Image Description in High-Stakes Assessment

South Pacific Educators in Visual Impairment
Auckland, NZ
14 January 2013

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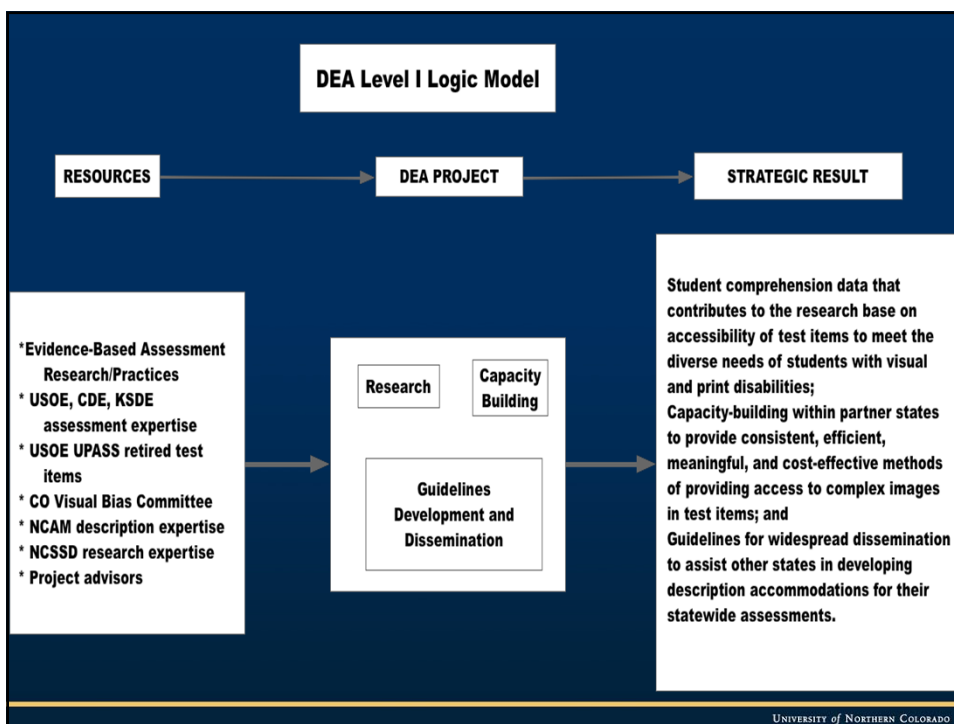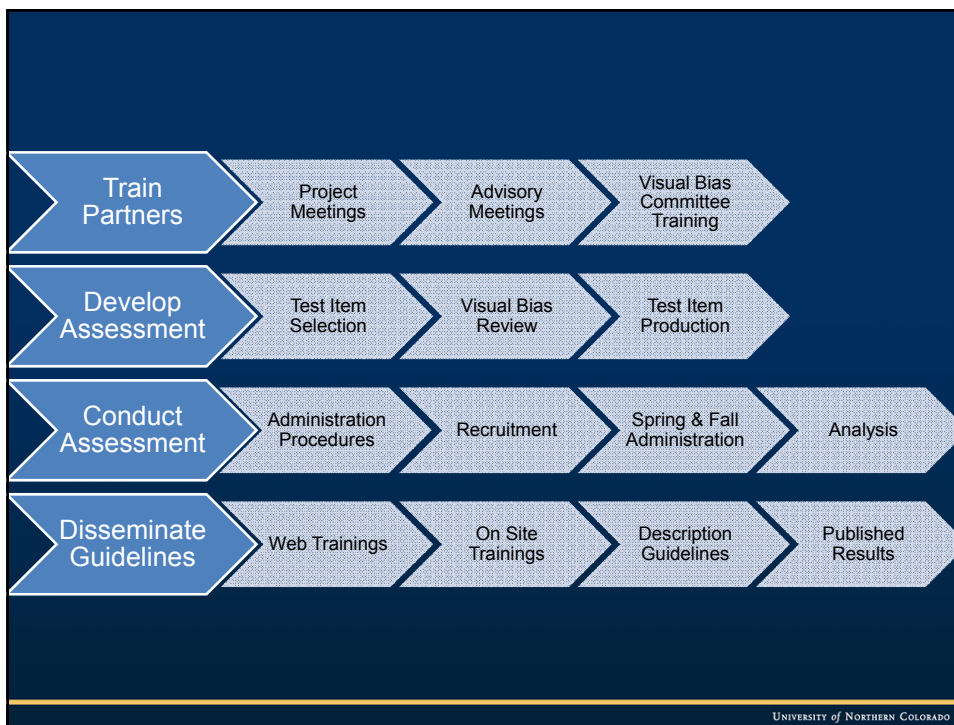
Bringing education to life.

