DYNAMIC®
LEARNING MAPS

Aligned Academic Achievement Standards to Support Pursuit of Postsecondary Opportunities:

Year-End Model

Technical Report #22-01

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Executive Summary

The Dynamic Learning Maps® (DLM®) Alternate Assessment System provides students with the most significant cognitive disabilities the opportunity to demonstrate their knowledge, skills, and understandings (KSUs) on challenging grade-level content aligned to general-education academic standards but at reduced depth, breadth, and complexity. The Dynamic Learning Maps (DLM) Consortium's theory of action includes beliefs, activities, outputs, and outcomes in support of student attainment of high academic expectations so they are prepared for postsecondary opportunities (DLM Consortium, 2016).

This report describes evidence of the alignment of the DLM alternate academic achievement standards and the relationship of those standards to the knowledge, skills, and understandings (KSUs) required for pursuit of postsecondary opportunities. This evidence supports validity evaluation for the DLM alternate assessment system and fulfills the requirement for U.S. Department of Education peer-review evidence (Office of Elementary and Secondary Education, 2018) regarding this part of Critical Element 6.3: "The alternate academic achievement standards are aligned to ensure that a student who meets the alternate academic achievement standards is on track to pursue postsecondary education or competitive integrated employment." This requirement was added to the Critical Element in 2018 and retroactively applied to assessments that had already been peer reviewed under the current requirements.

Through the research described in this report, we identified a sampling of academic skills that students may use to pursue a variety of postsecondary education and employment options and evaluated the relationship of those skills to the At Target performance level descriptors (PLDs) in each grade. We had two hypotheses about the expected relationship between meeting DLM alternate academic achievement standards (i.e., achieving At Target) and being prepared for postsecondary opportunities.

Hypothesis 1: The academic skills needed for postsecondary education opportunities will be aligned with At Target PLDs at a range of grades between grade 3 and high school.

Like academic education for all students, academics for students with significant cognitive disabilities (SCD) builds across grades. People use academic skills at various levels of complexity, depending on what is needed for a job or postsecondary education. Therefore, academic skills associated with achieving At Target in lower grades indicate where students are ready to apply the least complex version of the skill. Given the vertical alignment of DLM content and achievement standards, students are expected to continue their learning in subsequent grades and be ready for more-complex applications of the academic skills by the time they transition into postsecondary education and employment.

Hypothesis 2: Because academic skills may be applied across various employment and education opportunities and they are also embedded in the soft skills needed to pursue those opportunities, we expected Hypothesis 1 to hold for the academic skills associated with employment opportunities, education opportunities, and soft skills.

The DLM Consortium's evidence is divided into two parts: *alignment* of the achievement standards, and evidence that a student who meets the standards would be *on track to pursue* postsecondary opportunities.

Alignment

Evidence that DLM achievement standards are aligned was first reported in initial DLM peer-review submissions (2014–15 administration for ELA and mathematics). The evidence met expectations for Critical Element 6.3 as it was defined at the time; no further evidence was required. The evidence is summarized again in this report to support the reader's evaluation of the full body of evidence for this part of Critical Element 6.3. The evidence, summarized in Chapter 3, includes descriptions of the development and evaluation of content structures (learning map models, Essential Elements, and linkage levels); the standard-setting process; and the development of grade- and content-specific PLDs to describe skills typically mastered by students achieving at each of four performance levels.

On Track to Pursue Postsecondary Opportunities

Evidence that a student who meets the DLM achievement standards would be on track to pursue postsecondary opportunities comes from a series of panel activities conducted between 2019 and 2022.

The first panel, conducted in October 2019, identified a range of postsecondary education and competitive integrated employment opportunities that students with SCD might pursue (see Chapter 4). The goal was to identify an extensive sampling of opportunities, not an exhaustive list. Panelists considered the types of educational and employment opportunities currently available to students with SCD and opportunities that may be more aspirational (i.e., students may not regularly access them now, but the opportunities may become available as a result of the Workforce Innovation and Opportunity Act).

This panel—comprising professionals with experience in secondary transition, postsecondary education and/or employment, and competitive integrated employment—identified 57 employment opportunities and seven education opportunities. The employment opportunities spanned sectors including agriculture, business, arts, education, health sciences, hospitality, information technology, manufacturing, and transportation.

The panel next identified the KSUs needed to fulfill the responsibilities for the employment opportunities, including the academic skills within the broader KSUs. Panelists also identified eight common responsibilities across all postsecondary education opportunities and the KSUs for each responsibility. Finally, the panel identified the KSUs within soft skills (e.g., self-advocacy, social skills) that are applicable across many postsecondary settings. Subject-matter experts reviewed and refined the panel-derived academic skill statements for clarity and consistency. This process resulted in 50 ELA skills, and 41 mathematics skills, to be used in the second phase of the study. For information on science skills, see *Aligned Academic Achievement Standards to Support Pursuit of Postsecondary Opportunities: Instructionally Embedded Model* (Karvonen et al., 2020).

The second set of panels, one per subject, examined the relationship between the academic skills and the kinds of academic KSUs typically associated with meeting the DLM alternate academic achievement standards (i.e., achieving At Target; see Chapter 5).[1] Panelists rated the academic skill statements derived from the first panel against the DLM At Target year-end model PLDs at each grade. Panels identified the lowest grade in which a student achieving At

[1] The second set of panels were conducted in June 2022 after pandemic-related delays in 2020 and 2021 postponed adjustments to the DLM alternate academic achievement standards to spring 2022.

Target is likely to consistently demonstrate the academic skill, which is the first indication that students are ready to pursue postsecondary opportunities that require less-complex applications of the skill. Given the vertical alignment of DLM achievement standards, students who are At Target in lower grades are expected to continue learning in subsequent grades so that they are prepared for more-complex applications of the academic skills by the time they transition into postsecondary education and employment.

Each panel consisted of educators from across DLM states, including special educators who administered DLM assessments. Most panelists had expertise across more than one grade band, and some had dual certification (i.e., academic subject and special education). Each panel completed training and calibration activities before making independent ratings. When there was not majority agreement on independent ratings, the panel discussed their ratings and reached consensus. Panels also had the option to add or modify skills during the discussion phase (e.g., clarify interpretation and support a consensus, create differentiated versions in which each new statement more clearly linked to what is expected at different grade levels).

Panels identified the lowest grade in which students who achieve At Target on the DLM alternate assessment are at least 80% likely to be able to demonstrate each skill, indicating their first point of readiness to pursue postsecondary opportunities that require the least complex application of academic skills. In ELA, students achieving At Target are expected to first demonstrate 65.9% of those skills by grade 5, and 26.9% in middle grades (grades 6-8; see Table 0.1). In mathematics, students meeting achievement standards are expected to first demonstrate 81.3% of the academic skills by grade 5 and 18.8% of skills in middle grades (grades 6-8). (Full distributions are presented in Figure 5.3–Figure 5.4 in Chapter 5.)

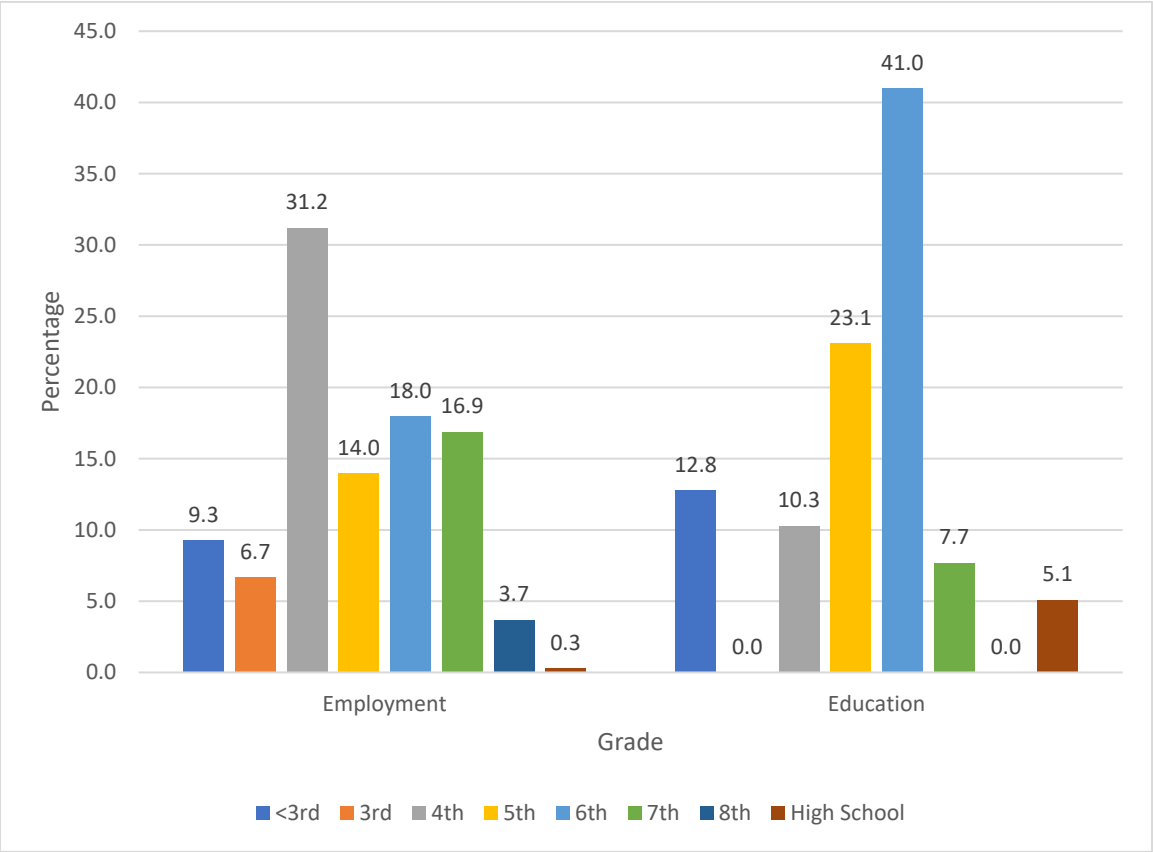
Table 0.1
Percentage of Academic Skills First Expected for Students Achieving At Target, by Grade Band and Subject

Subject	Grade 5 or lower	Grades 6–8	Grades 9–12 / High school
ELA	65.9	26.9	7.3
Mathematics	81.3	18.8	0.0

Some academic skills are applicable across both employment and education settings, while others may be unique to one of those settings. We explored the distributions of academic skill ratings across all subjects by employment (n = 356) and education (n = 39) opportunity categories (see Figure 0.1). Over 61% of the academic skills were rated from below grade 3 through grade 5 across employment opportunities, whereas 46.2% were rated from below grade 3 through grade 5 across education opportunities; however, the number increases to 87.2% when including grade 6.

