How Can Alternate Assessment Based on Modified Achievement Standards Improve Student Learning and Outcomes?

Structured Poster Session

American Education Research Association (AERA) Annual Conference

Denver Colorado

May 1, 2010

Session Sponsor: SIG-Inclusion & Accommodation in Large-Scale Assessment

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Project Matrix

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**Characteristics of the Students**

- Specific learning barrier patterns were identified
  - among low achieving students
  - among low achieving students with disabilities
  - in relation to eligibility guidelines

- Not all students who demonstrate low achievement on the regular test are students with disabilities.

- Students who may be candidates for an AA-MAS are disproportionately poor and from an ethnic minority.
  - Analyzed whether the proportions were the same or different for low achieving kids with and without disabilities.

**Instruction and Opportunity to Learn**

- Project has designed tools to collect programmatic and instructional data to link to achievement patterns.
### Focus and Findings

- Sometimes students who perform poorly on the regular assessment may not have had the opportunity to learn grade level content.
  - Analyzed whether they were the same or different for low achieving kids with and without disabilities
  - Analyzed standards-based IEPs and other documentation

- Some instructional strategies may help students who may be candidates for this assessment better access the grade-level curriculum.

- Programmatic and instructional data are not routinely collected in state(s) we are in.

### Test Design

- Specific barriers were identified that prevent students from showing what they know.
  - Analyzed whether they were the same or different for low achieving kids with and without disabilities
  - Specific approaches were established for the targeted student population
    - Analyzed whether approaches/test design changes helped the targeted student population
    - Analyzed whether approaches/test design changes affected low achieving students with and without disabilities similarly or differently

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1. How Can Alternate Assessment based on Modified Achievement Standards (AA-MAS) Improve Student Learning and Outcomes?

**MT GSEG:** Identifying students in need of modified achievement standards and developing valid assessments

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**Project Goals**
1: Identify students in need of MAS
2: Determine test adaptations needed to measures MAS
3: Specify inferences about target students’ knowledge, skills, and abilities
4: Determine operational plan for collecting validity evidence

**Poster Summary**
Little is known about designing and evaluating the effectiveness of AA-MAS in a paper and pencil format. Far fewer studies have been conducted on non-traditional testing scenarios, including the use of computers in content areas. Participants attending this poster display will consider methods one GSEG project used for developing valid and accessible technology-enhanced AA-MAS that are tailored to the unique learning characteristics of the target population. There are contributions from four theoretical tenets that help establish the connection among the characteristics of the tested students, the knowledge and skills assessed, and the design of the assessment: Universal design, considerations of construct-irrelevance variance, accommodations, and cognitive load.

Six investigations were undertaken to describe eligible students and identify their cognitive processing characteristics. The data from these studies were synthesized to inform scaffolding strategies for the beta test items, and beta test results were used to revise and create items for a pilot test. This combination of large-scale and micro-level data collection and analyses enabled triangulation of the findings to inform test development.

Content and format scaffolding strategies were developed for a beta test (N=145 students, 49 items): four types for reading items (vocabulary, recall, inference, and complex questions) and six types for mathematics (vocabulary, visual display, multi-step, name symbol or process, proportions, and highlight important information). Analyses showed that there were general trends in the increase in p-values across test conditions (paper and pencil test, general test items on computer, scaffolded test items on computer). It appeared that the technology alone increased performance, and the technology plus scaffolding raised performance of eligible students to levels which are similar to students in the general population. The results of the beta test were used to create a pilot test, administered Jan. – Feb., 2010 (N= 1221 students, 142 items). Four scaffolding types were used for each content area. Examples will be displayed on the poster.
Toward a Validity Framework for AA-MAS: A Collaborative Project of the Kansas State Department of Education, the Louisiana Department of Education, and WestEd

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Poster Summary
This three-year study involves systematic collection and analysis of qualitative and quantitative data to inform a validity framework for alternate assessments based on modified academic achievement standards (AA-MAS). This study addresses the following questions:

1. How valid is the process by which students are identified for the AA-MAS? Does evidence exist that the intended population of students is being accurately identified for this assessment?
2. In what ways are the states’ AA-MAS improving access for students? That is, does the assessment adequately address the specific access needs of the intended population of students administered this assessment? Are the particular strategies/models used by the state departments of education yielding AA-MAS that are sufficiently more valid measures (i.e., of grade-level academic content knowledge and skills) for the intended population of students?
3. Are the assessment outcomes (intended vs. unintended consequences, validity, etc.) sufficient to justify the resources (cost, full set of activities, etc.) needed to build this test?

