. Chief among them are:

- A clear definition of the construct—the knowledge, skills, and abilities—that is intended to be measured;
- The development of items and tasks that are explicitly designed to assess the construct that is the target of measurement; and
- The delivery and capturing of responses from those items and tasks in ways that enable students to maximally demonstrate their achievement of the construct.

Smarter Balanced has adopted or developed several documents to address reliability, validity, and fairness. Two of those, the *Common Core State Standards* and the *Smarter Balanced Content Specifications*, articulate the assessment targets of the Smarter Balanced assessments and define the knowledge, skills, and abilities to be assessed. In doing so, these documents describe the major constructs—identified as "Claims"—within English language arts and mathematics for which evidence of student achievement will be gathered, and which will form the basis for reporting student performance.

Three additional sources—the *Smarter Balanced Item Specifications*, the *Smarter Balanced Accessibility Guidelines*, and the *Smarter Balanced Bias and Sensitivity Guidelines*—are used to guide the development of items and tasks to ensure that they accurately measure the targeted constructs.

Smarter Balanced member states adopted a common set of universal tools, designated supports, and accommodations to ensure the assessment has consistent meaning across students while also being accessible for all students, regardless of English language proficiency, disability, or other individual circumstances. The three components of the Accessibility and Accommodations Framework (Framework) presented here are designed to meet that need. The Framework guided the following Consortium activities:

- The design and development of items and tasks that ensured greater student accessibility while still measuring the targeted constructs,
- The delivery of items and tasks to students and the collection of student responses in a way that maximizes the validity of the measure of achievement for each individual student;
- The development of accessibility features of the test administration system and digitally-delivered items/tasks
- The development of policies regarding how the accessibility features are delineated along a continuum from those available to all students to those that are activated under adult supervision; and
- The development of an individualized and systematic needs profile for students (Individual Student Assessment Accessibility Profile [ISAAP]) that promotes the provision of appropriate access and tools for each student.

The Framework integrates current best practices with recent advances in assessment enabled by digital technologies that focus on improving the assessment experience of all students while

preserving the validity of the assessment. The Framework also integrates recent developments in measurement across students who are ELLs, students with disabilities, ELLs with disabilities, and students who have access needs but who have not been identified as having a disability. In addition, recognizing that both educational settings and the field of assessment are in a period of transition with respect to paper-based and digital technologies, the Framework addresses measurement of students in a digital environment and a paper-based environment. Finally, the Framework is designed to help structure the universal tools, designated supports, and accommodations available for each individual student and to frame the types of decisions educators must make about the provision of universal tools, designated supports, and accommodations for each individual student. Schools should evaluate individual students' needs based on how well the students use the computer systems as part of instruction and during practice tests. It is important to note that some students may need software and hardware that exceed the minimum technology specifications (e.g., bigger computer screens, newer operating systems for higher quality text to speech).

To the extent possible, the features of the Accessibility and Accommodations Framework are supported by research. However, because some of the digital tools are new, with a few developed specifically for the Smarter Balanced system, additional research will be required as part of the test validation process. In the absence of a firm research base, the universal tools, designated supports, and accommodations that are included have met two requirements: first, they meet a documented need of a specific group or groups of students and, second, they have been used in research with evidence of valid and effective outcomes and the absence of detrimental effects.

The Smarter Balanced Accessibility and Accommodations Framework was developed with extensive input from state-level representatives and national experts with guidance from Consortium provided resources. Resources provided by the Consortium included:

- Two extensive literature reviews—one focused on ELLs and the other on students with disabilities—and incorporates information from an inventory of current state assessment policies and practices.
- A rating of commonly available resources based on validity, effectiveness, and overall usefulness (Abedi & Ewers, 2013). The ratings were based on literature and expert knowledge. The process also included meetings of experts and state representatives that focused on resolving the few areas of incompatibility that emerged in the research reviews and state inventory.

The result is a framework of universal tools, designated supports, and accommodations that can meet the needs of all but a very small percentage of students who will participate in alternate assessments, and that reflects contemporary research, benefits from emerging technologies, and represents a consensus view of Consortium member states.

This paper begins by describing some of the differences between digitally delivered assessments and paper-based systems and presents several advantages to meet individual student needs that digitally delivered assessments afford. That is followed by the three major components of the Accessibility and Accommodations Framework: the access and accommodations model known as "Access by Design"; a conceptual model of the Framework; and a description of the ISAAP for students needing individualized assessment supports. A discussion of the Consortium's key policies is followed by a discussion of how the Smarter Balanced Framework meets the needs of traditionally underrepresented populations (including ELLs, students with disabilities, and ELLs with disabilities). The paper closes with recommendations for validating the Framework's universal tools, designated supports, and accommodations, and a look to the future.

Accessibility in the Digital Age

Digitally delivered assessment differs from paper-based assessment in four important ways. First, the dynamic nature of digitally delivered assessments does not constrain the format and encoding of items and tasks to the degree we find with paper-based assessments. Unlike paper, a digital file can contain several different forms for a given item or task. As an example, a single digital file can contain information that an item or task can be presented as a "standard" print-based form, an auditory (e.g., read aloud) form, a braille form, American Sign Language (ASL), and a language-supported form in one or more languages other than English. In addition, the same digital file can contain information about how specific parts of an item are to be presented, such as a glossary definition for selected words or phrases, or a text-based description of an image.

A second important difference between paper-based and digitally delivered assessment is that the flexible nature of digital items and tasks allows for a degree of individual customization of delivery not found in paper-based systems. Because paper can only contain a single representation of an item, which cannot be tailored once printed, paper-based assessments present a given item in the same way to all students. Any change in presentation requires the printing of a different version of the item (e.g., large print) or the use of physical devices and/or human intervention to tailor the presentation of the item for a given student (e.g., oral translation). In contrast, the flexible nature of a digital delivery interface allows the same item file to be presented in a variety of ways.