Figure 0.1

Distribution of Academic Skills Across the Lowest Grades in Which a Student At Target Is Likely to Demonstrate the Skill, by Employment and Education Opportunities



Soft skills, such as social skills, require academic skills that are applicable across both employment and education opportunities. Panels determined that 55.5% of the academic skills associated with the soft skills would first be demonstrated by students who performed At Target at or before grade 5 (see Chapter 5, Table 5.4).

Overall, findings from the two panels indicate that

- Experts can identify a range of postsecondary opportunities for students with the most significant cognitive disabilities, including competitive integrated employment across a variety of sectors; and several types of postsecondary education opportunities
- Most academic skills needed to access postsecondary outcomes are first associated with meeting the DLM academic achievement expectations in elementary grades. Given the vertical alignment of the DLM academic achievement standards, students who achieve At Target in early grades build on these skills as they progress through school so that, by the time they leave high school, they are ready to pursue postsecondary opportunities that require more-complex applications of the academic skills.

Panelists also participated in focus groups to share their general perceptions of opportunities, skills, and expectations for students with SCD. Panelists believed the academic skills were important to postsecondary education and employment opportunities for all students, not only

those with SCD. Panelists indicated that students who were At Target in high school on the DLM alternate assessment possessed the necessary academic knowledge, skills, and opportunities to pursue a range of postsecondary opportunities.

Conclusions

Results of the study support our hypotheses. Almost all academic skills were associated with PLDs from grades 3 through high school. Distributions were evident for skills associated with education opportunities, employment opportunities, and soft skills.

Findings indicate students with the most significant cognitive disabilities who achieve At Target on the DLM alternate assessments possess a range of KSUs applicable to a variety of postsecondary education and employment opportunities. The vertical alignment evidence supports the identification of the earliest grade a student who is At Target demonstrates the skill. The high percentages of skills rated in earlier grades signifies the academic skills are introduced early in students' academic careers, providing ample time for students to learn and practice more-complex versions of the skills before they graduate or leave high school, thus providing evidence that students who are At Target in high school are on track to pursue postsecondary education and employment opportunities.

Evaluations of panelists' experiences from both panels and DLM Technical Advisory Committee members' review of the processes and evaluation results provide evidence that the methods and processes used achieved the goals of the study.

1. Introduction

The Dynamic Learning Maps® (DLM®) Alternate Assessment System provides students with the most significant cognitive disabilities (SCD) the opportunity to demonstrate their knowledge, skills, and understandings (KSUs) on challenging grade-level content aligned to general education academic-standards but at reduced depth, breadth, and complexity. DLM assessments are designed for a small population of students (approximately 1% of the population) in grades 3 through 8 and high school for whom general large-scale assessments, even with accommodations, are not appropriate. Students who are eligible to take DLM assessments have a significant cognitive disability or multiple disabilities that have a substantial bearing on intellectual function and adaptive behavior requiring individualized support, and receive academic instruction based on the DLM Essential Elements (EEs).

DLM assessments have been used operationally since 2015 in ELA and mathematics. In 2021–2022, 21 states used DLM alternate assessments in one or more subjects.

ELA and mathematics assessments are administered in one of two assessment models (selected by each state): instructionally embedded or year-end. This report describes evidence collected for the year-end model (ELA and mathematics). The evidence collected for the instructionally embedded model (ELA and mathematics) and for science can be found in *Aligned Academic Achievement Standards to Support Pursuit of Postsecondary Opportunities: Instructionally Embedded Model* (Karvonen et al., 2020).

The DLM Consortium's theory of action includes beliefs, activities, outputs, and outcomes in support of student attainment of high academic expectations so they are prepared for postsecondary opportunities (DLM Consortium, 2016). While the DLM Consortium has collected extensive evidence on the academic performance of students who take DLM assessments, evidence has not yet been collected concerning the relationship between what is expected for students who meet the DLM year-end model alternate academic achievement standards and what is needed to pursue postsecondary education and employment opportunities.

This report describes evidence collected to evaluate the extent to which the DLM alternate academic achievement standards meet this criterion: "The alternate academic achievement standards are aligned to ensure that a student who meets the alternate academic achievement standards is on track to pursue postsecondary education or competitive integrated employment."

This criterion is a requirement for alternate assessments based on alternate academic achievement standards under U.S. Department of Education peer review for statewide assessment systems (Critical Element 6.3; see Office of Elementary and Secondary Education, 2018).

DLM Academic Achievement Standards

DLM assessments are based on the EEs in each subject. The EEs link general education content standards to rigorous academic expectations for students with SCD. DLM assessment results are described using four performance levels that describe the academic achievement standards. The policy performance level descriptors (PLDs) are Emerging, Approaching the Target, At Target, and Advanced (see Figure 1.1). There are also PLDs specific to each grade and subject (see Appendix 1.A).

A student **meets the alternate academic achievement standards** if their overall performance level is at least At Target.

Figure 1.1
DLM Policy Performance Level Descriptors

The student demonstrates ***emerging*** understanding of and ability to apply content knowledge and skills represented by the Essential Elements.
The student's understanding of and ability to apply targeted content knowledge and skills represented by the Essential Elements is ***approaching the target***.
The student's understanding of and ability to apply content knowledge and skills represented by the Essential Elements is ***at target***.
The student demonstrates ***advanced*** understanding of and ability to apply targeted content knowledge and skills represented by the Essential Elements.

While cut points delineating year-end model achievement standards were adjusted in spring 2022, the same four performance levels and general policy-level descriptors were retained.

Postsecondary Opportunities

After high school, individuals with SCD may pursue a wide range of opportunities for employment, education, citizenship, and community involvement. Employment opportunities have historically been limited for this population (National Longitudinal Transition Study-2, 2007; Newman et al., 2009), often in sheltered workshops for below minimum wage (Rusch & Braddock, 2004). However, opportunities should expand as states adjust to the 2014 Workforce Innovation and Opportunity Act (WIOA) requirement that individuals with the most significant cognitive disabilities have opportunities to pursue competitive integrated employment. This type of employment is different from what has historically been available for students with SCD and includes these features:

- full-time or part-time work at minimum wage or higher
- wages and benefits similar to those received by individuals without disabilities performing the same work
- fully integrated
- may include customized and/or supported employment

The WIOA also provides supports for individuals who wish to pursue postsecondary education. Options for postsecondary education have expanded through U.S. Department of Education-funded Transition and Postsecondary Programs for Students with Intellectual Disabilities, designed so students may gain access to programs on university or community college campuses. These programs provide a college experience focused on student interests and skillsets while also allowing students to gain employment training and experience. However, these programs have traditionally been available to students with mild to moderate intellectual disability, not students with SCD.