Data are being collected in three phases. Phase 1 involved document analyses (e.g., existing regulations, manuals, reports, test blueprints and specifications, score reports) using a research-based protocol and rubric to evaluate the quality of evidence in each document. Phase 2 involves cognitive interviews and surveys (cognitive interviews will be completed in spring 2010). Phase 3 will include data collection and analyses related to the examination of the consequential validity of these assessments (e.g., stakeholder surveys, analyses of student performance data).

Preliminary findings suggest that the criteria for identifying AA-MAS eligible students in both states are clear and consistent with federal requirements, and students generally seem to be appropriately identified for eligibility. Additionally, preliminary analyses of data suggest that the specific access strategies applied in the assessments are facilitating student access to tested content as intended.

Research suggests that different items intended to measure the same construct may require different processing by examinees, depending on the particular characteristics of the item (e.g., structure, complexity) and their related processing requirements (e.g., Messick, 1996; Pearson & Garavaglia, 2003; Thissen, Wainer, & Wang, 1994). That is, two items may be psychometrically equivalent, however, they may not be psychologically equivalent—the items may require students to access the content in different ways, subsequently affecting their processing. As a result, the items either may measure skills or knowledge that differ from the intended content (construct irrelevance) or may provide processing challenges that interfere with the student’s ability to fully demonstrate what he or she knows and can do (underestimation). This study is systematically examining the effectiveness of aspects of the design, development, and implementation of two states’ AA-MAS in order to contribute to our understanding of the validity of these assessments. If we are to obtain accurate measures of students’ knowledge, skills, and abilities, so that we can provide effective and equitable instruction to all our students,
it is critical that we ensure that our assessments do not introduce challenges (e.g., cognitive, visual, linguistic) that may interfere with students’ abilities to fully demonstrate what they know and can do.
3. A Multistate Approach to Development of AA-MAS: Removing Disability-Imposed Barriers to Student Performance

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Wendy I McLaughlin Stoica, Ohio Department of Education (wendy.stoica@ode.state.oh.us)

Poster Summary
The Ohio Consortium, comprising the Minnesota, Ohio, and Oregon departments of education, is developing an Alternate Assessment based on Modified Achievement Standards (AA-MAS). The AA-MAS targets persistently low-performing students with disabilities. This assessment supports the hypothesis that deficits in specific cognitive traits may impede student performance on assessment tasks and that specific design revision to test forms and items can lower these barriers to access.

Consortium members identified 10 types of item design revisions that may improve access for persistently low-performing students with disabilities. To better understand the empirical effects of these item revisions, and to determine whether they allow grade-level content to be more accessible to target students, the consortium subjected these item revisions to a comprehensive pilot-testing effort across the three states.

With funding from the Minnesota-led Enhanced Assessment Grant (EAG), the spring study was IRB approved to administer a set of cognitive tests to enable a finer-grained analysis that was. The cognitive tests were given to a target group of eligible students and a control group of general education students at a variety of performance levels. This approach to the AA-MAS follows three basic premises:
1. Deficits in specific cognitive traits or abilities have an impact on the ability of a student to access and perform assessment tasks in specific and identifiable ways.
2. Ideal test modifications remove disability-imposed barriers to performance rather than simply making the test easier.
3. An appropriately modified assessment can accurately and fairly measure proficiency on grade-level content among students with disabilities who have persistently performed poorly on an unmodified assessment.

