Instructionally Relevant Alternate Assessments for Students with Significant Cognitive Disabilities

Neal Kingston, Karen Erickson, and Meagan Karvonen
Background

• History of AA-AAS as separate from instruction
  – Standardized, scripted performance tasks
  – Portfolios as evidence culled from instruction
  – Neither drives instruction
Topics in the Session

• Overview of the DLM system
• Sample Testlets
• Research in support of instructional relevance
Elements of the System

• Learning Map
  – Claims and Conceptual Areas
  – Essential Elements

• Assessment
  – Design and delivery

• Professional Development
A Portion of the Math Map
Quick Facts about the Map

- **ELA**
  - 141 foundational nodes
  - 1,645 ELA nodes
    - 538 Essential Elements
  - 3,982 edges/connections

- **Mathematics**
  - 141 foundational nodes
  - 2,312 mathematics nodes
    - 172 Essential Elements
  - 4,838 edges/connections
Learning Map

Claims

Conceptual Areas

Essential Elements

(and other nodes)
<table>
<thead>
<tr>
<th>Major Claims</th>
<th>Conceptual Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students can comprehend text in increasingly complex ways</td>
<td>Determining critical elements of text</td>
</tr>
<tr>
<td></td>
<td><strong>Constructing understandings of text</strong></td>
</tr>
<tr>
<td></td>
<td>Integrating ideas and information from text</td>
</tr>
<tr>
<td>Students can produce writing for a range of purposes and audiences</td>
<td>Using writing to communicate</td>
</tr>
<tr>
<td></td>
<td>Integrating ideas and Information in writing</td>
</tr>
<tr>
<td>Students can communicate for a range of purposes and audiences</td>
<td>Using language to communicate with others</td>
</tr>
<tr>
<td></td>
<td>Clarifying and contributing to discussion</td>
</tr>
<tr>
<td>Students can investigate topics and present information</td>
<td>Using sources and information</td>
</tr>
<tr>
<td></td>
<td>Collaborating and presenting ideas</td>
</tr>
</tbody>
</table>
Constructing understandings of text
WHAT ARE ESSENTIAL ELEMENTS?
Definition

The DLM Essential Elements (EEs) are specific statements of the content and skills that are linked to the Common Core State Standards (CCSS) grade level-specific expectations for students with significant cognitive disabilities.
DLM Essential Elements

• Reduced depth, breadth, complexity
• Provide appropriate level of rigor and challenge
• Focus on the skills (with multiple means of demonstration)
• Are a starting point for defining achievement standards
• Are not functional or pre-K skills or instructional descriptions
Example for English Language Arts

Common Core State Standard

• RL.6.2 Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.

Essential Element

• EE.RL.6.2 Determine the theme or central idea of a familiar story and identify details that relate to it.
Example for Mathematics

Common Core State Standard

- 4.MD.5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:
  - An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a “one-degree angle,” and can be used to measure angles.
  - An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

Essential Element

- EE.4.MD.5. Recognize angles in geometric shapes
HOW DO ESSENTIAL ELEMENTS RELATE TO THE MAP?
Identify two related points the author makes in an informational text.
Design of Instructionally Embedded Assessment

- Instructionally relevant testlets
  - ELA, math, soon science
- 3 - 5 linkage levels per EE
- Item types
- Accessibility by design
- Delivery
Testlets in Linkage Levels

Connect the map... 

Initial Precursor

Distal Precursor

Proximal Precursor

Target

Successors

...to the items developed.

Behavior

Testlet a

Behavior

Testlet b

Behavior

Testlet c

Behavior

Testlet d

Behavior

Testlet e
Linkage Levels - a Definition

• Linkage levels contain one or more nodes that precede (or follow) an identified EE. Links both identify important “waypoints” en route to an EE and specify where a student is in relationship to the grade-level target.
M.EE.6.RP.1: Demonstrate a simple ratio relationship.