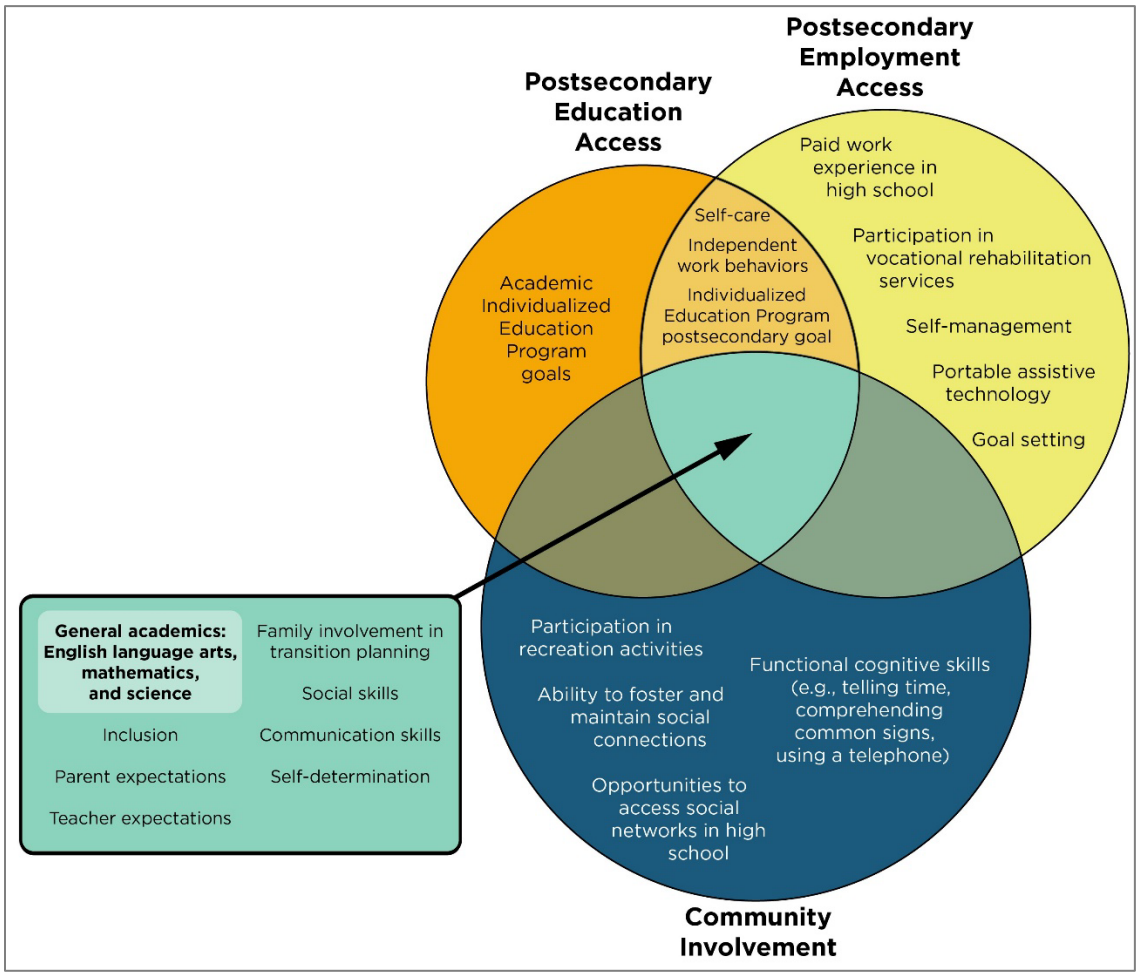
There is some evidence that secondary students' in-school experiences are related to their postsecondary access and outcomes. For example, students with SCD or intellectual disabilities who experience paid work during high school are more likely to have successful postsecondary competitive integrated employment (Carter et al., 2012; Papay & Bambara, 2014; Simonsen &

Neubert, 2012). Students with intellectual disabilities who are active in their transition-planning process are more likely to enroll in a postsecondary education class and more likely to be employed after high school (Papay & Bambara, 2014). However, we identified no research linking academic achievement to postsecondary employment and education outcomes among students with SCD.

To prepare for this study, we developed a framework of postsecondary opportunities and skills for students with SCD. The framework is based on existing literature and key informant input.[2] The framework (see Figure 1.2) highlights predictors of access to postsecondary education, employment, and community involvement for students with SCD. While academic achievement has not been empirically shown to be a predictor of postsecondary access, the framework shows that academic KSUs support access to education, employment, and community involvement opportunities.

[2] See Appendix 1.B for a full description of the postsecondary opportunities and skills framework development and refinement process.

Figure 1.2
Postsecondary Opportunities and Skills Framework



Although not reflected in the figure, external and systemic factors also influence access to postsecondary opportunities. For example, state budgets, adequate staffing, availability of transportation, availability of opportunities in one's community, and staff training can affect students' access to postsecondary opportunities.

Overview of the Study

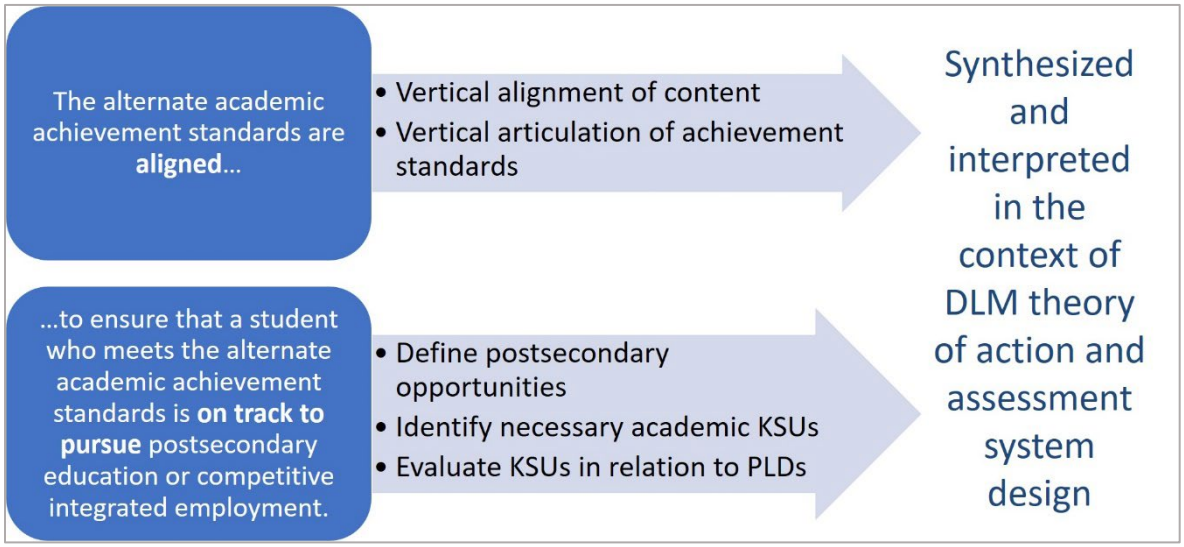
The purpose of this study was to evaluate the extent to which the DLM alternate academic achievement standards are aligned such that a student who meets the alternate academic achievement standards is on track to pursue postsecondary education or competitive integrated employment.

There are many factors that affect students' access to postsecondary opportunities and their success with those pursuits. Therefore, this study is delimited to the relationship between academic KSUs typically associated with meeting achievement standards (i.e., grade-specific PLDs) and the academic KSUs needed to pursue a range of postsecondary opportunities. We used the PLDs instead of the EEs (extended content standards) because the PLDs are more directly related to the academic skills expected for students whose achievement is At Target on

DLM assessments. (Content standards set expectations for what students should learn in each grade, while achievement standards indicate how much academic knowledge a student demonstrates on an assessment.)

Following the language provided in the peer-review guidance, we collected evidence according to two tracks: alignment of achievement standards and evidence that students who meet alternate academic achievement standards are on track to pursue postsecondary opportunities, as shown in Figure 1.3.

Figure 1.3
Sources of Evidence



Note: KSUs = knowledge, skills, and understandings; PLDs = performance level descriptors.

Evidence of aligned academic achievement standards comes from initial DLM assessment design and development activities conducted through 2016 (original peer review submission) and the 2022 achievement standards adjustment.

Content evidence is based on development and evaluation of the DLM map structure, the EEs measured by the assessment, the linkage levels at which content is assessed, and alignment of the assessment system. Empirical evidence supports the ordering of linkage levels within EEs. This evidence was part of the initial DLM peer-review submissions, based on the 2014–2015 administration for ELA and mathematics. That evidence met expectations for Critical Element 6.3 as it was defined at the time; no further evidence was required. Following adjustments to the scope of blueprint EEs in 2019-2020, an updated alignment report was produced summarizing evidence for the adjusted blueprint (Flowers & Wakeman, 2020). Evidence is also summarized in Chapter 3 of this report.

A standard-setting method was used to specify cut points between achievement standards. Achievement standards were vertically articulated during the standard-setting process. Grade- and content-specific PLDs describe skills typically mastered by students achieving at that level. All of this evidence was part of the initial DLM peer-review submissions, based on the 2014–2015 administration for ELA and mathematics. That evidence met expectations for Critical Element 6.3 as it was defined at the time; no further evidence was required. Parallel evidence based on the 2022 adjusted achievement standards is described in Chapter 3 of this report and

in the 2022 DLM technical manual (DLM Consortium, 2022). Achievement standards were adjusted during spring 2022 to account for modifications to the blueprints.

Evidence that students who meet achievement standards are on track to pursue postsecondary opportunities was collected through panel activities in 2019 and 2022. A panel of experts on secondary transition or education of students with SCD, or both, identified postsecondary, competitive integrated employment and education opportunities and the KSUs needed to carry out the necessary responsibilities for these opportunities. Subject-matter experts reviewed and refined the academic skill statements using consistent academic language across all skills. A second set of panels—one each for ELA and mathematics—was convened to rate these academic skill statements against the DLM PLDs in each subject. Panelists for each subject-specific panel selected the lowest grade in which a student who achieves At Target could consistently demonstrate each identified academic skill. Panelists also participated in a focus group to explore their perceptions about the opportunities, skills, and expectations for students with SCD.

Hypotheses

While the DLM system was designed to promote student attainment of rigorous academic achievement standards and prepare students for postsecondary opportunities, the system was not designed with specific postsecondary opportunities in mind. With the WIOA reauthorization (which occurred after DLM achievement standards were first set), those opportunities are likely to shift in the coming years.

Before completing the second part of the study, we decided it was important to articulate hypotheses and a supporting logical argument about the expected relationship between meeting academic achievement standards and being prepared for postsecondary opportunities.

1. The DLM theory of action includes a belief about the importance of teaching appropriately challenging content so students are prepared for postsecondary opportunities. One expected outcome is that students make academic progress while they are in school so they are prepared for postsecondary opportunities. An important part of helping students reach high expectations is balancing rigorous expectations with access to the content.
2. Meeting DLM academic achievement standards should be indicative that a student has the necessary academic KSUs to pursue a range of postsecondary opportunities, including education and competitive integrated employment. Meeting the achievement standards does not guarantee postsecondary success because there are so many other factors that affect availability of opportunities and student experiences as they pursue opportunities.
3. Students with SCD often need substantial supports during education. It is reasonable to assume these students might need continued supports as they pursue postsecondary employment or education. Thus, pursuit of opportunities is not assumed to require a certain type or amount of support or independence. In other words, students will need variable amounts and types of supports to pursue opportunities using their academic KSUs.
4. Academic KSUs needed for postsecondary opportunities will range in complexity, much like academic content builds in complexity across grade-level content standards (i.e., EEs) and across linkage levels within a grade. Students may develop less-complex KSUs at earlier grades and more-complex KSUs at later grades.