In particular, the EAG study assessed the students’ cognitive deficiencies in memory, executive functioning, and attention. This addition to the study enables us to investigate whether each revision reduces the access barriers for students whose cognitive composition requires it.
4. Where Are We Going and What Have We Learned? Research Related to Alternate Assessments Based on Modified Achievement Standards

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Poster Summary
The focus of this GSEG was a Midwestern state’s alternate assessment based on modified achievement standards (AA-MAS). In this poster session we share our findings regarding the disability and learning characteristics of students assessed on the AA-MAS from the 2008-2009 administration of an annual survey of special education teachers selected randomly. Students from 11 out of 13 regulatory disability categories were represented in the AA-MAS population. The disability categories with the highest percentage of teacher responses were learning disabled, other health impairment, intellectual disability, and emotional disturbance. Over 80% of respondents reported that in reading their students on the AA-MAS read slowly, had difficulty identifying the main idea and drawing inferences from grade level text, had difficulty answering comprehension questions on long passages, and had limited awareness of narrative or expository text structures. Over 70% of respondents reported that in mathematics their students had difficulty with problems requiring multistep solutions, had slow or inaccurate retrieval of basic math facts and had difficulty understanding and applying mathematics procedures. Teacher responses to items on the learning and behavioral characteristics of students participating on an AA-MAS provide insight into some of the academic challenges faced by these students and can provide valuable information that the state could use to design professional development opportunities. Between 43% and 78% of respondents indicated that they would like professional development in research based interventions or strategies to improve students’ reading fluency, their reading and understanding of narrative and expository grade level text, their ability retrieve basic math facts quickly and accurately, their ability to solve multi-step problems, and their ability to understand and apply mathematical procedures. Other professional development topics of interest to teachers included strategies or interventions designed to help students improve their organizational skills, to help them keep track of assignments, and to remain on task.
5. What Have We Learned About Student Characteristics, Accommodations, and AA-MAS?

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Linda Turner, South Dakota Department of Education (Linda.Turner@state.sd.us)

Poster Summary
The National Center on Educational Outcomes (NCEO) and a consortium of five states (Alabama, Hawaii, South Carolina, Tennessee, Wisconsin) joined together to form the Multi-state GSEG Toward a Defensible Alternate Assessment Based on Modified Achievement Standards (AA-MAS). This poster reports the results of one study conducted by this project.

For this analysis persistently low performing (PLP) was defined as students who scored at the 10th percentile or below on the statewide assessment for three consecutive years. Potentially persistently low performing (PPLP) was defined as students who scored at the 10th percentile or below for two out of three years. Low performing (LP) was defined as students who scored at the 10th percentile or below in any one of the three years. Tenth percentile or above (10th or above) was defined as students who scored above the tenth percentile for three years.

A previous study by NCEO (Lazarus, Wu, Altman, & Thurlow, 2010) found that male students, minority students, and students from low socio-economic backgrounds were more likely to be PLP. PLP students included both students who qualified for special education services and general education students.

We conducted the study reported in this poster because we wanted to get a deeper understanding of the characteristics of one subgroup of struggling learners—struggling learners who also have an Individualized Education Plan (IEP). We also wanted to learn more about the use of accommodations by this group of students. A three-year longitudinal data set from South Dakota was used for this analysis.

This study found that PLP students with IEPs were also more likely to be male, have minority status, and live in poverty than other students. Students with IEPs who performed at the 10th percentile or above on the statewide test typically used fewer accommodations than lower performing students. And, regardless of performance level, students instructed in less inclusive settings typically used more accommodations than other students.

The results suggest that the accommodations decisions that IEP teams make may have implications for student performance. This study focused on assessment accommodations, but IEP teams need to make good accommodations decisions for both instruction and assessment. Professional development may be needed to help educators learn how to develop and implement standards-based IEPs that appropriately include accommodations. Focusing on ensuring that all students, including students with disabilities, are being taught well should also be a top priority.

Reference
6. Accessibility Reviews to Improve Test Score Validity

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Poster Summary
Accessibility is defined as the degree to which a test and its constituent item set permit the test-taker to demonstrate his or her knowledge of the target construct of the test. It is conceptualized as the sum of interactions between features of the test and individual test-taker characteristics (Beddow, Elliott, & Kettler, 2009). To the extent a test contains access barriers for a portion of the tested population, inferences made from test scores of those individuals likely are invalid and the validity of subsequent norming procedures or comparisons across the population is reduced.