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Partner States	Partner Centers	External Partners

• **Utah**
  • Wendy Carver
  • Jennifer Howell
  • Amy Groll
• **Colorado**
  • Tanni Anthony
• **Kansas**
  • Deborah Matthews
	• **NCSSD**
	  • Kay Ferrell
	  • Silvia Correa-Torres
	  • Kathryn Botsford
	  • Nana Phangia Dewald
	  • Catherine Smyth
	  • Aaron Dewald
	• **NCAM**
	  • Bryan Gould
		• John McLaughlin
		• Carol Allman
		• Diane Bassett
		• Chuck Hitchcock
		• Martha Thurlow
		• Kevin King
		• Hollie Murdock
		• Trisha O'Connell

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Train Partners
- Project Meetings
- Advisory Meetings
- Visual Bias Committee Training

Develop Assessment
- Test Item Selection
- Visual Bias Review
- Test Item Production

Conduct Assessment
- Administration Procedures
- Recruitment
- Spring & Fall Administration
- Analysis

Disseminate Guidelines
- Web Trainings
- On Site Trainings
- Description Guidelines
- Published Results

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DEA Level I Logic Model

RESOURCES → DEA PROJECT → STRATEGIC RESULT

RESOURCES
* Evidence-Based Assessment Research/Practices
* USOE, CDE, KSDE assessment expertise
* USOE UPASS retired test items
* CO Visual Bias Committee
* NCAM description expertise
* NCSSD research expertise
* Project advisors

DEA PROJECT
Research | Capacity Building

Guidelines Development and Dissemination

STRATEGIC RESULT
Student comprehension data that contributes to the research base on accessibility of test items to meet the diverse needs of students with visual and print disabilities;
Capacity-building within partner states to provide consistent, efficient, meaningful, and cost-effective methods of providing access to complex images in test items; and
Guidelines for widespread dissemination to assist other states in developing description accommodations for their statewide assessments.

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Assumptions

Print Disabilities

- Limited or no experience with described media
- Not qualified for AA-AAS
- Disability impacts reading
- Uses read aloud
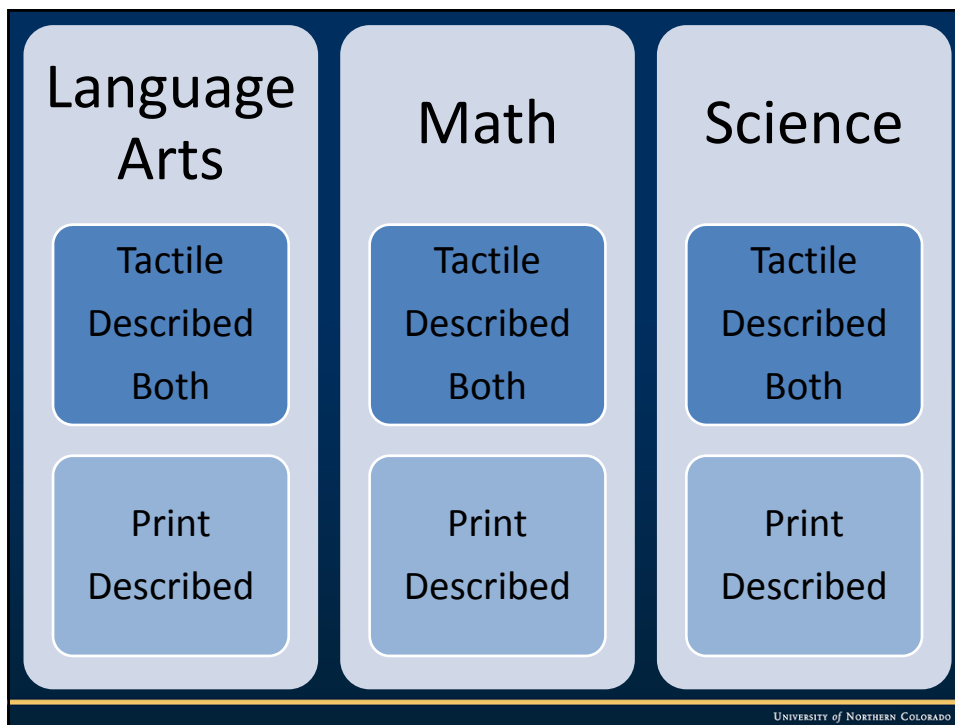- Varied access to electronic text