5. Some postsecondary opportunities will require less-complex academic KSUs than others. Requiring more-complex KSUs of all students with SCD could have the unintended consequence of limiting access to postsecondary opportunities for some students.
6. Providing access to postsecondary opportunities for the full range of students with SCD requires us to assume students can have access to those opportunities using less-complex academic KSUs and continue to learn while pursuing the opportunities.

Given these statements, we hypothesized that academic KSUs required for postsecondary education and employment opportunities would be associated with meeting DLM achievement standards (i.e., At Target performance level) at various tested grades 3 through high school. Few if any academic KSUs required for postsecondary opportunities would be expected before grade 3 At Target or after high school At Target performance. We also predicted the academic KSUs would be distributed broadly across grades for all three subjects and for both employment and education opportunities.

These hypotheses may seem counterintuitive at first. Wouldn't we expect the academic skills needed for postsecondary education and employment to be associated with At Target performance in high school? Not necessarily. Postsecondary employment and education requires all adults to apply academic knowledge and skills that they develop throughout their K–12 education. For example, the most basic operations required to balance a checkbook—addition and subtraction—are learned in earlier grades. Students learn to apply addition and subtraction skills in more-complex contexts in later grades, signifying they are ready to use those skills in a different context. For example, a student who uses addition to calculate perimeter can apply that skill during employment in landscaping or event setup and management.

In this study, academic skills associated with At Target performance in lower grades indicate less-complex applications of the skills. For students who may pursue postsecondary opportunities, these skills represent the first access points that require less-complex applications of the skills. Given the vertical alignment of DLM content and achievement standards, students who achieve At Target in lower grades are expected to continue their learning in subsequent grades and be ready for more-complex applications of the academic skills by the time they transition into postsecondary education and employment. Thus, our hypothesized distributions would indicate that students who achieve At Target are ready to pursue a range of postsecondary opportunities, not just the most challenging opportunities available. Providing access to a range of opportunities is important for the heterogeneous population of students who take DLM assessments, so they have a chance to continue developing their skills while pursuing postsecondary opportunities.

Organization of the Report

Chapter 2 of this report provides an overview of the DLM assessment system design, as background to support interpretation of the contents of later chapters. Chapter 3 describes the evidence for vertical alignment and vertical articulation. Chapter 4 summarizes the methods and results for the study that yielded the academic skills needed to pursue postsecondary opportunities (panel 1). Chapter 5 summarizes methods and results for the panel study that yielded evaluations of how academic KSUs related to DLM achievement standards (panel 2). Chapter 6 summarizes and interprets the evidence in light of the peer-review criterion and the DLM theory of action.

2. Dynamic Learning Maps Assessment System Design

The Dynamic Learning Maps® (DLM®) Alternate Assessment System is an instructionally relevant system that supports student learning and measures what students with significant cognitive disabilities (SCD) know and can do in ELA, mathematics, and science. The DLM Alternate Assessment System uses Essential Elements (EEs), specific statements of knowledge, skills, and understandings (KSUs) linked to the grade-level expectations identified in college and career-readiness standards. The DLM Alternate Assessment System assesses student achievement in ELA, mathematics, and science for students with SCD in grades 3–8 and high school.

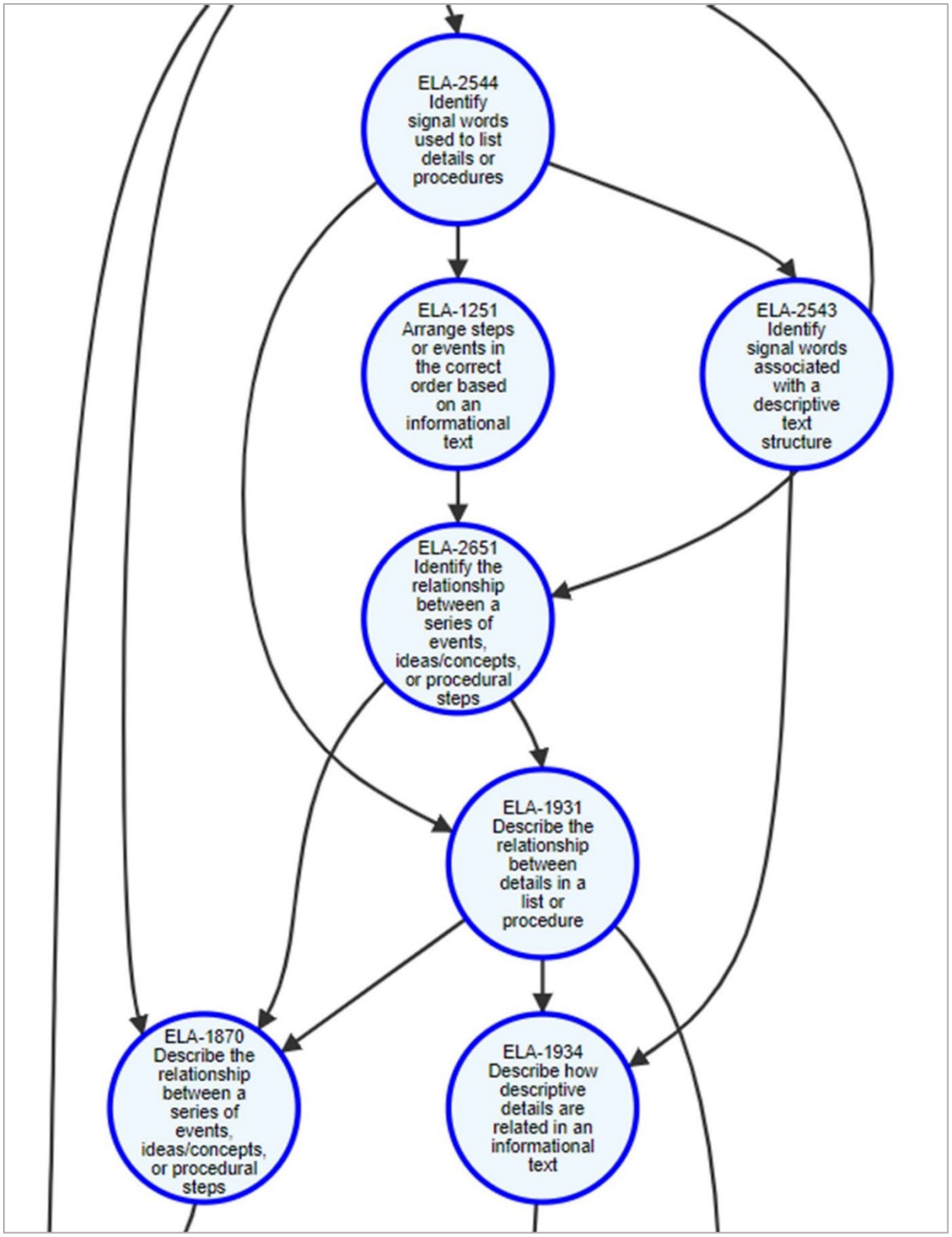
The purpose of this chapter is to provide the reader with an overview of the assessment system as background to help interpret information in later chapters. The assessment model for ELA and mathematics differs from science. The science model is described in *Aligned Academic Achievement Standards to Support Pursuit of Postsecondary Opportunities: Instructionally Embedded Model* (Karvonen et al., 2020).

ELA and Mathematics

The ELA and mathematics assessment system is built on learning map models that are highly connected representations of how academic skills are acquired as reflected in research literature. Nodes in the maps represent specific KSUs in ELA and mathematics, as well as important foundational skills that support student learning of the targets associated with grade-level content standards. The maps go beyond traditional learning progressions to include multiple and alternate pathways by which students may develop content knowledge and skills.

Seen in its entirety, the DLM map is highly complex. Figure 2.1 displays a section of the ELA map, with circles representing the nodes and lines representing the connections between the nodes. Underlying the current operational DLM assessments there are more than 4,400 nodes and 10,000 connections included in the learning map models for ELA and mathematics.

Figure 2.1
Sample Excerpt From an ELA Learning Map



ELA and Mathematics Essential Elements

DLM assessments balance the need to provide access to grade-level content at an appropriate level of complexity while maintaining challenge and academic rigor for students with the most significant cognitive disabilities. The EEs are represented within the learning map model. Since the EEs and maps are the underpinnings of the delivery of testlets, the DLM Alternate Assessment System gives fine-grained information about student mastery so that results can inform classroom decisions.

The EEs specify academic targets for students with the most significant cognitive disabilities, while DLM maps clarify the ways in which students can reach those targets. For each EE, linkage levels are identified as assessment targets. In ELA and mathematics, assessment items are written to five linkage levels: Initial Precursor, Distal Precursor, Proximal Precursor, Target, and Successor.