In some cases, changes in the presentation of an item involve tailoring the display (e.g., larger font, magnification, color contrasts). In other cases, changes in the presentation of an item focus on accessing and rendering a different form of the item that is contained in the item file (e.g., auditory/read-aloud of text-based content, ASL presentation of text-based or audio-based content, translation of content presented in English, text-based description of an image or sound file, tactile representation of an image). In this way, a digital delivery interface can flexibly tailor the presentation of an item using a single item file and a single delivery system. In contrast, tailoring paper-based delivery requires the creation of different paper forms, the use of physical devices, and/or the intervention of humans.

Third, most paper-based assessments require students to use a pen or pencil to produce responses. If a student cannot use a pen or pencil, then assistance from a human is required for the student to record a response on paper. In contrast, digitally delivered assessments allow students to use a variety of devices to produce responses. These devices may include a standard mouse, a standard keyboard, an alternative mouse, an alternative keyboard, and assistive communication devices such as switch mechanisms and sip-n-puff devices, touch screens, speech-to-text software, or eye gaze devices.

Finally, most conventional paper-based assessments use a common set of test questions that is administered to all students, regardless of individual student ability levels. These paper tests tend to provide more accurate measurement in the middle of the student distribution, but tend to become increasingly less precise as one moves toward the extremes of the distribution. Traditional "fixed form" paper tests, therefore, have limited usefulness for teachers because the data for low- and high-performing students are often imprecise. In contrast, digitally delivered assessments can be designed to customize both the presentation of items and tasks (as described above) but also the selection of which items and tasks the student sees. This selection can be based on which items and tasks will be most informative about what the student does and does not know, providing a fairer and more accurate assessment of all students across the spectrum of achievement. This approach, used by Smarter Balanced, is called "Computer Adaptive Testing" (CAT).

Together, these differences between paper-based and digitally delivered assessments have four important implications for accessibility:

- The ability to make available multiple forms of an item reduces and, in some cases, eliminates the need for human intervention to meet accessibility needs. As an example, by embedding auditory, ASL, and translated versions of items into digital item files, the need for a proctor to read aloud, sign, or translate content presented on paper is greatly reduced. Limiting human intervention standardizes presentation of content and improves reliability and validity.
- Presentation supports can be provided to all students by building into a digital delivery interface universal tools, designated supports, and accommodations that are similar to those included in many software applications. For instance, most applications that display text (e.g., Microsoft Word, Adobe Acrobat, Firefox) allow users to adjust the font size and/or the level of magnification. Similarly, all operating systems allow users to modify the contrast (both brightness and colors) with which content is displayed on screen. And all operating systems now include tools that allow users to have text-based content read aloud using synthesized text-to-speech software. While the extent to which and ways in which each individual uses these options vary widely, their universal presence and unrestricted use during daily interaction with digital devices open opportunities for all students to have the option to use similar supports for a digitally delivered assessment. In contrast, the need to order large-print paper versions of paper-based assessments and/or the need to have physical tools, such as colored acetate and magnifying glasses, restricts the use of these supports for paper-based assessments to a limited group of students.
- By separating the tools required to produce responses from the delivery medium, digitally delivered assessments allow students to use the communication device(s) available in the classroom. For example, a keyboard, a touch screen, and a switch mechanism are independent of the test delivery system, but may be used by students to produce responses. Allowing students to use a communication device that does not compromise the meaning of the assessment, but facilitates learning in the classroom, enables students to produce responses without the aid of an adult.
- CAT can produce scores that are equally precise across the full range of college and career readiness content. The additional precision CAT can provide is critical for describing students' progress and growth toward college and career readiness. The Smarter Balanced approach will ensure that every student experiences a challenging test, but one that allows substantial opportunities for success. On traditional paper tests, students who are struggling with the content may not be able to produce a single correct answer, an experience that can be very demoralizing and can impact the student's willingness to continue engaging in the test. Likewise, advanced students often find traditional assessments to be no challenge at all, which can also reduce their willingness to engage. Through the Smarter Balanced approach, there is a high probability that all students will perceive the test to be valuable, fair, and accurate and will therefore rise to the challenge to demonstrate their highest level of proficiency.

Collectively, these features of digitally delivered assessments create an important opportunity to rethink how accessibility and accommodations policies are framed. These features (including universal tools, designated supports, and accommodations) show great promise for improving the assessment experience for all students. Consistent with the development of accommodations in paper-based assessments, the validity and effectiveness of these new technologies as individually or simultaneously administered tools warrant investigation and are being studied as part of the Smarter Balanced research agenda.

Access by Design

Recognizing the opportunities that digitally delivered assessments provide for embedding presentation methods in digital item files and tailoring the presentation of items delivered by digital assessments, Smarter Balanced has embraced the Access by Design model (Fedorchak, 2012).

The Access by Design model aims to address the accessibility needs of most students through purposeful consideration during the item and task development process. This stands in contrast to traditional accommodation models, which have tended to address accessibility issues after item or task development. The Access by Design model systematically looks at multiple supports for students to access assessment content, ways students can interact with that content, and ways students can produce responses. The Access by Design model emphasizes the need to consider the variety of ways that students access and communicate information, and then design items and tasks so that a variety of methods of accessing and communicating information are possible.

The Access by Design model is a logical extension of Accessible Test Design. As described by Russell (2011a), Accessible Test Design begins by recognizing that an assessment item or task is a tool that is designed to provide an indirect measure of a cognitive construct. To provide an indirect measure of a given cognitive construct, an item or task must be carefully designed to create a context that requires a student to apply the targeted construct and to produce a response that is the product or outcome of his or her application of the cognitive construct. Based on the response produced, an inference is made about the extent to which the student has attained the construct of interest.

To function properly, an item or task must present information to a student in a manner that allows the student to understand the context being created. Key to accurately establishing the context is the student's ability to access and accurately understand information presented by an item. In addition, the context created by the item must minimize the application of constructs that are not targeted (Messick, 1989). Similarly, the context must not introduce cultural bias or threaten cultural validity (Solano-Flores & Nelson-Barber, 2000). Finally, the response produced by the student must accurately reflect the outcome or product of the student's application of the targeted construct.