Visual Disabilities

- Some access to described media
- No description for assessment
- Varied proficiency with tactile graphics
- Not qualified for AA-AAS

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n=297	Presentation Conditions for Each Content Area (Math, ELA, Science)		
	Reading Mode	Description	Tactile Graphics
Students with Visual Disabilities (28/60)	Braille	Yes	Yes
		No	Yes
		Yes	No
Students with Visual Disabilities (82/105) and Print Disabilities (187/306)	Print (large print, regular print, regular print with magnification)	No	
		Yes	

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Language Arts	Math	Science
Tactile Described Both	Tactile Described Both	Tactile Described Both
Print Described	Print Described	Print Described

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Data Collection

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The Test Materials

Braille

- Organized by content area
- Grade level

Print

- Organized by grade level
- Print size
- Content area

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Technology

Electronics

- iPad
- Digital Recorder

Online Test Materials

- Electronic Data Collection Site
- Audio Description Site

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Test Administration

- Assent form and script vocabulary modified for individual students
- Mini-lesson: modified for some children
- Wanted control of description speed
- Student testing accommodations

- Graphics: not always necessary to answer the questions
- Sequence of grade level content
- Variety of student strategies:
  - visual cues
  - readers and scribes for test directions, but not graphics

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The Human Element

- Time: managing multiple simultaneous demands.
- Scheduling: teachers of students with print disabilities had the ability to schedule many students back to back.
  - TVIs had fewer students, but more complex schedules.
  - Every effort was made to schedule and test all interested parties.
  - Some districts did not permit testing but teachers and families worked around this limitation.
- Subject Affect: some students needed significant support and reassurance because of pre-existing test anxiety or additional disabilities (anxiety disorders and autism).

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Reactions from Students

- Motivation to participate:
  - Excited about technology: recorder and iPad
  - Excited about the gift cards!
- They enjoyed being interviewed.
- Curious about when they could use description next.

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Quantitative Results

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Grade Level by State

	Colorado	Kansas	Utah	Total
Grade 3	20	3	34	**57**
Grade 4	22	13	33	**68**
Grade 5	17	5	30	**52**
Grade 6	19	4	26	**49**
Grade 7	7	3	26	**36**
Grade 8	11	6	18	**35**
Total	**96**	**34**	**167**	**297**
Percent of Total	**32.3**	**11.5**	**45.2**	**100.0**

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Disability Category by State

	Colorado	Kansas	Utah	Total
Print Disabilities	35 (36.5%)	20 (58.8%)	123 (73.7%)	**178 (59.9%)**
Visual Disabilities	61 (63.5%)	14 (41.2%)	44 (26.4%)	**119 (40.1%)**
Total	**96**	**34**	**167**	**297**
	(100.0%)	**(100.0%)**	**(100.0%)**	**(100.0%)**

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Reading Medium by Disability Category

	Print Disabilities	Visual Disabilities	Total
Braille	0	28	**28**
Large Print	9	73	**82**
Regular Print	169	18	**187**
Total	**178**	**91**	**269**

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Test Duration

- Test duration increased as grade level increased, from mean 15:53 minutes (grade 3) to mean 21:04 minutes (grade 8).

- Braille readers required a mean 39:50 minutes to complete 9 questions.

- Large print readers required a mean 16:23 minutes to complete 6 questions.

- Regular print readers required a mean 14:24 minutes to complete 6 questions.

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Working on Grade Level?