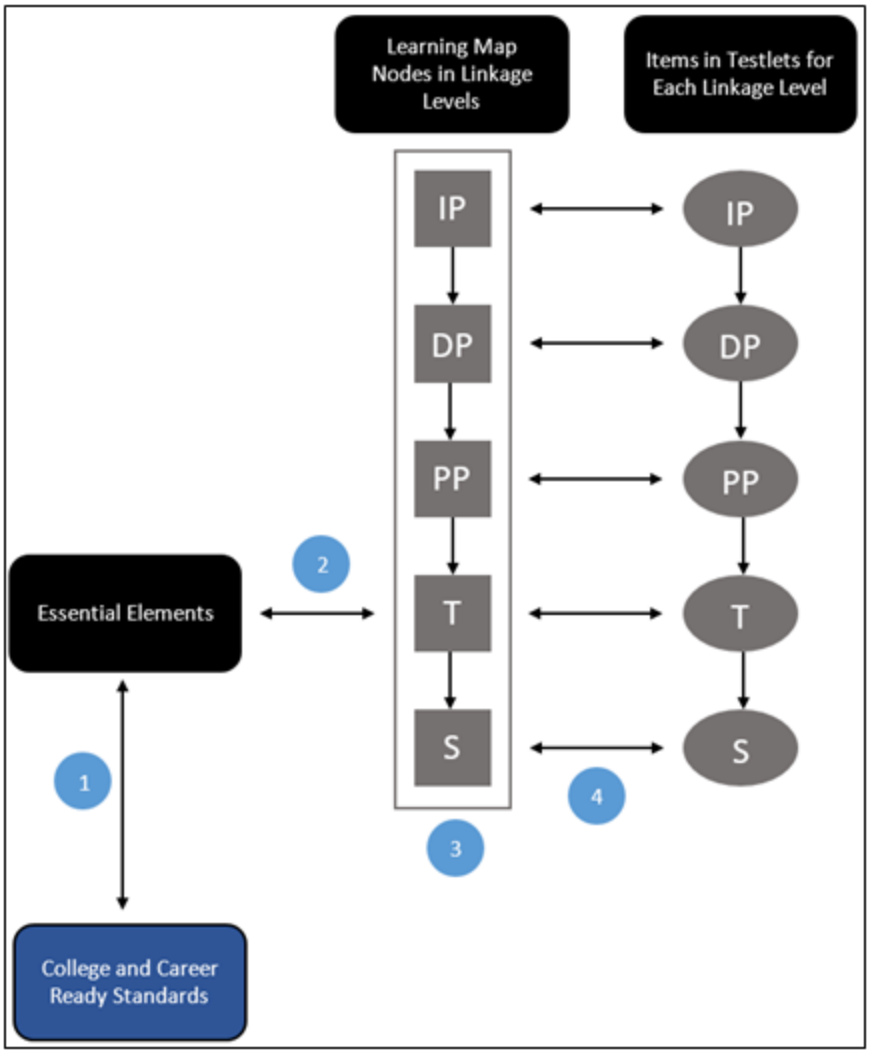
Assessments are available at each linkage level for the EE. The Target linkage level aligns to the EE. For ELA and mathematics, each of the three Precursor linkage levels aligns to a skill that precedes the Target linkage level. For ELA and mathematics, the Successor linkage level follows the Target and represents a next step beyond the skill described within the EE. The availability of assessments at all linkage levels allows students to show what they know and can do at different levels of complexity, while maintaining a connection to the grade-level expectation and fulfilling the on-grade requirements described by both the Elementary and Secondary Education Act and the Individuals with Disabilities Education Act.

Overall Structure of the Assessment System for ELA and Mathematics

The overall structure of the DLM Alternate Assessment System in ELA and mathematics has four key relationships between system elements (see Figure 2.2):

1. college- and career-readiness standards and EE for each grade level
2. an EE and its target linkage level
3. relationships between linkage levels for an EE
4. DLM map linkage levels and assessment items

Figure 2.2
Relationships in the DLM Alternate Assessment System for ELA and Mathematics



Note. IP = Initial Precursor; DP = Distal Precursor; PP = Proximal Precursor; T = Target; S = Successor.

The DLM alternate assessment is delivered as a series of testlets, each of which contains an unscored engagement activity and three to nine items. Assessment items are written to align to a linkage level and are clustered into testlets.

The consortium partner states selected a subset of the published EEs for inclusion in the test blueprint. Between 10 and 14 EEs are tested in each grade in ELA, and six to eight EEs are tested in each grade in mathematics. These assessments are used for accountability purposes, and testlets are available for all EEs included in the blueprint for grades 3 through 11. The research-based principles that guided the development of the blueprints in ELA and mathematics include:

- use of the learning map model to prioritize content that has the potential to maximize student growth in academic skills across grades
- use of knowledge of academic content and instructional methods to prioritize content that is considered important by stakeholders and central to the constructs identified in the Common Core State Standards
- prioritization of content that can be applied to real-world or workplace problems

Assessments are available at each linkage level for the EEs included on the test blueprint in each subject area. Test blueprints cover a broad range of academic content, connect skills across grades, and maximize student learning. Test blueprints identify EEs to be assessed. In 2019-2020, year-end model states adopted revised blueprints. These blueprints reduced the total number of EEs assessed in order to assess each EE with more items and support fine-grained reporting of results (for a complete description of the revision process, see DLM Consortium, 2022). The blueprint adjustment necessitated adjustments to the achievement standards. This process took place during spring 2022 (for more details see Chapter 3 of this report).

Year-End Model

The year-end model consists of ELA and mathematics assessments delivered to students in one spring assessment window. The test blueprint outlines the full set of Essential Elements prioritized for assessment, and students are assigned testlets that cover the entire blueprint. The system assigns the linkage level for each testlet based on student performance in the previous testlet. The assessment results are reported for state accountability purposes. Teachers also have the option of administering instructionally embedded assessments throughout the year, but these do not count toward summative results.

Scoring in Dynamic Learning Maps Assessments

Because of the assessment structure, all DLM assessments are scored using diagnostic modeling (see Chapter 5 of DLM Consortium, 2022). Scoring is based on linkage-level mastery rather than the total number of correct items. Students are considered masters of a linkage level if they have at least a .80 probability of mastery, as calculated through statistical modeling. Two additional scoring rules are applied: students are considered a master if they respond correctly to at least 80% of items on the testlet, or, if mastery is not demonstrated at the assessed linkage level, mastery is assigned two levels below. For each EE, scoring determines the highest linkage level mastered. Student achievement in the subject is based on the total number of linkage levels mastered. Performance is described using four levels: Emerging, Approaching the Target, At Target, and Advanced. The cut points were set during standard-setting events described in Chapter 3 of this report. Students are considered to have met proficiency when they achieve At Target or higher. Grade- and content-specific performance level descriptors (PLDs) describe the KSUs that students typically demonstrate at each performance level by grade and subject.

3. Vertical Alignment Evidence

The U.S. Department of Education peer-review guidance for statewide assessment systems requires evidence that alternate academic achievement standards are aligned so that students who meet the standards are on track to pursue postsecondary education or competitive integrated employment (Critical Element 6.3; see Office of Elementary and Secondary Education, 2018).

The Dynamic Learning Maps® (DLM®) Consortium submitted vertical alignment evidence with the initial peer-review submissions in 2015 (ELA and mathematics). That evidence was sufficient to meet the peer-review criteria at the time and no additional evidence was required.

This chapter summarizes the evidence from the original submissions, including vertical alignment of assessment content and vertical articulation of achievement standards, along with updated information resulting from a standards adjustment process conducted in 2022. More detailed descriptions are provided in the original technical manual (DLM Consortium, 2016) and in the updated technical manual (DLM Consortium, 2022).

Vertical Alignment for ELA and Mathematics

Academic achievement standards for DLM ELA and mathematics assessments are grounded in grade-level Essential Elements (EEs) and their association to the underlying DLM maps. When EEs were first developed they were aligned with general education college and career-readiness standards for the same grade. EEs were later reviewed and revised as needed to confirm they increased in complexity across grades.

The vertical progression of academic skills measured by DLM ELA and mathematics assessments is directly reflected in the underlying map structures. There is also vertical progression of content within grades, as learning map nodes are grouped into linkage levels that provide access to the EE at five levels of complexity. Maps were designed to articulate the set of skills spanning from foundational preacademic skills to college- and career-ready skills. When nodes were selected for linkage levels, content teams confirmed increasing complexity across linkage levels within a grade, as well as increasing complexity in related linkage levels across grades. Empirical evidence of linkage level ordering was collected during the fall 2013 pilot administration, where items in testlets at higher linkage levels were more difficult than those in lower linkage level testlets (Clark et al., 2014). Chapter 2 of this report further describes EE development and the learning map structure.

Nodes in the learning map model are measured by assessment items for an EE and linkage level. After the first operational administration in 2015, an external alignment study was conducted to evaluate four relationships: the alignment between the college- and career-ready standards and the EEs, the alignment between the EEs and their Target node(s) in the map structure, the progression of linkage levels within the EE (i.e., vertical alignment), and the alignment of nodes to assessment items (Flowers & Wakeman, 2016). Through panelist ratings of content and performance centrality, the study demonstrated an acceptable level of alignment between the college- and career-ready standards and the EEs, the EEs and their Target nodes in the map structure, the vertical alignment of linkage levels with an EE, and nodes and the assessments items. Following the adjustment to the blueprint in 2019-2020, an updated alignment report was produced summarizing evidence for the updated blueprint. A total of 80% of ELA EEs and 97% of mathematics EEs were rated as progressing through linkage levels

(Flowers & Wakeman, 2020). Test-development teams addressed areas needing further investigation. For example, the review identified some areas where additional nodes were required to fill in developmental steps between EEs across grades. New nodes were created when necessary and placed in appropriate areas of the map.