To minimize the adverse effects that accessibility challenges may have on test validity, Access by Design and Accessible Test Design encourage test developers to identify potential accessibility challenges prior to item development. Once challenges are identified, item and test developers are positioned to embed universal tools, some designated supports, and some accommodations directly into digital item files that provide multiple methods of presenting information so that items have an equal opportunity to create the intended contexts for students with different access needs. In addition, the models encourage assessment programs to develop or employ digital delivery systems that embed a variety of accessibility supports that minimize the effects that non-targeted constructs may have on a student's application of the targeted construct or the production of responses that accurately reflect the student's thinking (Russell, 2011b).

The approach to item and test development described in these models can be applied to meet the assessment needs of a wide range of students, including students who are English language learners and students with disabilities.

As Shafer Willner and Rivera (2011) describe, the challenges students who are ELLs experience accessing text-based information are different from the challenges encountered by students with language-related disabilities. Students who are ELLs experience challenges accessing text-based information as a result of language development, not because of an identified language-related disability (Shafer Willner & Rivera, 2011). For this reason, "ELLs need support in accessing the language of the test while students with disabilities need support to address the specific cognitive, physical, or learning disabilities" (Shafer Willner, Rivera, & Acosta, 2009, p. 697).

Furthermore, the needs of students who are ELLs should not be treated as being the same for all students in the group. As Shafer Willner and Rivera (in press) document, "There has been a growing awareness among members of the ELL field that ELLs should not be treated as a single, homogeneous group, but as a group with diverse English language proficiency levels, language and cultural backgrounds, schooling, age/grade, and other needs" (p. 2). For this reason, the unique background and needs of each student must be considered when assigning accommodations.

The Access by Design and Accessible Test Design models address these issues by emphasizing the importance of anticipating the needs of the full spectrum of students who are expected to participate in the assessment program. These designs also embrace embedded supports, such as auditory presentation of text-based content, translated glossaries, and English glossary definitions that are context-specific for words and phrases. Finally, these designs encourage matching these supports based on each student's individual need.

Experts on accommodations for students with disabilities have also identified several important issues that should be considered when designing next-generation assessment systems. As Thurlow, Quenemoen, and Lazarus (2011) note, the assessment needs of special education students have presented challenges for state assessment programs, which must often retrofit assessment programs for special education students. Moreover, "assessments can be designed from the beginning with consideration of all students, including special education students" (Thurlow, Quenemoen, & Lazarus, 2011, p. 2).

Like students who are ELLs, students with disabilities are not homogeneous. Instead, the wide variety of learning, physical, and emotional disabilities with which students are identified requires a wide variety of supports to enable valid assessment results. In addition, decisions about which supports should be provided to improve validity and which supports may decrease validity "require careful explication of the content standards, to define precisely what content is to be assessed and what content is not the focus of assessment" (Thurlow, Quenemoen, & Lazarus, 2011, p. 9). Further, Thurlow, Quenemoen, and Lazarus note that "computer-based tests can be developed in a way that embeds what would be 'accommodations' when the test is paper-based so that they are simply features of the test design rather than accommodations" (pp. 10–11). As examples, they cite a variety of alternative communication devices, built-in read-aloud tools, color contrast, and masking tools. Nonetheless, not all access needs required for some students with disabilities can be met by embedded supports. Therefore, accommodations that are external to the test delivery system are necessary. These recommendations made by Thurlow, Quenemoen, and Lazarus (2011) are well aligned with the practices embraced by the Access by Design and Accessible Test Design models.

Collectively, many recent developments create an opportunity for the field to reframe the approach to accessibility and accommodations. These developments include: (a) our understanding of the diverse needs of students who are English language learners, students with disabilities, and English language learners with disabilities; (b) the flexibility and capabilities of digital assessment; (c) the value placed on clear definition of the content and cognitive constructs that are the target of assessment; (d) the importance of considering and building supports for a wide variety of language development needs and needs associated with disabilities; and (e) the proven application of new models for assessment design.

A Conceptual Model for Accessibility and Accommodations

To develop a common accessibility and accommodations policy that is adopted and applied by all states that participate in the Smarter Balanced Assessment Consortium, an extensive review of current practices, research, and emerging approaches enabled by digital technologies was conducted (see Appendix B, "Goals and Process Employed to Develop Framework"). Given the