**Initial**
- F-69 recognize wholeness
- M-43 recognize a unit
- M-561 recognize parts of a given whole or a unit

**Distal**
- M-971 generate ordered pairs from 2 distinct numerical patterns
- M-816 extend a number pattern by applying the rule
- M-373 model equal parts

**Proximal**
- M-809 partition any shape into equal parts
- M-2633 explain unit fraction
- M-2411 recognize fraction
- M-1067 explain ratio

**Target**
- M-2625 recognize many to 1 ratio
- M-2626 represent many to 1 ratio

**Successor**
- M-2627 recognize many to many ratio
Structure of a Testlet

• Begins with engagement activity
  – Motivate students
  – Activate prior knowledge
  – Prepare for the cognitive process required in the items

• ELA: Text presented twice; questions embedded and at conclusion on 2nd read

• Math: series of questions or problems related to single topic
Item Types

- Single-select multiple choice
- Multi-select multiple choice
- Technology enhanced:
  - Sorting
  - Matching
- Teacher observation*
- Extended performance event*
Assessment Delivery

- Special user interface
- Dynamic routing
- Customization through Personal Needs and Preferences profile and First Contact
Expressive Communication

Does the student use speech to meet expressive communication needs?

- Yes
- No
Display Enhancements
Kristin Skeet - Grade Not Available

- **Magnification**
  - Activate by Default
  - 2x

- **Overlay Color**
  - Activate by Default

- **Invert Color Choice**
  - Activate by Default

- **Masking**
  - Activate by Default
  - Answer Masking
  - Custom Masking

- **Contrast Color**
  - Activate by Default
  - ABC

- **Background Color Hex**
SUPPORTING EDUCATORS IN USING THE DLM™ SYSTEM
The DLM™ System of Professional Development

• Modules in multiple formats

• Virtual Community of Practice
  – http://dlmpd.com/clds
SAMPLE ITEMS
Initial Precursor (7th grade)

Educator Directions:

Present the seven cups to the student in a way that captures the student’s attention. For example:

- Draw the student’s attention to the presence of the cups.
- Talk about how cups are used for drinking juice, water, etc.

Once the student has attended to the cups, stack five cups together and leave two cups separated. Indicate to the student that the stacked cups are in a group and the other cups are separate.

On the next screens, you will ask the student some questions about the cups.

EE: Solve multiplication problems with products to 100.

Node: Recognize set/ recognize separate
Educator Directions:

SHOW: the stacked cups.
SAY: “Here are some cups.”

SHOW: the separate cups.
SAY: “Here are some more cups.”

SHOW: the stacked cups and the separate cups.
SAY: “Show me the group of cups.”
Record student response:

- Indicates the group of stacked cups
- Indicates the separate cups
- Indicates one cup or all of the cups
- Attends to other stimuli
- No response
Initial Precursor (4th grade RI)

Educator Directions:

SHOW: one of the familiar, identical objects. Then give the student a moment to explore the object. 
SHOW: the other familiar, identical object. Then give the student a moment to explore the object.
SHOW: a new or different object that was not used in the previous item.

Record student response:

☐ Attends longer to the new or different object
☐ Attends equally to all of the objects
☐ Attends only to familiar objects
☐ Attends to other stimuli
☐ No response

EE: Identify one or more reasons supporting a specific point in an informational text.
Node: Recognize different
Target (5th grade RI)

Why do trees need water?
- to grow
- to move
- to stretch

EE & Node: Identify the relationship between a specific point and supporting reasons in an informational text
Jay counts $1.00. Jay then counts $0.25. What is the total amount Jay counts?

$0.75
$1.25
$1.75

EE: Solve real world problems involving addition and subtraction of decimals and whole numbers, using models when needed.

Node: Solve word problems involving addition with rational numbers
Proximal Precursor (HS)

Deb finds a cylinder. Which shape is a cylinder?

EE: Use properties of geometric shapes to describe real-life objects.