The results of four state accessibility reviews indicate state tests may contain less than 12% of test items that are optimally accessible, suggesting there are large numbers of test-takers whose test scores may not accurately reflect the extent of their knowledge due to access barriers intrinsic to the items. In general, test developers are advised to systematically examine all test items with a focus on reducing extraneous complexity in text and visuals, organizing information to facilitate responding. As well, they should ensure, to the extent possible, items are free from nonessential material that may impose demands on the test-taker that may siphon essential cognitive resources from the targeted interaction, thus introducing error into subsequent test score inferences.
7. Innovative Item Design for the Virginia Modified Achievement Standards Test (VMAST)

Contact Information
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Sharon Siler, Virginia Department of Education (Sharon.Siler@doe.virginia.gov)

Poster Summary
Virginia’s research agenda for the development of the Virginia Modified Achievement Standards Test (VMAST) focuses on incorporating research-based supports and simplifications in the design of Virginia’s online alternate assessment for grade 8 students in reading and mathematics. Inherent in this approach is the need to maintain the construct of the item while providing supports and simplifications helpful for students with disabilities. Virginia’s research agenda is grounded in the growing body of knowledge which suggests that digital technologies are beneficial in creating universally designed assessments for students with disabilities (Dolan, Hall, Banergee, Chun, Strangman, 2005).

As a first step in the development of VMAST, Virginia convened a Steering Committee composed of grade 8 teachers, school administrators, parents, and higher education faculty to draft participation criteria, develop performance level descriptors, and identify potential supports and simplifications for grade 8 reading and mathematics. For reading, the committee identified shortened reading passages, simplified text, highlighting critical text, graphic organizers, and locating test items in close proximity to the section of the text with the answers. Mathematics supports and simplifications included simplified text, on-screen manipulatives, formulas, division of items into discrete steps, and graphic organizers. The results of focus groups and an online survey conducted with Virginia educators further refined the participation criteria, the performance level descriptors, and the recommended supports and simplifications.

Two pilots, using a cognitive lab approach with students identified as meeting the draft participation criteria, were conducted. Results of the pilots largely confirmed that the supports and simplifications proposed for VMAST were aligned with the approaches students use to demonstrate their knowledge and skills. Findings for the reading assessment showed that graphic organizers, excerpted text, highlighting, and clarifying layout appear to be used and favored by students. Results of the mathematics pilots suggested that hint boxes, graphic organizers, graphics and formulas were helpful to pilot participants. A quantitative analysis of student responses indicated that students answered items with supports and simplifications correctly more frequently than original items.

Results suggest that supports and simplifications traditionally used in the classroom may have application in the online testing environment, may reduce test rigor without undermining item construct, and may benefit students with disabilities in demonstrating knowledge of grade level content.

Results of both pilots have been used to produce practice tests and field test items. VMAST reading and mathematics practice tests are available on the Virginia Department of Education website at http://www.doe.virginia.gov/testing/alternative_assessments/index.shtml)
A large scale field test of VMAST reading and mathematics tests will be conducted May 3 through June 21, 2010, with a report of results expected by early fall 2010.

As a contributor to the emerging knowledge base regarding innovative item types, Virginia’s work will provide a prototype for the development of VMAST at other grade levels and in other content areas. Additionally, Virginia’s research may assist other states with existing online assessments who are interested in expanding their test design to include innovative item types.

Goals

- Identify participation criteria that describe the characteristics of students for whom VMAST is an appropriate assessment
- Develop performance level descriptors for VMAST
- Identify supports and simplifications traditionally used in classroom instruction and assessments that could be applied to online items without impacting the tested construct
- Explore the efficacy of proposed supports and simplifications in increasing item accessibility for students identified under the participation criteria
8. Using AA-MAS Research Results for Decision Making

Contact Information
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Poster Summary
Current research on alternate assessments based on modified achievement standards (Bejar, 2007; Lazarus et al, 2007; Marion, 2007; Perie et al, 2008; Thurlow, 2008), coupled with issues raised in the trial peer reviews of the first states to implement an AA-MAS (Filbin 2008), have raised a number of issues. These issues include:

1. Who are the students eligible for the AA-MAS?
2. How do they learn and what does proficiency mean for this group?
3. How do we determine the necessity of an AA-MAS?

To investigate these issues, as well as investigating the process for developing an AA-MAS, the department of education in a Southern state received two federally funded grants from the US Department of Education. The first project on targeting research to investigate alternate assessment development was IRB approved. It focuses on students’ historical performance on the state’s regular assessment. This project also aims to investigate instruction and classroom assessments of eligible students with disabilities (SWD), and finally draft Descriptors of Achievement Levels (DALs).