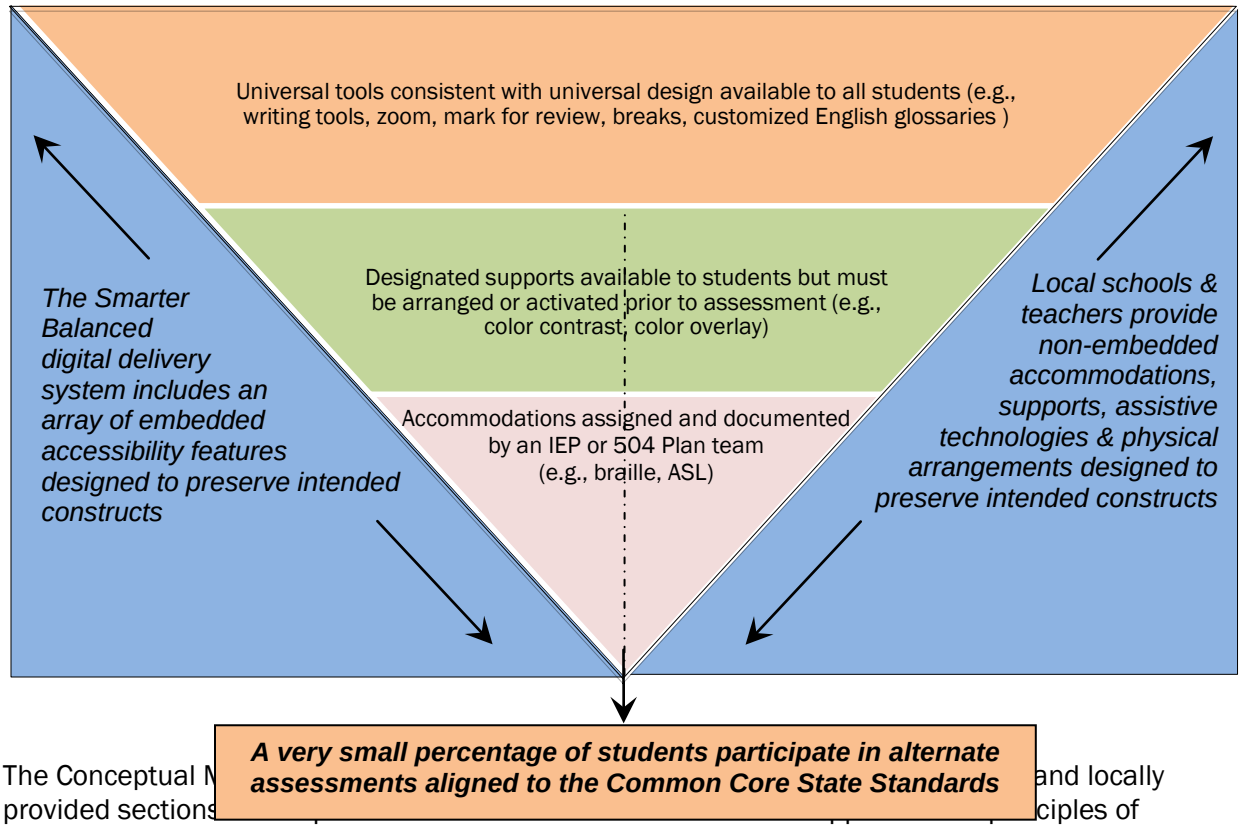
growing emphasis on the diversity of student access needs, recognition of the uniqueness of different populations of students, and advances in models of test design that emphasize the development of assessment programs that maximally meet access needs of all students by design, careful consideration was given to the Access by Design and Accessible Test Design models. Through these considerations and several months of conversation and feedback from a variety of people in the field, the Consortium's Accessibility and Accommodations Work Group developed the Conceptual Model depicted in Figure 1.

The Conceptual Model is composed of several parts. First, the framework is divided into two sections by a vertical line. The left side represents accessibility supports that are provided digitally by an assessment delivery system. In some cases, the digital supports focus on supports that are embedded in a digital item file and selectively presented by a digital delivery system to a student based on his or her need. In other cases, the supports addressed digitally are embedded in the assessment delivery system and do not require any specific information to be included in an item file.

The right side of the framework captures supports that are provided locally. Local supports may require the use of a physical device/tool or interaction with a human.

As noted in the blue section of Figure 1, the Smarter Balanced digital assessment delivery platform will include an array of digital accessibility features. As an example, magnification/text enlargement support will be included in the delivery system. Ability to navigate and produce responses using an external switch mechanism will be supported by the system. Locally provided options require local schools and staff to ensure that physical devices/tools (e.g., abacus, scratch paper) are available for a student or to provide an adult who offers accommodations requiring human interaction (e.g., read-aloud of directions for paper-based test).

Figure 1: Conceptual Model of the Smarter Balanced Accessibility and Accommodations Framework



The Conceptual M and locally provided sections ciples of

Universal Design to the development of items and tasks as well as the delivery environment. Applying principles of Universal Design to item writing can reduce barriers to valid measures of students by ensuring that terms, phrasing, images, and other content of items do not interfere with students' understanding of what an item is asking of them. Similarly, because some universal tools, such as a zoom tool, may be useful for any student, embedding these tools into the test delivery interface ensures their availability as needed for all students.

It is expected that all features and tools that fall into this topmost section are available for use by all students and do not require assignment prior to test administration. Furthermore, these tools can be automatically activated or deactivated via the test administration system, dependent on the construct being assessed. For example, spell check can be made available when spelling is not being assessed.

The middle section focuses on designated supports that are also available for all students, but that require assignment prior to test administration. Assignment is necessary because the use of the designated support may require prior experience with the tool, and therefore use must be limited to those students who have had such experience (e.g., use of a translation option).

The bottom section focuses on accommodations that are designed to meet the specific needs of students with a specific disability documented in an IEP or 504 plan. For example, a braille form of a test is designed to meet the needs of students who are blind or visually impaired and are accustomed to reading content presented in braille.

The horizontal sections of the Conceptual Model form an inverted triangle. An inverted triangle was selected to represent the decreasing percentages of students who are expected to make use of one or more supports within each category.

The final section of the Conceptual Model, which is depicted outside of the inverted triangle, represents the small percentage of students with significant cognitive disabilities for whom the general assessment is determined not to provide a valid measure of the student's achievement, despite the provision of accessibility and accommodation supports, and who will therefore participate in an Alternate Assessment based on Alternate Achievement Standards (AA-AAS). As noted in Figure 1, only a very small percentage of students are expected to participate in an alternate assessment.

These features of the Conceptual Model were developed to serve three purposes. First, the vertical divide between digitally and locally provided options reflects the state of transition from paper-based to digital delivery that is anticipated to exist for the next few years. In addition, this division is designed to acknowledge that even after the transition to digital delivery occurs across classrooms, there will still be some students who require paper-based delivery as an accommodation. For paper-based delivery, many of the locally provided accommodations will persist.

Second, the horizontal sections were delineated to differentiate between the level of familiarity and prior experience required for a given option and the generalizability of the benefit provided by the support. Universal Design and universal tools represented in the topmost category require the least amount of prior experience and may be of use for any student, regardless of his or her status as an ELL or student with a disability. Designated supports in the middle category may also be of benefit to any student, regardless of his or her status as an ELL or a student with a disability. However, designated supports require planned action taken within the local setting prior to test administration or previous experience using the designated support in order for the option to be beneficial.

Each accommodation in the bottom section is designed for a need that is specific to a given student characteristic (e.g., braille for students who are blind/visually impaired and are braille readers;

communication in ASL for students who are deaf/hearing impaired). Use of these accommodations is restricted to students with IEPs or 504 accommodation plans for whom the accommodation was specifically developed and who have sufficient familiarity with the accommodation during classroom instruction.