Node: Recognize cylinders
INSTRUCTIONAL RELEVANCE
Instructionally Relevant Testlets

• Model good instructional activities
• Teachers should want to use them even if no formal assessment were going on
• Major difference between instructionally relevant assessment and normal instructional activities should be the systematic collection and computer-assisted analysis of data
Principles of Good Instruction

- Engaging the student
- Providing context
- Making connections
Features That Support Relevance

- **Testlet structure**
  - Including engagement

- **Appropriate content choices**
  - Initial content selection based on First Contact survey
  - Teacher selection of content through instructional support interface
Instructional Support Interface

1. Student roster in Educator Portal
2. Teacher selects EE for a student*
3. Teacher selects level within the EE*
4. Routed to information about that EE

*System recommends, teacher chooses
Instructional Support Interface

4 steps
RESEARCH & DEVELOPMENT IN SUPPORT OF INSTRUCTIONAL RELEVANCE
Evidence

During test development
1. Internal review of testlets
2. External review of testlets

Research
1. Early evidence: entry to the map
2. Teacher surveys
3. Future research plans
First Math Testlet

Teacher evaluation of testlet difficulty for the student

<table>
<thead>
<tr>
<th></th>
<th>Fdn.</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too Easy</td>
<td>8%</td>
<td>19%</td>
<td>15%</td>
<td>28%</td>
</tr>
<tr>
<td>About Right</td>
<td>40%</td>
<td>52%</td>
<td>58%</td>
<td>60%</td>
</tr>
<tr>
<td>Too Hard</td>
<td>52%</td>
<td>29%</td>
<td>27%</td>
<td>12%</td>
</tr>
</tbody>
</table>
## Last Math Testlet

Teacher evaluation of testlet difficulty for the student

<table>
<thead>
<tr>
<th></th>
<th>Fdn.</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too Easy</td>
<td>4%</td>
<td>6%</td>
<td>17%</td>
<td>17%</td>
</tr>
<tr>
<td>About Right</td>
<td>31%</td>
<td>44%</td>
<td>55%</td>
<td>60%</td>
</tr>
<tr>
<td>Too Hard</td>
<td>65%</td>
<td>50%</td>
<td>28%</td>
<td>23%</td>
</tr>
</tbody>
</table>
First ELA Testlet

Teacher evaluation of testlet difficulty for the student

<table>
<thead>
<tr>
<th></th>
<th>Fdn.</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too Easy</td>
<td>6%</td>
<td>13%</td>
<td>15%</td>
<td>22%</td>
</tr>
<tr>
<td>About Right</td>
<td>35%</td>
<td>50%</td>
<td>68%</td>
<td>69%</td>
</tr>
<tr>
<td>Too Hard</td>
<td>59%</td>
<td>37%</td>
<td>17%</td>
<td>9%</td>
</tr>
</tbody>
</table>
## Last ELA Testlet

Teacher evaluation of testlet difficulty for the student

<table>
<thead>
<tr>
<th></th>
<th>Fdn.</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too Easy</td>
<td>4%</td>
<td>3%</td>
<td>5%</td>
<td>16%</td>
</tr>
<tr>
<td>About Right</td>
<td>29%</td>
<td>41%</td>
<td>65%</td>
<td>71%</td>
</tr>
<tr>
<td>Too Hard</td>
<td>67%</td>
<td>56%</td>
<td>30%</td>
<td>13%</td>
</tr>
</tbody>
</table>
Pilot Comments Related to Instructional Relevance

• The student is able to listen to stories and point to pictures.
• Good questions based on the student levels.
• This test is a good representation of the core curriculum in this grade level and will show a reasonable level of my student abilities.
• I really like that the assessment provides the curriculum for assessing what we do now.
Field Test 1 Comments Related to Instructional Relevance

- Pictures used in ELA tests need to be bigger to better engage the student.
- This test was very informative and captured my students attention. He enjoyed the real life pictures with the text. Overall great interaction with the student!
Future Research Directions on IR

- Teacher surveys
- Test administration observation studies
- Instructional consequences studies
THANK YOU!

For more information, please contact:

dlm@ku.edu

or

Go to: www.dynamiclearningmaps.org

For Professional Development, contact:

dlmpd@unc.edu

The present publication was developed under grant 84.373X100001 from the U.S. Department of Education, Office of Special Education Programs. The views expressed herein are solely those of the author(s), and no official endorsement by the U.S. Department should be inferred.