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Technology Assisted Reading Assessment (TARA) Research Plans

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Technology Assisted Reading Assessment (TARA)

- **Collaborators:** ETS, NCEO and Center for Applied Special Technology (CAST)
- **Purpose:**
 - To research and develop standards based reading assessments for blind and visually impaired students
 - To research the design and development of an alternate assessment of modified achievement standards in reading for blind and visually impaired examinees

Research Activities

- Three components:
 - The examination of the validity of an operational ELA test for students who are blind and visually impaired
 - The research and development of a prototype Technology Assisted Reading Assessment
 - The inclusion of students who are blind and visually impaired in NARAP field test

What is the Technology Assisted Reading Assessment?

- A prototype assessment of a student's ability to independently access text using technology
- Modified assessment of reading for NCLB accountability purposes

Goals for TARA Psychometric Research

- **Primary Goal:** Gather evidence for the validity of a state standards-based assessment administered to blind and visually impaired examinees
- **Secondary Goal:** Provide feedback to test developers and policy makers about ways to increase the accessibility of state standards-based assessments for blind and visually impaired examinees

Research Framework

- To evaluate the validity of the ELA assessment we will compare the psychometric properties of scores for examinees with and without disabilities who have taken the assessment with and without changes in testing conditions (accommodations or modifications)
- We will compare
 - Descriptive statistics
 - Difficulty level
 - Reliability
 - Differential item functioning (DIF)

Research Challenges

- Low incident disabilities
 - Small sample sizes
 - Precludes some types of analyses
 - Difficult to generalize results of analysis

Comparison of Psychometric Properties

- Means and standard deviations across grades and years
- Test statistics such as reliability, standard error of measurement, difficulty level, completion rates
- Item statistics such as differential item functioning (DIF)

Number of Items for Grade 8 English-Language Arts Assessment

Test	Content	No. of Items
Reading	Word Analysis, Fluency, and Systematic Vocabulary Development	9
	Reading Comprehension	18
	Literary Response and Analysis	15
	Total—Reading	42
Writing	Writing Strategies	17
	Written and Oral English Language Conventions	16
	Total—Writing	33

Descriptive Information for 2004 ELA Grade 4 and Grade 8 Samples

		Total Group		VI no Acc		VI Large Print		VI Braille	
Grade		W.O. ELL	With ELL	W.O. ELL	With ELL	W. O. ELL	With ELL	W. O. ELL	With ELL
4	N	298,622	432,537	70	98	67	111	23	32
	Mean	48	44	48	43	40	36	38	39
	SD	14	15	18	18	15	15	15	17
8	N	357,374	438,397	82	102	66	81	25	26
	Mean	46	44	42	39	35	34	36	35
	SD	12	13	15	15	12	11	18	18

Comparison of Psychometric Properties

- Descriptive Statistics (grades: 2-11; years: 2002-2004)
- For students with and without VI who took test with and without accommodations—compare:
 - Mean—average score
 - Standard Deviation—spread of scores
 - Selected demographic variables

ELA DIF Analyses: Focal and Reference Groups

Grade	Focal Groups	Reference Groups	
4	VI Students with a Braille or large print accommodation	Students without disabilities (including ELLs)	Students without disabilities (excluding ELLs)
	VI Students with only a large print accommodation	Students without disabilities (including ELLs)	Students without disabilities (excluding ELLs)
	VI Students without changes in testing conditions	Students without disabilities (including ELLs)	Students without disabilities (excluding ELLs)
8	VI Students with a Braille or large print accommodation	Students without disabilities (including ELLs)	Students without disabilities (excluding ELLs)
	VI Students with only a large print accommodation	Students without disabilities (including ELLs)	Students without disabilities (excluding ELLs)
	VI Students without changes in testing conditions	Students without disabilities (including ELLs)	Students without disabilities (excluding ELLs)

Differential Item Functioning

- Difficult to interpret the results of significant DIF finding
- Before analyses, hypothesize why items may function differently
- Identify items based on hypothesis
- Compare DIF results with items identified prior to analysis
- Examine DIF results to generate new hypotheses

ELA Hypotheses for Items With Possible DIF for Blind or Visually Impaired Students

- Long Passage
- Negative Stem
- Words With Multiple Meanings
- Items Containing Graphics
- Visual Content
- Subject Matter Content

Questions?