These three distinctions were made to help inform Smarter Balanced policy decisions about which universal tools, designated supports, and accommodations will be allowed and for whom. In addition, these distinctions are intended to help inform decisions about the addition of new universal tools, designated supports, and accommodations as they become viable in the future.

Third, the Conceptual Model is organized as a single framework that applies to all students rather than separated by status/group affiliation. This approach was adopted to reflect the importance of focusing on each student as an individual rather than as a member of a given subgroup. In turn, this approach is intended to support decisions based on individual needs rather than needs that are affiliated with subgroups. While there is a correlation between the needs associated with students who have a given disability, the unique needs and experiences of each individual student require a focus on meeting individual needs rather than group needs. While some readers may be concerned that structuring the framework as a unified framework may ignore the struggles that specific subgroups have had to gain access to accommodations and/or may imply that members of different subgroups are lumped together, the intent is the exact opposite: the framework is intended to provide a focus on each student as an individual rather than as a member of a given group and to meet each individual's needs.

The Individual Student Assessment Accessibility Profile (ISAAP)

Smarter Balanced is providing a suggested tool and process by which a student's need(s) can be matched with appropriate universal tools, designated supports, and/or accommodations. States, districts, or schools can use the Individual Student Assessment Accessibility Profile (ISAAP) if they feel it is helpful.

Traditionally, state assessment programs have required schools and educators to document, a priori, the need for specific accommodations and then to document the actual use of accommodations after an assessment has been administered. As an example, most programs require schools to document a student's need for a large-print version of a test so that it can be delivered to the school. Following the administration of the assessment, the school must document (often by bubbling in information on an answer sheet) which accommodations, if any, a student received (e.g., whether the student actually used the large-print form and whether any other accommodations, such as extended time, were provided). In effect, the documentation of need and use is a form of documenting a student's accessibility needs for assessment. Traditionally, many programs have focused only on those students who have received accommodations and thus may consider an accommodation report as documenting accessibility needs.

For most students, digital universal tools will be available by default and need not be documented. Still, these tools can be deactivated if they would create an unnecessary distraction for the student. Other designated supports that are available for any student needing them must be activated prior to assessment. Smarter Balanced intends to use a data file that contains information on individual student accessibility and accommodation needs for students with specific accessibility needs not addressed by the universal tools. Thus, for most students who do not have special accessibility requirements and who do not receive accommodations, the fields containing information about accessibility and accommodations automatically will be set to default (or null) values.

To capture specific student accessibility and accommodation needs, the Smarter Balanced Assessment System is creating an "Individual Student Assessment Accessibility Profile" (ISAAP)

process and tool that states can use. For students requiring one or more designated supports or accommodations, schools will be able to document this need prior to test administration. Furthermore, the ISAAP can include information about universal tools that may need to be turned off for an individual student. By documenting need prior to test administration, a digital delivery system will be able to activate the specified options when the student logs in to an assessment. In this way, the ISAAPs allow educators and schools to focus on each individual student to document the designated supports and accommodations required for valid assessment of that student.

The Conceptual Model (Figure 1) provides a structure that assists in identifying which designated supports and accommodations are available for which students. In addition, the Conceptual Model is designed to differentiate those universal tools that are available for all students and those designated supports and accommodations that must be assigned before the administration of the assessment (see Appendix A for the matrix of universal tools, designated supports, and accommodations).

Consistent with recommendations from Shafer Willner and Rivera (2011), Thurlow, Quenemoen, and Lazarus (2011), Fedorchak (2012), and Russell (2011b), Smarter Balanced is encouraging schools to use a team approach to make decisions about each individual student's ISAAP. By gaining input from multiple people who are familiar with the student, including input from the student, better decisions about the assignment of designated supports and accommodations will result. Also consistent with these recommendations and other research is a caution to not select too many universal tools, designated supports, or accommodations for a student. Research has indicated that too many unneeded designated supports or accommodations can decrease student performance.

It is important to note that the team approach encouraged by Smarter Balanced does not require the formation of a new decision-making team and that the structure of teams can vary widely depending on the background and needs of a student. An IEP team, 504 team, or locally convened student support team can create the ISAAP. For most students who do not require designated supports or accommodations, an initial decision by a teacher may be confirmed by a second person (potentially the student and/or parent). In contrast, for a student who is an ELL and also has been identified as having one or more disabilities, the IEP team should include the English language development specialist who works with the student, along with other required IEP team members and the student as appropriate. The composition of teams is not being defined by Smarter Balanced; it is under the control of each school, and is subject to state and federal requirements.

Meeting the Needs of Traditionally Underrepresented Populations

The decision to make universal tools and designated supports available to all students based on need rather than eligibility status or categorical designation (see Policy 2, above) reflects a belief among Consortium states that restricting access to universal tools and designated supports threatens the validity of the assessment results and places students under undue stress and frustration. Additionally, accommodations are available for students who qualify for them. Although the intention of this policy is to ensure a positive and productive assessment experience for all students, elimination of specific eligibility criteria may raise concerns among some educators and advocates who worked to create eligibility criteria that guarantee appropriate assessment supports for their students of interest. This section provides information on how a needs-based approach will benefit ELLs, students with disabilities, and ELLs with disabilities.

How the Framework Meets Needs of Students Who Are ELLs

As described in previous sections, students who are ELLs have needs that are unique from those students who have disabilities, including language-related disabilities. The needs of ELLs are not the result of a language-related disability, but instead are specific to the student's current level of

English language development. In addition, the needs of students who are ELLs are diverse and are influenced by several factors, including their current level of English language development, their prior exposure to academic content and verbiage in their native language, the languages to which they are exposed outside of school, the length of time they have participated in the U.S. education system, and the language(s) in which academic content is presented in the classroom, as well as other factors. These factors combine in many different ways to influence the needs of a given individual student. Given the unique background and needs of each student, it is important to focus on students as individuals and to provide a variety of universal tools and designated supports that can be combined in a variety of ways.

Some of these digital tools, such as using a highlighter to highlight key information, and audio presentation of test navigation features, are available to all students, including those who are at various stages of English language development. Other tools, such as audio presentation of items and glossary definitions in English, may also be assigned to all students, including those who are at various stages of English language development. Collectively, the Framework embraces a variety of supports that have been designed to meet the needs of students who are at various stages of their English language development.