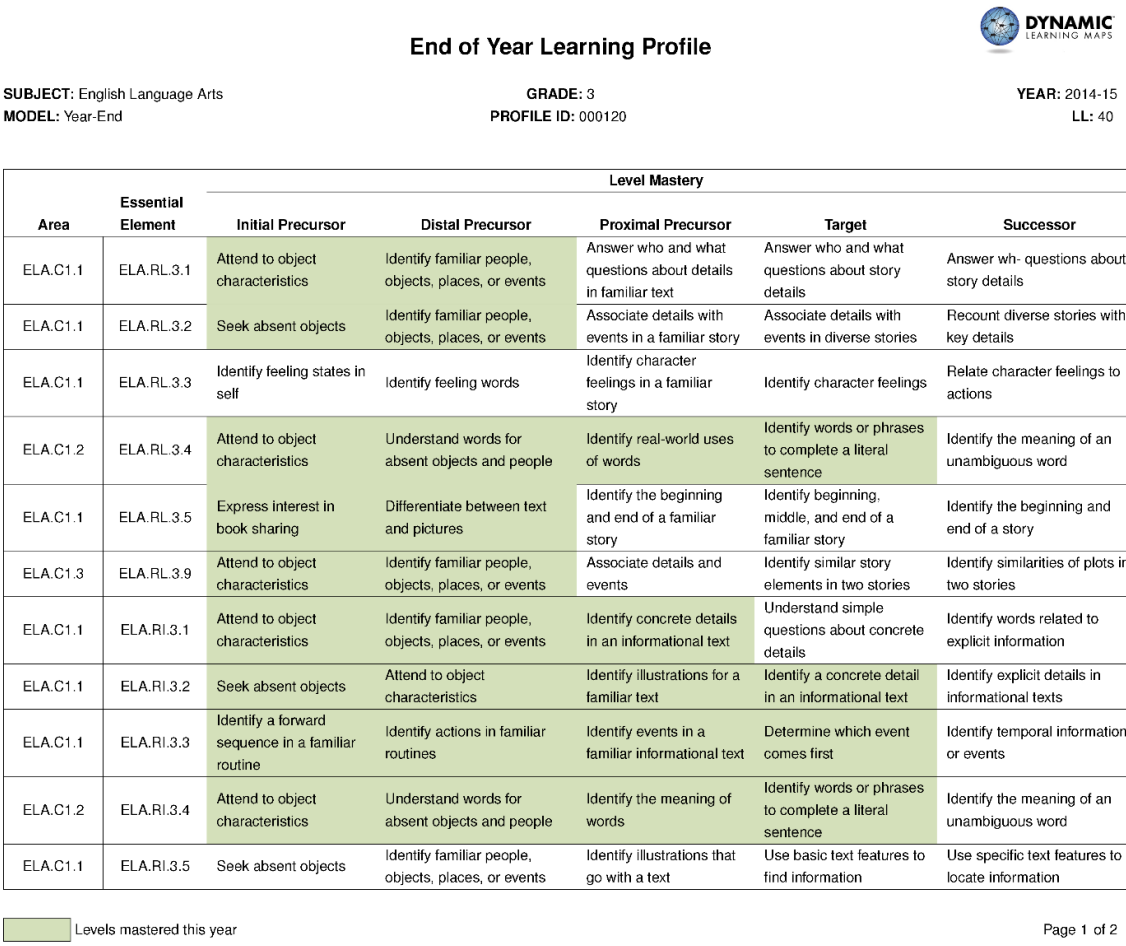
Vertical Articulation of Achievement Standards

DLM assessments describe student achievement on the EEs using four performance levels. Panelists specified cut points for the four achievement levels using a mastery profile approach (Clark et al., 2017). Panelists recommended ELA and mathematics achievement standards at a standard-setting event in June 2015. Achievement standards were adjusted in 2022 to account for the updated year-end model blueprint.

Mastery Profile Method for ELA and Mathematics

Because the DLM system is based on fine-grained learning map models and uses diagnostic classification modeling to determine students' mastery status for each assessed linkage level, the DLM Consortium selected a content-based standard-setting approach using mastery profiles. Student-performance data were used to create exemplar profiles for each subject and grade, as shown in Figure 3.1. Profiles contained a row for each EE on the blueprint (between eight and 20) and columns displaying the text of each linkage level. The total number of linkage levels possible was determined by multiplying the number of rows by the number of columns. Green shading was used to indicate mastery of the linkage level(s) for each EE. A computer program examined all mastery profiles occurring in the data to determine the three most common profiles for each possible total number of linkage levels mastered by grade and subject. Those most common profiles were used for standard-setting panel events.

Figure 3.1
Exemplar ELA Mastery Profile From Standard-Setting Event



End of Year Learning Profile

DYNAMIC LEARNING MAPS

SUBJECT: English Language Arts **GRADE:** 3 **YEAR:** 2014-15
MODEL: Year-End **PROFILE ID:** 000120 **LL:** 40

Area	Essential Element	Level Mastery				
		Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
ELA.C1.1	ELA.RL.3.1	Attend to object characteristics	Identify familiar people, objects, places, or events	Answer who and what questions about details in familiar text	Answer who and what questions about story details	Answer wh- questions about story details
ELA.C1.1	ELA.RL.3.2	Seek absent objects	Identify familiar people, objects, places, or events	Associate details with events in a familiar story	Associate details with events in diverse stories	Recount diverse stories with key details
ELA.C1.1	ELA.RL.3.3	Identify feeling states in self	Identify feeling words	Identify character feelings in a familiar story	Identify character feelings	Relate character feelings to actions
ELA.C1.2	ELA.RL.3.4	Attend to object characteristics	Understand words for absent objects and people	Identify real-world uses of words	Identify words or phrases to complete a literal sentence	Identify the meaning of an unambiguous word
ELA.C1.1	ELA.RL.3.5	Express interest in book sharing	Differentiate between text and pictures	Identify the beginning and end of a familiar story	Identify beginning, middle, and end of a familiar story	Identify the beginning and end of a story
ELA.C1.3	ELA.RL.3.9	Attend to object characteristics	Identify familiar people, objects, places, or events	Associate details and events	Identify similar story elements in two stories	Identify similarities of plots in two stories
ELA.C1.1	ELA.RI.3.1	Attend to object characteristics	Identify familiar people, objects, places, or events	Identify concrete details in an informational text	Understand simple questions about concrete details	Identify words related to explicit information
ELA.C1.1	ELA.RI.3.2	Seek absent objects	Attend to object characteristics	Identify illustrations for a familiar text	Identify a concrete detail in an informational text	Identify explicit details in informational texts
ELA.C1.1	ELA.RI.3.3	Identify a forward sequence in a familiar routine	Identify actions in familiar routines	Identify events in a familiar informational text	Determine which event comes first	Identify temporal information or events
ELA.C1.2	ELA.RI.3.4	Attend to object characteristics	Understand words for absent objects and people	Identify the meaning of words	Identify words or phrases to complete a literal sentence	Identify the meaning of an unambiguous word
ELA.C1.1	ELA.RI.3.5	Seek absent objects	Identify familiar people, objects, places, or events	Identify illustrations that go with a text	Use basic text features to find information	Use specific text features to locate information

Levels mastered this year

Page 1 of 2

Educators from consortium partner states with subject-matter and population expertise participated as panelists. Panelists used content-based judgments of the mastery profiles to specify cut points during rounds of range-finding and pinpointing exercises. During range finding, panelists used profiles for students who mastered a range of linkage levels in five-number increments. After the panelists determined an approximate cut point, profiles with linkage levels mastered adjacent to that number were used in the pinpointing exercises. Panelists discussed their content-based ratings in the context of the mastery profiles. Regression analyses were used to identify the cut points for the four performance levels. Statistical adjustments were applied to smooth distributions across grades. Impact data were generated to show the percentage of students achieving at each performance level according to the cut points. Cut points and impact data were shared with the DLM Technical Advisory Committee and DLM state partners. The state partners accepted the recommended cut points as final. Karvonen et al. (2015) provide a complete description of the standard-setting method and results.

Grade- and Content-Specific Performance Level Descriptors

Standard-setting methods often used for scaled assessments (e.g., bookmark) rely on grade- and content-specific PLDs written before the standard-setting panel to inform panelist decisions

about placement of cut scores. In contrast, with a mastery profile approach, grade- and content-specific PLDs are developed after the standard-setting panel according to the accepted cut points and other information about the underlying content.

After panelists recommended cut points during the standard-setting event, they used the linkage-level statements in the mastery profiles to assemble lists of skills typically demonstrated by students achieving at each performance level. DLM test-development teams, with expertise in each subject area, used the panelist-generated lists and additional materials to develop language for grade- and content-specific PLDs. In addition to lists assembled by panelists, test-development teams used these materials:

- blueprints
- accepted cut points
- exemplar mastery profiles used during standard setting
- Essential Element Concept Maps for each EE on the blueprint
- extended linkage-level descriptors
- sections of the DLM maps
- *The Standards for Mathematical Practice* (Common Core State Standards Initiative (n.d.); mathematics only)

Test-development teams reviewed the EEs, Essential Element Concept Maps, and linkage-level descriptors to determine skills and understandings assessed at each grade level. These skills and understandings increase in complexity from one grade to the next. Next, teams reviewed the panel-generated skill lists and cut points. The teams then used the sample mastery profiles to consider the types and ranges of student performances that could yield specific performance levels. The synthesis of standard-setting panelist judgments and content-team judgments provided the foundation for descriptions of typical performance associated with mastery at each performance level. As content teams drafted PLDs for each grade, they reviewed the PLDs in relationship to each other (and, in ELA and mathematics, to the underlying learning map models) to ensure differentiation in skills at the same performance level from one grade to the next.