Medium	Yes	No
Braille	60.7%	39.3%
Large Print	62.2%	37.8%
Regular Print	12.3%	87.7%
Total, All Students	30.5%	68.9%

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Responses by Content Area: Students with Visual Disabilities, Reading Print

Content Area	Correct	Incorrect
English Language Arts	56.0%	44.0%
Science	51.7%	48.3%
Math	51.1%	48.9%

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GenMod Procedure: Students with Visual Disabilities, Reading Print

Analysis Of GEE Parameter Estimates						
Empirical Standard Error Estimates						
Parameter	Estimate	Standard Error	95% Confidence Limits		Z	Pr > |Z|
Intercept	0.5177	0.5069	-0.4758	1.5112	1.02	0.3071
Grade	-0.0612	0.0586	-0.1760	0.0535	-1.05	0.2957
LP	-0.0379	0.4782	-0.9751	0.8994	-0.08	0.9369
Trt2	-0.6496	0.4238	-1.4803	0.1810	-1.53	0.1253
CA_ELA	0.7122	0.3867	-0.0457	1.4701	1.84	0.0655
CA_SCI	-0.1669	0.5214	-1.1888	0.8550	-0.32	0.7489
LP*Trt2	0.5329	0.3837	-0.2191	1.2849	1.39	0.1648
LP*CA_ELA	-0.7633	0.4110	-1.5688	0.0422	-1.86	0.0633
LP*CA_SCI	0.3194	0.5427	-0.7442	1.3831	0.59	0.5561
Trt2*CA_ELA	0.2124	0.3958	-0.5633	0.9881	0.54	0.5915
Trt2*CA_SCI	-0.1385	0.4267	-0.9749	0.6979	-0.32	0.7455

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Responses by Content Area: Print Disabilities, Reading Print

Content Area	Correct	Incorrect
English Language Arts	54.2%	45.8%
Science	44.1%	55.9%
Math	45.9%	54.1%

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GenMod Procedure: Print Disabilities

Analysis Of GEE Parameter Estimates						
Empirical Standard Error Estimates						
Parameter	Estimate	Standard Error	95% Confidence Limits		Z	Pr > |Z|
Intercept	0.1732	0.2518	-0.3204	0.6667	0.69	0.4916
Grade	-0.0551	0.0408	-0.1351	0.0250	-1.35	0.1774
LP	-0.2600	0.6200	-1.4753	0.9552	-0.42	0.6749
Description (Trt2)	-0.0926	0.2053	-0.4950	0.3097	-0.45	0.6518
CA_ELA	0.3162	0.2240	-0.1228	0.7552	1.41	0.1580
CA_SCI	-0.1700	0.2186	-0.5985	0.2585	-0.78	0.4368
LP*Trt2	-0.1784	0.4841	-1.1272	0.7705	-0.37	0.7125
LP*CA_ELA	0.0383	0.6450	-1.2259	1.3025	0.06	0.9526
LP*CA_SCI	0.7033	0.8753	-1.0124	2.4189	0.80	0.4217
Trt2*CA_ELA	0.0335	0.3090	-0.5721	0.6390	0.11	0.9138
Trt2*CA_SCI	0.1246	0.2898	-0.4433	0.6926	0.43	0.6671

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Responses by Content Area:
Braille Readers

Content Area	Correct	Incorrect
English Language Arts	52.4%	47.6%
Science	46.4%	53.6%
Math	40.5%	59.5%

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GenMod Procedure: Braille Users

Analysis Of GEE Parameter Estimates						
Empirical Standard Error Estimates						
Parameter	Estimate	Standard Error	95% Confidence Limits		Z	Pr > |Z|
Intercept	-0.9163	0.4183	-1.7362	-0.0964	-2.19	0.0285
CA_ELA	1.0594	0.5317	0.0173	2.1015	1.99	0.0463
CA_SCI	0.9163	0.6065	-0.2725	2.1050	1.51	0.1309
Description (Trt2)	1.2040	0.5468	0.1323	2.2756	2.20	0.0277
Description + Tactile (Trt4)	0.3285	0.6142	-0.8753	1.5323	0.53	0.5927
CA_ELA*Trt2	-0.7593	0.6888	-2.1093	0.5908	-1.10	0.2703
CA_SCI*Trt2	-1.2040	0.8811	-2.9309	0.5230	-1.37	0.1718
CA_ELA*Trt3	-0.9069	0.7115	-2.3014	0.4875	-1.27	0.2024
CA_SCI*Trt4	-0.7638	0.8093	-2.3500	0.8223	-0.94	0.3453

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Quantitative Conclusions

- Braille readers were more likely to select the correct answers when given image description without tactile graphics.