How the Framework Meets Needs of Students with Disabilities

Federal law requires students with disabilities, who have a documented need, to receive accommodations that address those needs that result from their disabilities and to participate in assessments. The intent of the law is to ensure that all students have appropriate access to instructional materials and are held to the same high standards. When students are assessed, it is also the law to ensure that students receive appropriate accommodations during testing so that they can appropriately demonstrate what they know and can do, and so that their achievement is measured accurately. As described by Fedorchak (2012), test accommodations for paper-based tests have been required because paper-based tests have not traditionally been designed to meet the needs of students with disabilities.

The Framework addresses the needs of students with disabilities in three ways. First, it provides for the use of digital test items that are purposefully designed to contain multiple forms of the item, each developed to address a specific access need. By allowing the delivery of a given access form of an item to be tailored based on each student's access need, the Framework fulfills the intent of federal accommodation legislation. Embedding universal accessibility digital tools, however, addresses only a portion of the access needs required by many students with disabilities.

Second, by embedding universal tools and designated supports in the digital test delivery system, additional access needs are met. Again, this approach fulfills the intent of the law for many, but not all, students with disabilities, by allowing the designated supports to be activated for students based on their needs.

Third, by allowing for a wide variety of digital and locally provided accommodations (including physical arrangements), the Framework addresses the full spectrum of universal tools, designated supports, and accommodations currently provided across state testing programs. Collectively, the Framework adheres to federal regulations by allowing a combination of universal tools, designated supports, and accommodations embedded in a digital delivery system and locally-provided based on individual student needs.

How the Framework Meets Needs of Students Who Are ELLs and Have Disabilities

By providing universal tools and designated supports designed for students with different English language backgrounds and levels of proficiency, and providing universal tools, designated supports, and accommodations designed to meet unique student assessment needs because of a disability, the Framework allows educators to assign and provide a combination of universal tools, designated supports, and accommodations that meet the needs of students who are ELLs and who have a disability. An IEP team that includes the English language specialist who works with the student should make these decisions.

Validating the Framework Universal Tools, Designated Supports, and Accommodations, and Looking to the Future

The Conceptual Model depicted in Figure 1 builds on current practices across states, is informed by research, and incorporates recently demonstrated capabilities of digital assessment. As previously described, development of the Framework began by reviewing all current practices and examining the research base that exists for those practices. At the same time, recently introduced practices were also examined. Applying the Access by Design and Accessible Test Design models, careful consideration was given to whether all universal tools, designated supports, and accommodations should be available to all students, should a need be clearly identified, an approach consistent with that currently used in state consortia and individual states. Through feedback from the field, it became clear that a subset of universal tools and designated supports was specifically designed to meet unique language development needs or the needs associated with a specific disability; therefore, these features should be available for the subset of students for whom the feature was designed. Research findings, as well as experience with large-scale implementation of digital accessibility tools in Delaware, Oregon, and the New England Common Assessment Program (NECAP) states, also led to the understanding that some supports require familiarity and prior experience, while others do not. In addition, input from the analysis of the research literature on the effectiveness and validity of specific accommodations for ELLs and students with disabilities (Abedi & Ewers, 2013) informed the classification of accommodations. Collectively, this research, analysis, and feedback led to the three-tiered categorization of universal tools, designated supports, and accommodations depicted in Figure 1.

Although the Conceptual Model shown in Figure 1 has not been applied to an operational assessment program, its key components have been operationalized. As an example, NECAP has implemented an open policy regarding the assignment of accommodations to any student, regardless of IEP or ELL status. In NECAP, an educational team can determine that a student will be more validly assessed if a support option is provided and will therefore assign that option to a student. In addition, for students who are assigned to perform a test on computer, NECAP has been developing an ISAAP for the past five years. Recent research shows that when proper training supports are provided, educators and educational teams are able to develop quality ISAAPs that support more valid assessment of students (Higgins, Fedorchak, & Katz, 2012).

In addition, analysis of all accommodations currently available in at least one state assessment program indicates that the Conceptual Model can be used to categorize all currently provided accommodations. Review of existing literature, however, also indicates that there is not a research base for many currently provided accommodations (Laitusis et al., 2012; Pennock-Roman & Rivera, 2012). As a result, best practices and expert judgment are required when determining which of the currently provided accommodations will be incorporated into the Smarter Balanced Accessibility and Accommodations Policy.

Given the mixed findings for some accommodations and the lack of research for others, a key consideration that will inform decisions about the inclusion of a given option is evidence of detrimental effect. Traditionally, decisions about whether to allow a given accommodation have called for evidence of positive effects for students who are identified as requiring the accommodation, as well as evidence of the absence of positive effects for students who are not identified as requiring it (Sireci, Scarpati, & Li, 2005). This criterion, however, has resulted in mixed findings and recommendations. In addition, research has often found that the effects of an accommodation may benefit some individuals, but not others (Laitusis et al., 2012; Pennock-Roman & Rivera, 2012). Given the mixed findings, coupled with the variation in the magnitude of effects on individuals, an alternative approach was taken when determining whether to include a universal tool, designated support, or accommodation. This alternative approach focuses on lack of evidence of detrimental effect. The Framework and associated policy support the inclusion of universal tools, designated supports, and accommodations for which no evidence of detrimental effect currently exists.

Smarter Balanced recognizes the importance of closely monitoring and examining assessment data, *including external evaluation*, to study the validity of each access feature as student assessment data become available. In fact, the multi-state nature of the Consortium provides a unique opportunity to collect sufficient data for many tools and accommodations that are employed by small percentages of students—percentages that result in too few students within any one state to conduct meaningful empirical analyses but that are sufficiently large when aggregated across Consortium states. Over time, Smarter Balanced will examine assessment data to determine the extent to which the use of a given universal tool, designated support, or accommodation produces a detrimental effect, and will modify its accessibility and accommodations policy when detrimental effects are detected.