While in general skills build in complexity across grades, sometimes those progressions are not immediately evident in the PLDs across grade levels. This is because the PLDs are expressions of KSUs *typically* mastered by students achieving at a particular level and because of variations in the emphases of the blueprints across grades. Not all students achieving at the level demonstrate all skills, and they may demonstrate other skills beyond those listed in the PLDs.

Table 3.1
Example Content from English Language Arts PLDs Across Grades

Grade	At Target PLD
4	The student demonstrates an understanding of language by • identifying words with opposite meanings • determining which words in a text relate to explicit information
7	The student demonstrates an understanding of language by • understanding the meaning of idioms and figures of speech • using context to identify the meaning of multiple-meaning words
10	The student demonstrates an understanding of language by • using semantic clues to identify word meaning • identifying the intended meaning of multiple-meaning words • determining the figurative meaning of words and phrases

Table 3.2
Example Content from Mathematics PLDs Across Grades

Grade	At Target PLD
4	The student calculates accurately by • adding and subtracting numbers within 20 • adding or subtracting two-digit numbers up to 100
7	The student calculates accurately by • adding and subtracting fractions with common denominators (for example, 2/5 + 1/5) • demonstrating the concept of division • multiplying numbers 1–20 by numbers 1–5 and 10
10	The student makes sense of problems, perseveres in solving them, and calculates accurately by • solving linear inequalities • reporting numerical answers with a degree of precision • solving problems using rational numbers • writing equations using different operations (for example, addition and subtraction)

The grade- and content-specific PLDs were finalized after a period of review by state education agencies, subsequent revision by test-development teams, and an editorial review.

Standards Adjustment

Because the original 2015 standard setting process applied cut points to the total number of linkage levels mastered across EEs that were on the blueprint at the time, the 2019-2020 blueprint revision required an adjustment to the original 2015 cut points.

The DLM governance board, in consultation with the DLM Technical Advisory Committee, determined that the new cut points should be reached via a statistical adjustment, rather than a full standard setting. The statistical adjustment involved (1) reducing each cut point in proportion

to the number of EEs removed and (2) further adjusting the cut points ± 2 using spring impact data to preserve performance distributions. Due to COVID-19 disruptions, step 2 was postponed from spring 2020 to spring 2022. Mastery profiles were generated for the resulting cut points and shared with the DLM governance board for review and approval.

Following adoption of the adjusted standards, the DLM test development team updated the grade- and subject-specific PLDs to reflect the revised blueprint and new cut points. For more information on the 2022 standards adjustment process, including the final cut points and impact data, see the *2021-2022 Technical Manual* (DLM Consortium, 2022).

4. Identifying Postsecondary Opportunities and Academic Skills

This chapter describes the process used to identify postsecondary education and employment opportunities, and the associated academic skills required to fulfill duties for those opportunities. During a one-day event, a panel of educators and researchers used their professional experience and background knowledge to collectively identify postsecondary opportunities; and the knowledge, skills, and understandings (KSUs) required to fulfill those opportunities; and the academic skills within the KSUs. After the event, subject-matter experts reviewed and refined the academic skill statements.

Purpose and Study Overview

The purpose of this portion of the study was to identify the kinds of academic skills that students with significant cognitive disabilities (SCD) need to pursue a range of postsecondary employment and education opportunities. We grounded the work in the opportunities and skills framework that we developed from existing literature (see Chapter 1). We recruited a panel of individuals with expertise in the population and in postsecondary transition to first identify the types of educational and employment **opportunities** currently available to students with SCD and those that may be more aspirational (i.e., new opportunities that may become available as a result of the Workforce Innovation and Opportunity Act requirements; see Chapter 1). The goal was to identify a broad sampling of opportunities, not an exhaustive list. The panelists then identified the **responsibilities** associated with those opportunities. Responsibilities are the duties necessary to pursue the opportunity. Finally, panelists identified the kinds of **KSUs** needed to fulfill those responsibilities. We asked panelists to especially focus on identifying **academic** KSUs, which we call **academic skills** to distinguish from broader KSUs throughout this chapter.

An illustration of the relationship between these concepts is in Figure 4.1. An assembly line worker may have responsibilities including starting shifts on time, following the bell or break schedule, and completing assigned repetitive tasks with speed and accuracy. Each responsibility is fulfilled using one or more KSUs. Some KSUs require academic skills (noted with asterisks in the figure). For example, to fulfill the responsibility of following the bell or break schedule, an assembly line worker would need to know how to identify the next task in a sequence of activities using ordinal numbers, a mathematics skill.

Figure 4.1
Example Opportunity; Responsibilities; and Knowledge, Skills, and Understandings (KSUs)

Opportunity: Assembly Line Worker	
Responsibilities	KSUs
Start shift on time. Follow the bell or break schedule. Complete assigned repetitive tasks with speed and accuracy.	Know how to tell time. • Decode text.* • Tell time on a clock.* Learn cues and follow instructions (arrive at station, break at correct times), return from breaks on time. • Identify next task in a sequence of activities using ordinal numbers.* Track productivity to reach goals. • Demonstrate comprehension of information.* • Identify core of a repeating pattern to continue the pattern.* • Retell/follow process in proper order.*

Note: Asterisks indicate academic KSUs.

Because the panelists had population expertise rather than academic-content-specific knowledge, and because the academic skills were to be used in a subsequent panel to evaluate their relationship to Dynamic Learning Maps® (DLM®) performance level descriptors (see Chapter 5), we recruited subject-matter experts to review and refine the panel-generated academic statements for accuracy and continuity.

Methods

We describe methods for the on-site panel event, subsequent data processing, and subject-matter expert review of KSUs to produce final academic skill statements.

Panel

Panelists were recruited for an on-site event that included four phases: (a) training; (b) panel activities to identify postsecondary employment and education opportunities, responsibilities, and KSUs including academic skill; (c) an evaluation questionnaire, and (d) post-meeting-day steps to identify remaining KSUs.

Participants

We recruited professionals with experience in secondary transition, postsecondary employment and/or education, and competitive integrated employment to participate in the one-day event. State education agency staff from DLM partner states provided names of five individuals with experience in secondary or postsecondary employment settings through vocational rehabilitation agencies, community-based employment and independent living agencies, existing postsecondary education programs, and state advisory panels. Research team members submitted names of another nine individuals with expertise as evidenced by scholarly publications or recognition in the fields of secondary transition, postsecondary education or employment, or education of students with SCD.

Fourteen email invitations to complete an eligibility survey were sent. Three people responded affirmatively to the eligibility survey, four responded that they could not attend, one declined but recommended a panelist in her place who was sent the survey and responded that she could attend. The remaining six did not respond. The invitation email was then shared with national email lists for the Council for Exceptional Children's Division on Career Development and Transition and the Division on Autism and Developmental Disabilities. From these lists, an additional eight individuals completed the eligibility survey. Three of these individuals whose background and experience met panel needs were selected, along with the four earlier affirmative responders to the eligibility survey. One panelist dropped out before the meeting. Table 4.1 summarizes the remaining six panelists' professional roles and years of experience. Panelists had between five and 29 years of experience.

Table 4.1
Panelists' Role, Experience, and State of Residence

Current role	Years of experience with population	State
District transition specialist	29	Wisconsin
National transition specialist	25	Oklahoma
University faculty/staff	23	Tennessee
Special education teacher	14	Illinois
University faculty/staff	10	Kansas
University faculty/staff	5	North Carolina

Table 4.2 identifies the number of participants with the specified expertise in working with individuals with SCD. All panelists had experience teaching or providing professional development to other individuals who work with students with SCD.

Table 4.2
*Panelists' Expertise (*N = *6)*

Expertise category	*n*
High school	
Teaching academic content	4
Teaching transition skills	4
Postsecondary	
Teaching transition skills	4
Teaching academic content	3
Teaching independent living/life skills	1
Other	
Teaching or providing professional development to individuals who work with students with significant cognitive disabilities	6
Transition planning	4
Vocational training	4
Job placement	3
Job development	3
Transition assessment	3
Job coaching	2
Employer of students with significant cognitive disabilities	1
Law/policy	1

Panel Facilitators

Three staff members from Accessible Teaching, Learning, and Assessment Systems (ATLAS) cofacilitated the event. One had more than 20 years of experience facilitating focus groups and panel-type studies (e.g., alignment, standard setting) and 20 years of experience in alternate assessment. Another had more than 18 years of experience managing federal program activities, including facilitation of multiple partners, data collection and analysis, and reporting, as well as experience leading research teams. The last staff member had more than 15 years of experience in special education, with five years of experience in alternate assessment, expertise in secondary transition, and five years of experience teaching students with SCD. A fourth staff member with expertise supporting meetings and special events provided technical support and managed the meeting software, materials, and recording.

Training

The one-day, on-site panel meeting began with training to orient panelists to (a) the DLM assessment system and students with SCD, (b) the WIOA, and (c) competitive integrated employment. Panelists viewed a series of video clips portraying individuals with SCD in employment settings in a library, hospital, and medical device company. At the conclusion of each clip, panelists identified the KSUs individuals would need to perform the job shown. Participants were then led through a discussion of academic skills versus adjacent skills, which we defined as skills that might be related to academic skills but are not truly academic. These include skills such as choice making, self-care, time management, and self-regulation.

Panelists were introduced to the opportunities and skills framework (Figure 1.2) to continue orienting participants to the task of identifying academic skills and differentiating them from nonacademic skills. Since some panelists had more expertise in transition and postsecondary

options for students with mild to moderate disabilities, we provided more examples of the population of students who take the DLM alternate assessment by showing a video of secondary students with SCD to anchor panelists' thinking to the intended population of students with SCD (WebsEdge Science, 2019).

