

RESEARCH SYNOPSIS



DYNAMIC[®]
LEARNING MAPS

Access to the General Education Curriculum for Students Who Communicate Using Only Non-Symbolic Modes

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For many students who communicate only in non-symbolic ways – through body language, gestures, and expressions that are often unique to them – participating in standardized tests has been a significant challenge. Non-symbolic communication involves person-specific or context-dependent actions and expressions. In contrast, symbolic communication relies on widely shared symbols like words, manual signs, or graphic or tactile symbols.

While federal law requires all students to participate in statewide assessments, some assessments fail to meaningfully

include students who communicate exclusively in non-symbolic ways. In some alternate assessments, administrators stop the assessment if a student can't provide symbolic responses to several items in a row.

Students who communicate only in non-symbolic ways make up about 7 – 9% of all students with significant cognitive disabilities. This brief describes how the DLM system includes these students and offers evidence that the approach supports students in this population to make meaningful responses to assessment items designed for them.

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The Dynamic Learning Maps[®] (DLM[®]) Alternate Assessment System Approach

DLM alternate assessments are tailored to include students who do not yet communicate using spoken words, signs, or other symbols. By using items that access lower levels of cognitive processing, DLM alternate assessments capture the unique cognitive and communication modes among students who communicate exclusively in non-symbolic ways. A key advantage of this approach is that it moves beyond simple right or wrong answers and instead captures student understanding as they move from pre-intentional to intentional then conventional and symbolic communication. The DLM system includes an expanded taxonomy of cognitive processes dimensions (Bechard et al., 2021) to support the full participation of students who communicate in non-symbolic, unconventional, or pre-intentional ways. Items designed for this group of students target these cognitive processes in the context of academic subjects to provide information about student progress toward grade-level academic expectations. Teachers administer the assessment and record student responses.

The DLM assessment system also includes professional development for teachers to help students in this population make progress toward grade-level academic expectations.

Expanded Taxonomy

Pre-intentional

- » Behavior reflects a general state but does not reflect intentional behavior. Intent is inferred by others (e.g., teachers, parents) as they attend to facial expressions, movements, or sounds.

Attend

- » Orients to objects, people, or activity. Indicates selective attention to stimuli in the academic learning environment.

Respond

- » Intentional response using any mode of expression. Indicates joint attention to materials and activities in the academic learning environment.

Source: Bechard et al., 2021

Student Characteristics

We evaluated the effectiveness of the DLM approach to assessment design for this population by examining data from the 2022-23 school year. Students who communicate only in non-symbolic ways represented 7% of the 104,187 students who participated in the alternate assessments. The two most common primary disabilities among this group of students were autism (41%) and multiple disabilities (33%). Most students who communicate only in non-symbolic ways (87%) were educated in separate classes for more than 60% of the day, or in separate schools.

Figure 1. Percentage of students in each grade band who communicate only in non-symbolic ways

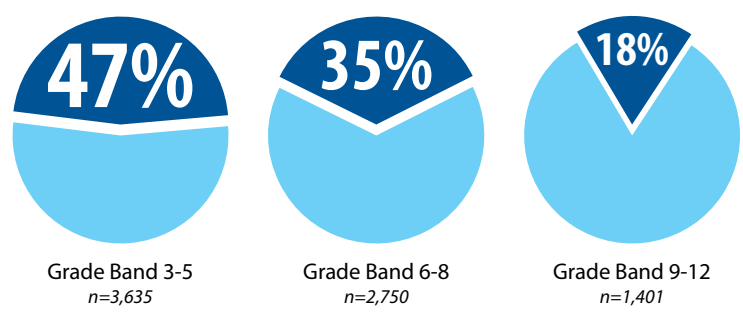


Table 1 shows examples of how students responded to Initial Precursor (IP) level assessment items aligned with grade-level Essential Elements (EEs). Most students who do not use symbols to communicate are making some response to assessment items, even if the responses are incorrect.

Table 1. Examples of Item Response Distributions

Response Category	Grade 3 Math Example N = 1,025	High School Reading Example N = 407
	EE: Place value to tens IP: Recognize groups of objects	EE: Change in characters in a text IP: Understand subgroups in a category
Selects correct object(s) or symbol(s)	28.1%	24.1%
Selects incorrect object(s) or symbol(s)	17.0%	16.5%
Attends to objects or symbol(s)	12.2%	9.1%
Attends to other stimuli	20.4%	17.0%
Does not respond	22.2%	33.2%

- » 93% of students in the sample answered one or more items correctly.
- » Many students in the sample (75% in ELA, 67% in math) achieved overall assessment scores greater than zero.
- » Only 0.17% of the entire tested population in 2022-23 made no observable responses to all items.

Summary

The DLM system, which employs an expanded cognitive taxonomy, UDL principles, and multiple linkage levels, effectively captures varied responses and detects subtle understanding. This approach appears to foster intentional and symbolic communication over time, with the percentage of students who communicate only in non-symbolic ways decreasing across grade bands. These findings underscore the potential for academic progress in this population and the ongoing need to refine assessment and instructional supports through future research.

Bechard, S., Karvonen, M., & Erickson, K. (2021). Opportunities and challenges of applying cognitive process dimensions to map-based learning and alternate assessment. *Frontiers in Education*, 6, 653693. <https://doi.org/10.3389/feduc.2021.653693>

Resources

Getting Started With Students Working at an Initial Precursor Linkage Level

Use this bundle of professional development modules to learn strategies for helping students develop symbolic communication while teaching ELA and math.

[Click to download the PDF bundle or use the QR code below.](#)



Using Mini-Maps to Plan Instruction

Most students who use only non-symbolic communication are working on Initial Precursor learning objectives. Learn how to use mini-maps to connect Initial Precursor learning objectives to grade-level Essential Elements

[Click here to download the PDF or use the QR code below.](#)



Test Administration Tip

Some students are progressing from pre-intentional communication to selective attention. During DLM assessments, test administrators should patiently wait after each question, allowing time for a response and watching for signs of intentional communication of any mode.