In addition, it is understood that research on universal tools, designated supports, and accommodations will continue to be performed by organizations outside of Smarter Balanced. For example, the National Assessment of Educational Progress (NAEP) is currently conducting a study on oral administrations of paper-based tests. Similarly, a collaborative of 18 states is conducting research on presentation of tests in a digital audio and signed form. Findings from these and other ongoing research studies will be closely monitored and used to inform future modifications to the policy. Also, as new approaches to meeting students' access needs are introduced to the field, research on those approaches will be examined and used to inform modifications to the policy.

Conclusion

The Smarter Balanced Assessment Consortium emerged out of an ambitious desire at the local, state, and federal levels to move student assessment into its next generation. Incorporating lessons learned from the era of No Child Left Behind testing at the state and national levels and leveraging a broadening research base and an expanding array of digital assessment technologies, the Smarter Balanced Assessment System seeks to enhance student engagement and thereby ensure the validity of results in ways that have not been possible with conventional paper-and-pencil tests. The Smarter Balanced Accessibility and Accommodations Framework described here contributes to this evolution through innovations such as the incorporation of accessibility into the design of items and tasks through Access by Design, and the pre-identification of unique accessibility and accommodation needs of students through the ISAAPs.

Through these approaches the Accessibility and Accommodations Framework advances a policy perspective on accessibility that is based on unrestricted access to tools and supports and planning

at the individual student level. In contrast to the current generation of assessments, in which accessibility has often been addressed as an afterthought, providing a meaningful and productive assessment experience for all students, with no exceptions based on disability or level of language proficiency, has been a major priority for Smarter Balanced from its inception and a thread woven through all aspects of its assessment design and development.

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Appendix A

Summary of Universal Tools, Designated Supports, and Accommodations

	Universal Tools	Designated Supports	Documented
Embedded	Breaks Calculator[1] Digital Notepad English Dictionary[2] English Glossary Expandable Passages Global Notes Highlighter Mark for Review Math Tools[3] Spell Check[4] Strikethrough Tab-enter Navigation Writing Tools[5] Zoom	Color Contrast Highlighter Magnification Masking Text-to-speech[6] Translations (Glossary)[7] Translations (Stacked)[8] Turn off Any Universal Tools	**American Sign Language**[9] Braille **Closed Captioning**[10] **Speech-to-Text** **Text-to-Speech**[11]
Non-embedded	Breaks English Dictionary[12] Protractor Ruler Scratch Paper Thesaurus[13]	Bilingual Dictionary[14] Color Contrast Color Overlay Read Aloud Scribe[15] Separate Setting Translations (Glossary)[16]	Abacus Alternate Response Options[17] Calculator[18] Multiplication Table[19] Print on Demand Read Aloud **Scribe**

*Items shown are available for ELA and Math unless otherwise noted. **Bolded tools and accommodations** are under consideration by Smarter Balanced states at this time.

[1] For calculator-allowed items only
[2] For ELA performance task full-writes
[3] Includes embedded ruler, embedded protractor
[4] For ELA items
[5] Includes bold, italic, underline, indent, cut, paste, spell check, bullets, undo/redo.
[6] For ELA items (not reading passages) and math items
[7] For math items
[8] For math test
[9] For ELA listening Items and math items
[10] For ELA listening items
[11] For ELA passages grades 6-HS; blind students in grades 3-HS who do not yet have adequate Braille skills
[12] For ELA performance task full-writes
[13] For ELA performance task full-writes
[14] For ELA performance task full-writes
[15] For ELA non-writing items and math items
[16] For math items
[17] Includes adapted keyboards, large keyboards, StickyKeys, MouseKeys, FilterKeys, adapted mouse, touch screen, head wand, and switches.
[18] For calculator-allowed items only
[19] For math items beginning in grade 4.

Appendix B

Goals and Process Employed to Develop Framework

In February 2012, the Smarter Balanced Assessment Consortium Accessibility and Accommodations Work Group began work on developing the Accessibility and Accommodations Framework. The primary goal of this effort was to develop uniform accessibility and accommodation policies and guidelines that will be adopted and used by all Smarter Balanced states. Recognizing the diversity in policies and practices that currently exist across states, the legal issues that must be addressed by the policies, the mixed research findings regarding many accommodation practices, and the differences in opinion regarding accommodation policies, the work group undertook an iterative process designed to gather input from a large and diverse audience. This effort began by contracting with Measured Progress and its partners, who included:

- Members of the Measured Progress Innovation Lab who conducted work in accessibility in digital environments, developed the Accessible Test Design model, and were leaders in developing the Accessible Portable Item Protocol (APIP) Standard;
- Experts at Educational Testing Service who have conducted a variety of studies on test accommodations and accessibility for students with disabilities and for students who are English language learners, and who have developed industry-recognized guidelines for accessibility in the context of assessment;
- Experts at the George Washington University Center for Equity and Excellence in Education, who are nationally recognized experts in accessible assessment for students who are English language learners and who have worked with several states to develop policies on test accommodations for students who are English language learners; and
- Experts affiliated with the National Center on Educational Outcomes who have conducted extensive reviews of state test accommodation policies, worked with the Assessing Special Education Students (ASES) work group of the Council of Chief State School Officers (CCSSO) to develop test accommodation policies, and closely monitored research on test accommodations.

In addition to these partners, an expert panel was formed that was composed of:

- **Jamal Abedi**, a national expert in assessment of English language learners;
- **Stephanie Cawthon**, a national expert in accommodations for students who communicate in ASL;
- **Laurene Christensen,** a national expert in accommodations for students with disabilities, including English language learners with disabilities
- **Richard Jackson**, a national expert in accommodations for students with visual impairments;
- **Rebecca Kopriva**, a national expert in assessment of students who are English language learners;
- **Sheryl Lazarus**, a national expert in test accommodations for students with disabilities;
- **Christopher Rogers,** an expert in accommodations research
- **Stephen Sireci**, a nationally recognized psychometrician who has conducted extensive reviews on the validity of test accommodations.
- **Martha Thurlow**, a national expert in assessment of students with disabilities;

To inform the development of the Framework, the following activities were conducted:

Expert Panel Meeting: All members of the expert panel attended a two-day meeting, along with representatives from the Accessibility and Accommodations Work Group and the

Measured Progress/ETS project team, to discuss and make initial recommendations regarding the Framework.