- All other students in the study were equally likely to select the correct answer whether given image description or not.

- Image description is an unbiased accommodation.

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Qualitative Results

Data Collection: Interviews

- Interviews conducted and recorded (after assessment was completed) and then transcribed.

- Prior to conducting the interviews, participants were asked to read and sign a consent or assent form.

- Student interviews took approximately 3-5 minutes.

- Teacher interviews took take approximately 10-15 minutes.

Student Interview

- Test outcome (how they did on the test);
- Time (more/less/same time as tests in school);
- Questions (easier/harder/same as tests in school);
- What they liked about the test;
- Questions they liked better and why;
- Questions that were frustrating and why.

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Teacher Interview

- Students they provide services to/work with;
- Current access to print accommodations;
- Benefits and challenges of providing access to print accommodations.

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Data Analysis

- Nvivo (qualitative data analysis software) used to determine systematic categories through coding;

- Meaning units for each participant were grouped into categories based on frequency of occurrence;

- Each participant was then compared with the subsequent participant, in search of categories;

- Categories were clustered together into themes based on similarity of content.

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Results/Patterns: Students

- Majority of students felt they did "okay," "good," or "great" in the assessment.

- Most of the participants found the assessment to be easier or the same as tests they take in school.

- Majority said it took them less time to answer assessment questions than in school.

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What Students Liked About the Test...

- Audio description:
  - "I liked when it showed the voice because I really understood what it was describing."
  - "That on some of them [questions] I had a description."
  - "That someone could read for me and that I had time to think."

- Math and science!
  - "[I liked] the math ones because it is my favorite subject."
  - "I love math."
  - "I liked the science [questions] because science is my favorite thing in school."

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Students' Frustrations

- Many did not experience any frustrations;

- Specific questions from test;

- Math & science questions!

- "Reading" questions:
  - "the reading questions because there was more remembering to answer the question."

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Students' Thoughts on Audio Description

- "I get more understanding of it."

- "It made me understand them and visualize them."

- "It makes more sense when someone reads for me."

- "That way I don't have to read everything."

- "I don't like the ones where you have to look at them because I get a headache whenever I look at something too long."

- "It helps me out more . . . . It helps me better understand the question."

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Results/Patterns: Teachers

- Current access to print accommodations:
  - TVI was obvious;
  - Other participants seemed unsure about the accommodations;
  - Benefit: Allow students to access the same information as their peers;
  - Challenging.

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Challenges
Access to Print Accommodations

- Collaboration with general education teachers;
- Getting materials on time;
- Discrepancy between accommodations in the classroom and state assessment accommodations;
- Acceptance/understanding of students in general ed classroom;
- Time consuming;
- Cost ($$$$);
- Access to instructional materials, technology, internet, etc. (specially in rural areas);
- Students' self-advocacy skills.

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Teachers' Thoughts on
Audio Description

- Beneficial for the students;
- Ensures that students receive accurate information;
- Increases comprehension;
- Technology is motivating;
- "Excited" about the study and "anxious" to know the results.

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State Assessment Implications

- Populations of students in need
  - Braille readers
  - Exclusive auditory learners
  - Print-challenged learners
- Matching instruction to assessment accommodations.
- Auditory accommodations in the classroom.
- Lack of state consistency for auditory assessment accommodations.

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State Assessment Implications

- Advent of state computerized assessments
- PARCC
- Smarter Balanced

- Complement to paper and pencil / braille tests

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Guidelines

- Familiarity with High Quality Image Descriptions.

- Mechanics of taking the test.

- Equivalent does not mean exactly the same.

- Access without giving away the answer.

- Implications for the test of the future.

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Learn More!

- Search "describing images for assessment"
  - Project details
  - Updated results
  - 60 minute webinar for teachers
  - Example descriptions with assessment images
  - Guidelines for using description in assessment
  - Guidelines for describing STEM images

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Utah State Office of Education:

Wendy Carver

Jennifer Johnson Howell

University of Northern Colorado:

Kay Alicyn Ferrell

Silvia Correa-Torres

Kathryn Botsford

Nana Phan Dewald

Catherine Smyth

UNIVERSITY *of* NORTHERN COLORADO

Colorado Department of Education

Tanni Anthony

Kansas State Department of Education

Deborah Matthews

National Center on Accessible Media

Bryan Gould

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