

# Validity Evidence for a Writing Assessment for Students with Significant Cognitive Disabilities

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# Purposes

The purposes of this presentation are to:

- Describe the Dynamic Learning Maps (DLM) Alternate Assessment System writing assessments
- Present sources of evidence to evaluate multiple assumptions that underlie the validity argument
- Describe how evidence was used to improve assessments based on pilot and field test results

# Dynamic Learning Maps (DLM) Alternate Assessment System

- The DLM Alternate Assessment consortium includes 17 states that have collaborated to develop a computer-based, adaptive alternate assessment based on alternate achievement standards (AA-AAS).
- All DLM assessments are delivered as “testlets,” short, instructionally relevant groups of 3-8 items.
- Writing testlets require the test administrator to engage in a scripted activity with a student outside the computer delivery system and enter observations and ratings of the student’s behavior online.
- DLM assesses both emergent writing and conventional writing.

# Students Who Take DLM Assessments

Students:

- with significant cognitive disabilities (SWSCDs)
- who participate in an alternate assessment based on alternate achievement standards (AA-AAS)

All students are assessed in writing.

- Due to their expressive communication systems, SWSCDs often use less common tools for writing, such as alternate pencils, letter selection by eye-gaze, and adapted keyboards.

# Writing Testlets

- Writing has been inconsistently taught in regular instruction for SWSCDs (Karvonen, et al., 2011).
- In DLM assessments, writing requires a coordinated set of abilities to communicate thoughts, ideas, or information by attending to the mechanics of transcription and organization (Harris, Graham, Mason, & Saddler, 2002).
- The test administrator engages the student in writing about information using the tools the student normally uses for writing as a part of instruction, following step-by-step on-screen instructions.

# Research Questions

DLM uses an argument-based approach to validity. Three claims related to the construct of writing were used as a framework for developing tools to gather evidence related to the writing assessments during the design phase:

1. Students are able to interact with the system as intended.
2. Student responses to items reflect their knowledge and abilities.
3. Teachers enter student scores/responses with fidelity.

# Validity

These assumptions underlie the claims from the validity argument.

*Sources of Evidence for Assumptions Related to the Validity Argument*

Assumptions	Sources of Evidence		
	Test Administration Observations	Surveys of Test Administrators	Test Administration Cob Labs
Students are able to interact with the system as intended	X		
Student responses to items reflect their knowledge and abilities.		X	
Teachers enter student scores/responses with fidelity	X		X

# Methods

- Twenty-six test administration observations of writing assessments were conducted in multiple states in 2015, during the students' typical test administrations.
- Surveys of test administrators who administered a field test assessment were completed by 305 participants in nine states.
- Test administrator cognitive labs were conducted in 2015 with six teachers in two schools. Each test administrator completed a think-aloud procedure while preparing for and administering a practice writing assessment.



# Students Are Able to Interact with the System as Intended

## Evidence from Test Administration Observations

### *Student's Engagement During the Session*

	n	%
High	17	65
Medium	4	15
Low	1	4
Missing	4	15

### *Problems that Occurred During the Assessment*

	n	%
The student's response to a task did not match the answer options in the testlet	2	8
The test administrator had difficulty prompting the student based on the on-screen instructions	0	0
The student had to wait for a period of time while the test administrator read the on-screen instructions	4	15

# Students Are Able to Interact with the System as Intended

## Evidence from Test Administration Observations

*Writing Tools and Supports Used for All or Part of the Writing Testlet*

	n	%
Pens, pencils, markers or other traditional writing tools	11	42
Traditional Keyboard	6	23
Tablet keyboard	1	4
Adapted keyboard	2	7
Any keyboard using word prediction software	0	0
Eye gaze display of letters	0	0
Alphabet flip chart/book	5	19
Letter Dictation	1	4
Other alternate pencil	0	0
Other tool	15	58
Picture symbols	1	4

# Student Responses to Items Reflect Their Knowledge and Abilities

## Evidence from Test Administrator Surveys

*Match Between Regular Instruction in Writing and Skills Assessed in Testlet*

	No Regular Instruction	Instruction Did Not Match	Instruction Matched On $\geq$ 1 Skills
Winter FT	16%	17%	48%
Spring FT	15%	32%	47%

*Match between Answer Options and Student Response, with the Prompt "The student's response was one of the answer choices on..."*

	All of the Items	Some of the Items	None of the Items
Winter FT	30%	43%	18%
Spring FT	23%	58%	17%

# Teachers Enter Student Responses with Fidelity

## Evidence from Test Administrator Observations

*Test Administrator Actions during the Assessment*

	n	%
Navigated the system without problems	21	81
Repeated question(s) before student responded	11	42
<b>Interpreted the student's responses and recorded them with fidelity</b>	14	54
Used verbal prompts to direct the student's attention	15	58
Used physical prompts or hand over hand guidance to assist student in answering an item	3	12
Acted as a scribe to record student writing	3	12

*Student Completion Rate*

	n	%
Yes	23	88
No	1	4
Unknown	2	8

# Using Problems with Fidelity to Redesign Assessments

- Increased the assessment directions to test administrators to direct them to the specific behaviors/products to be evaluated in each item.
- Added additional response options to better cover the diversity of student performance.
- Provided additional training materials for test administrators.

# Teachers Enter Student Responses with Fidelity

## Preliminary Evidence from Test Administrator Cognitive Labs

As observed from Teacher Cognitive Labs, the following potential problems in response fidelity were considered:

- Teacher tried to record responses and help the student write at the same time.
- Teacher believed she went through every item, but did not state whether she had reviewed the testlet for 100% completion.
- Teacher struggled to respond when objects did not match well with testlet, when instructions were confusing, and when trying to make the testlet language/objective understandable for the student.

# Responses and Considerations

## Questions:

1. What other data collection tools could be used to collect information about response process for students who are not able to provide verbal think-alouds?
2. How can we avoid confirmation bias when collecting validity evidence during test development?

# Selected References

- Altman, J. R., Lazarus, S. S., Quenemoen, R. F., Kearns, J., Quenemoen, M., & Thurlow, M. L. (2010). *2009 survey of states: Accomplishments and new issues at the end of a decade of change*. Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes. Retrieved from [http://www.cehd.umn.edu/NCEO/OnlinePubs/StateReports/2009\\_survey\\_of\\_states.htm](http://www.cehd.umn.edu/NCEO/OnlinePubs/StateReports/2009_survey_of_states.htm)
- Flower, L. & Hayes, J. R., (1981). A Cognitive Process Theory of Writing. *College Composition and Communication*, 32 (4), 365-387.
- Harris, K., Graham, S., Mason, L., & Saddler, B. (2002). Developing self-regulated writers. *Theory Into Practice*, 41, 110-115.
- Kane, M. T. (2006). Validation. In R. L. Brennan (Ed.), *Educational Measurement* (4<sup>th</sup> ed.) (pp. 17-64). Westport, CT: Praeger.
- Karvonen, M., Wakeman, S. Y., Browder, D. M., Rogers, M. A. S., & Flowers, C. (2011). Academic curriculum for students with significant cognitive disabilities: Special education teacher perspectives a decade after IDEA 1997. Retrieved from ERIC database (ED521407).
- Ruppar, A. L. (2014). A preliminary study of the literacy experiences of adolescents with severe disabilities. *Remedial and Special Education*, 36, 235-245. doi: 10.1177/0741932514558095