Research Activities: To inform decisions about the Accessibility and Accommodations Framework, several research studies were conducted. A list of studies conducted can be found in Appendix C.

States Meeting: A two-day meeting was held, where the key issues being considered when developing the Accessibility and Accommodations Framework were presented and discussions were held about potential concerns and additional issues to consider. The meeting was attended by representatives from 19 Smarter Balanced states, as well as representatives from CCSSO, the National Center for Learning Disabilities, and the Accessibility and Accommodations Work Group, and members of the research and development team. In addition, Jamal Abedi was in attendance.

Webinars: Multiple webinars were conducted to present the draft Framework and policy recommendations. These webinars were attended by representatives from Smarter Balanced member states, the National Center for Learning Disabilities, higher education (selected by Smarter Balanced), and advocacy groups for students with disabilities (invited by Smarter Balanced states). In total, more than 100 participants logged into the webinars, with many participants comprising state teams and/or advocacy teams.

Feedback and Revision: Feedback was requested from all people who participated in the webinars and from additional advocacy groups identified by states. In total, more than 500 comments were submitted. In addition, the recently completed Abedi and Ewers (2013) paper on a research-based decision algorithm informed the Framework document. Based on feedback and the Abedi and Ewers paper, the Framework document was revised and then presented to the Smarter Balanced Students with Disabilities Advisory Committee and the Smarter Balanced English Language Learners Advisory Committee for further review. The Framework was revised further based on panel committee feedback.

Through this process, the Accessibility and Accommodations Framework was informed by research, current and emerging practices, and input from a broad base of constituents who are expected to either implement policies based on the Framework or work with students who are impacted by those policies. The Framework was designed to reflect current practices and emerging opportunities to provide each individual student with conditions designed to maximize the validity with which his or her achievement of the Common Core State Standards is measured.

Appendix C

Framework Research Base

The research studies conducted to inform the development of the Framework included:

- Review of existing state accommodation practices that focused on:
  - Recent analyses conducted by the National Center on Educational Outcomes on state accommodation policies
  - Review of publicly available accommodation policies for all Smarter Balanced member states
  - Review of research literature on effectiveness and validity of accommodations for English language learners and Students with Disabilities by Abedi and Ewers (2013)
- Survey of all Smarter Balanced member states that focused on current accommodation policies and practices, and support for accommodation practices enabled by digital technologies
- Review of the literature for several test accommodations, including:
  - Audio presentation of mathematics items
  - Audio presentation of English language arts/literacy (ELA/literacy) items
  - Refreshable braille for ELA/literacy and mathematics items
  - ASL presentation of mathematics items
  - Calculator use for mathematics items
  - Writing tool use for ELA/literacy items, including word processor, spell check, grammar check, speech-to-text, word prediction, and text-to-speech for proofreading.
- Review of the literature for test accommodations for students who are English language learners
- Case studies on emerging accommodations, including:
  - Presentation of items via refreshable braille display
  - Dual language presentation of items for students who are English language learners
  - Presentation of items on computer via ASL using a videotaped human interpreter, a signing avatar, and Sign Generator video clips
  - Use of ISAAP to tailor provision of accessibility options for digitally delivered tests
- Review of laws and regulations regarding test accommodations for students with disabilities and students who are English language learners
- Publication of findings from the above research findings in the following reports:
  - Accommodations Listed in Laws and Regulations
  - Summary of Literature on Empirical Studies of the Validity and Effectiveness of Test Accommodations for ELLs: 2005–2012
  - Inventory and Analysis of State Laws, Rules, and Policies for ELL Participation in State Content Assessments
  - Literature Review of Testing Accommodations and Accessibility Tools for Students with Disabilities
  - ELL Accommodations Guideline Tools, Resources, and Supports
  - Results from the Survey of Smarter Balanced Assessment Consortium States
  - OAKS Braille Interface Case Study
  - New England Common Assessment Program Accessible Delivery Interface Case Study
  - Signing Supports Case Study
  - Dual Language Item Presentation Case Study

Appendix D

Advisory Groups and Members

The following individuals have advised the Smarter Balanced Assessment Consortium on a variety of key issues related to English language learners, students with disabilities, and other students with special assessment needs, including extensive input on the Accessibility and Accommodations Framework:

ELL Advisory Group:

- Jamal Abedi, Ph.D.
- Edward Bosso
- Donna Christian, Ph.D.
- Richard Duran, Ph.D.
- Kathy Escamilla, Ph.D.
- James Green, Ph.D.
- Kenji Hakuta, Ph.D.
- Okhee Lee, Ph.D.
- Robert Linquanti
- Maria Santos
- Guadalupe Valdes, Ph.D.

SWD Advisory Group:

- Carol Allman, Ph.D.
- Bridget Dalton, Ed.D.
- Donald D. Deshler, Ph.D.
- Barbara Ehren, Ed.D.
- Jack M. Fletcher, Ph.D.
- Jacqueline F. Kearns, Ed.D.
- Susan Rose, Ph.D.
- Ann C. Schulte, Ph.D.
- Richard Simpson, Ed.D.
- Stephen W. Smith, Ph.D.
- Martha L. Thurlow, Ph.D.

Members:

- Robert Bauer
- Dianna Carrizales-Engelmann
- Holly Carter
- Wendy Carver
- Wendy Carver
- Magda Chia, Ph.D.
- Gaye Fedorchak
- Melissa Gholson
- Margaret Ho, Ed.D.
- Michael Hock
- Audrey Lesondak
- Deb Matthews
- Gail McGregor, Ph.D.
- Carissa Miller, Ph.D.

- Jennifer Paul
- Noelia Ramirez
- Shobhana Rishi, Ed.D.
- Robert Romero
- Wendy St. Michell
- Doreen Strode
- Brad Witzel, Ed.D.