The second project on operationalizing alternate assessment for science inquiry skills was also IRB approved, and it focuses on high school science inquiry skills in three partnering states. This project aims to establish learner characteristics of eligible students, establish common constructs of states’ standards, and enhance test items to determine if the enhancement increases access for SWD. Together, these two grants will investigate issues that will help the southern state determine whether it is necessary to develop an AA-MAS.

A mixed-methodological approach was developed for these projects, involving consultants with expertise in large scale assessments and special education at five universities. Methodologies include surveying educators about instructional practices and students’ learner characteristics, analysis of student test performance, differential item functioning (DIF) analyses of test items, item reviews of DIF items, analyses of student Individualized Education Programs, cognitive laboratories with students in a 3X3 factorial design, pilot testing, and multiple focus groups to consider eligibility, DALs, and item enhancements.

Results thus far have indicated a group of persistently performing SWD who could be eligible, comparable to other studies’ findings. Further, there are certain items that perform differently on the current statewide assessment. Using enhancement protocols and the principles of universal design, items have been modified to increase access, but through cognitive labs, some of the enhancements seem thus far to have negligible effect. Finally, analyses of surveys and IEPs seem to indicate that potentially eligible SWD may lack the opportunities to learn, evidenced by teacher responses and comparisons of present levels of performance, annual goals, and test performance. Further analyses, including pilot testing, will add to these intial results.
The significance of these two projects is informing better ways to assess and instruct SWD. From additional data analyses, the will have comprehensive information to not only determine if such an assessment is warranted, we will also have addressed a number of issues that exist in current discourse on AA-MAS.

References


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Enhanced Assessment Grant: Adapting Reading Test Items to Increase Validity of AA-MAS (ART 2%)
Participating states: Montana, Maine, New Hampshire, Rhode Island, Vermont
http://www.measuredprogress.org/resources/inclusive/research/grants/mt0710ea.html

Project Goals
- Goal 1: Collaborate with other states and researchers to identify appropriate and effective modifications of current tests and test specifications for secondary reading assessments for students eligible for MAS.
- Goal 2: Empirically test item modifications and accommodations based on validated cognitive models to improve the alignment between the intended and the observed knowledge, skills, and abilities (KSAs) referenced in the states’ standards.
- Goal 3: Determine the feasibility of incorporating test adaptations and MAS on a systematic basis in the states’ assessment systems.
- Goal 4: Disseminate project results to inform other state education agencies and research organizations.

Poster Summary
This poster describes one facet of the study: identifying the cognitive characteristics of students who might qualify for AA-MAS in reading. Cognitive interviews were conducted with students with disabilities to better understand their cognitive processes as they completed high school reading assessment items. The interviews were completed in two rounds; first with the original items, and then with manipulated items. In each round, students were asked to speak aloud all their thoughts as they read the passages and answered items. This process permitted students to describe their thinking processes, and allowed researchers to identify the specific cognitive barriers students faced as well as the cognitive processes they used to answer the items. In addition to cognitive interviews with students, data collected included teacher interviews, school transcripts and IEPs, and state assessment scores. The transcripts, IEPs, and scores allowed researchers to make connections between cognitive interview results and student access to grade-level curriculum.

The first phase of the study identified two broad categories of cognitive barriers: linguistic barriers that included the structure of the stem (open vs. closed question format), vocabulary, order of answer options, attractive distracters, and lack of question clarity. Formatting barriers included lack of visual links between each item and its corresponding passage text and physical distance of the item from the corresponding passage text. In the next phase the assessment items were manipulated in order to minimize these barriers, and the second round of interviews looked at how students responded to the manipulations.
In this poster we provide a descriptive analysis of the students who participated in the second round of cognitive interviews as well as student case studies. The study sample was drawn from students who fit the following criteria: students with disabilities, who had not reached proficiency on the high school reading assessment, and whose disabilities did not limit verbal communication. Within that sample, students had varied levels of participation in general education classes, varied levels of performance on the state assessment, and varied levels of cognitive skills. The in-depth case studies reveal that they also perform inconsistently across different settings. Among the cognitive challenges for students, we identified short term memory limitations, inability to identify important information from text, challenging vocabulary, inability to draw inferences, and inappropriate use of prior/outside knowledge.