Identification of Postsecondary Opportunities

After training, panelists shared various opportunities individuals with SCD pursue within their communities, which facilitators wrote on chart paper. Panelists also shared aspirational opportunities, in other words, those that students with SCD may not have full access to now but may be able to in the future as expectations increase and barriers are removed. The goal was to identify a sampling of potential opportunities available to students with SCD, not an exhaustive list.

Figure 4.2 lists all 57 identified employment opportunities; aspirational opportunities are bolded. Identified employment opportunities spanned the sectors of agriculture, business, arts, education, health sciences, hospitality, information technology, manufacturing, and transportation, as defined by the Advance CTE (2020 career clusters. Example opportunities included veterinary assistant, data entry clerk, baking assistant, receptionist, and farmhand. Appendix 4.A lists opportunities with their primary sector.

Figure 4.2
Identified Postsecondary Employment Opportunities

Employment opportunities	
Administrative clerk	Hospital guide
Artist [a]	IT programmer [b]
Assembly line worker	Jewelry maker
Assistant coach	Landscaper
Audio visual assistant [b]	Library aide
Auto detailer	Lyft driver [b]
Auto porter	Mechanic assistant
Automotive assistant*	Motivational speaker [a]
Baking assistant	Musician
Certified medical assistant [b]	Paper shredder (self-employed)
Certified nursing assistant [b]	Patient transportation assistant
Childcare worker	Pet sitter
Dairy farm assistant [a]	Photographer [b]
Data entry clerk [b]	Quality assurance assistant [b]
Delivery person (packages)	Receptionist
Dog walker [b]	Record scanner
Entrepreneur [a]	Recreational center assistant
Environmental services worker	Retail salesperson
Etsy merchant [a b]	Security assistant
Event setup assistant	Self-employed: salesperson (new items)
Farmhand	Self-employed: salesperson (resale items)
Flower shop assistant	Stock clerk
Food deliverer (app based) [b]	Surgical sterilization technician
Food preparer [a]	Teaching assistant
Food service worker	Vending machine attendant
Gamer (monetized) [a b]	Veterinary assistant
Greeter	Wildlife rescue worker
Handyperson	YouTuber [b]
Help desk technician [a b]	

Note. [a] opportunities that were initially identified but not carried forward in later panel activities because of time constraints. [b] aspirational opportunities for students with significant cognitive disabilities

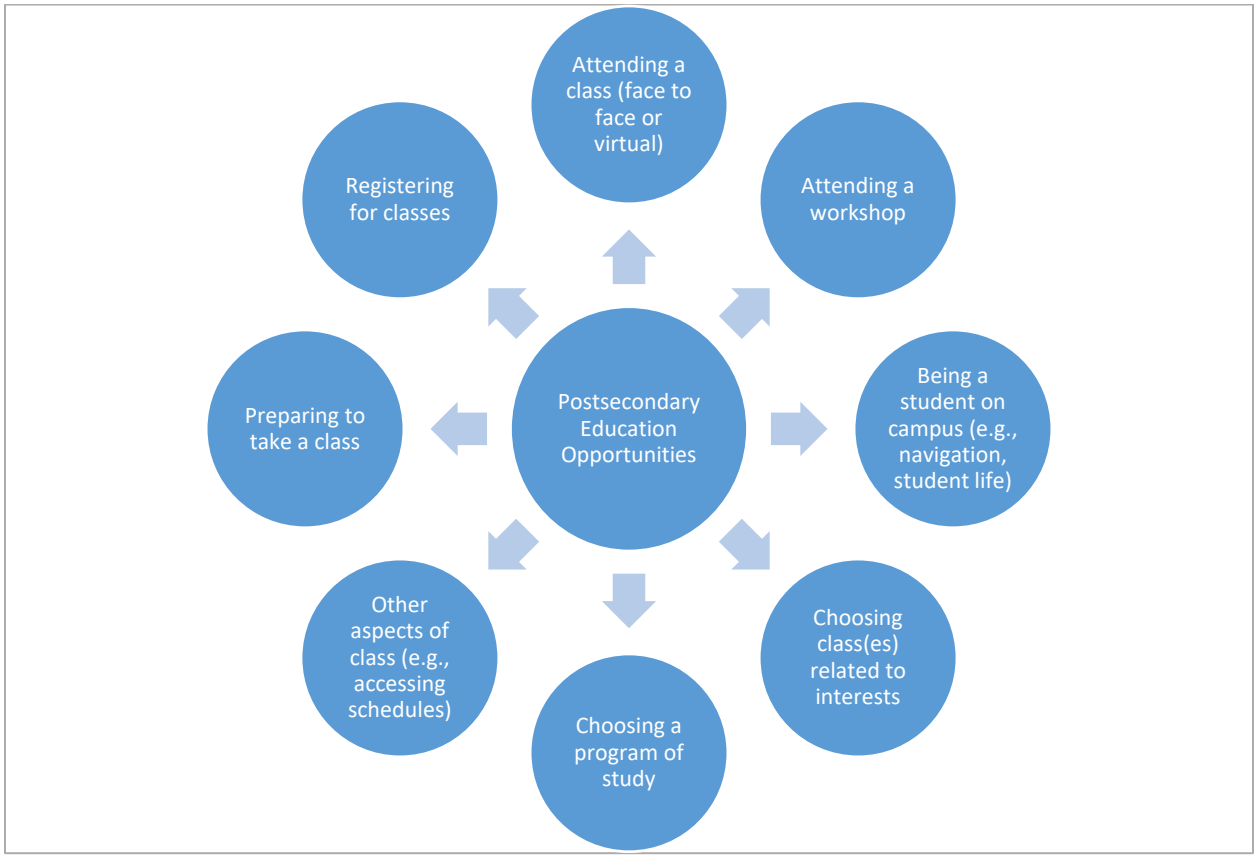
Panelists also identified seven education opportunities: attendance at a college or university, community-based classes and workshops, vocational courses that lead to certification, apprenticeships, internships, lifelong learning/continuing education, and targeted education programs such as Project Search (https://www.projectsearch.us/).

Responsibilities; Knowledge, Skills, and Understandings; and Academic Skills

To prepare for independent work, panelists first participated in a group practice activity where they identified key responsibilities; KSUs; and academic skills needed to pursue an employment opportunity as a barista in a coffee shop. Panelists first completed the activity independently. A facilitator then led group discussion to gauge whether panelists understood the link between identified responsibilities, KSUs, and academic skills. Participants discussed the key responsibilities that may be required to fulfill the role of a barista and a variety of KSUs the student may need to fulfill these responsibilities. Within the KSUs, the panel identified academic skills that might be necessary to fulfill the barista's responsibilities, such as understanding size and measurement, discriminating and measuring ingredients, and understanding methods of payment (which requires reading or deciphering skills, or both).

After the training activity, the panel discussed responsibilities for postsecondary education identifying eight responsibilities (see Figure 4.3) common across educational opportunities, regardless of type of class or setting and whether or not they were part of a degree or certificate program.

Figure 4.3
Responsibilities Common Across All Postsecondary Education Opportunities



Panelists identified employment responsibilities through independent work on each employment opportunity. Each participant self-selected eight of the 57 employment opportunities according to their familiarity with the type of position. There were no overlapping assignments; only one panelist completed work for each selected opportunity. Panelists worked independently to

complete templates identify key responsibilities, KSUs, and academic skills for each. The template they used included columns to identify the responsibilities, KSUs, and academic skills. The expectation was that the KSUs may include nonacademic skills as well, so the final academic skills column was to help them specify the academics within the KSUs. See Appendix 4.B for an example product from this activity. One panelist with a background in postsecondary education opportunities identified KSUs and academic skills associated with the education responsibilities (Figure 4.3). All panelists completed their independent work using paper copies or electronic versions of a template.

After 25 minutes of independent work on the first opportunity, facilitators paused for group discussion, including questions and clarification points, and to check progress. After the group discussion, participants continued to work independently, turning in the completed template for each opportunity as they finished it. Facilitators reviewed each submitted template to monitor completeness of KSUs and clarity of academic skill descriptions.

As panel facilitators reviewed the completed work, they noted that panelists repeatedly listed certain job-related KSUs that were not immediately recognizable as academic but where academic KSUs may be embedded. These included social skills, self-advocacy, setting or making a budget, and organizational skills. Through the rest of this report we refer to these as **soft skills**. To gather more information about what panelists intended when they identified the soft skills, facilitators convened a whole-group discussion to elaborate on the meaning of each term and recorded the responses on chart paper. For example, panelists identified topic choice, understanding context, sustaining conversation, asking complex questions, and listening comprehension as components of social skills. We retained the academic skills identified through this exercise and treated them the same as other academic skills identified on employment opportunity templates. Appendix 4.C includes a sampling of academic skills first identified as soft skills.

Postpanel Work

During the on-site event, panelists described academic skills for 33 of the 48 selected employment opportunities. Because panelists did not complete all work during the event, they identified the academic skills for the remaining 15 employment opportunities over the subsequent 3 weeks and emailed their completed work to facilitators. One panelist with experience in postsecondary education completed the task of identifying KSUs and academic skills related to the eight specific postsecondary education responsibilities identified in Figure 4.3.

Evaluation Survey

At the conclusion of the on-site meeting, five of the six panelists completed a postmeeting evaluation. Panelists rated their responses to the questions on a 4-point Likert scale, choosing from *strongly disagree*, *disagree*, *agree*, or *strongly agree*. Table 4.3 summarizes the responses. Overall, panelists provided high ratings for the quality of the meeting, its value, and their role in the process.

Table 4.3
*Number of Panelist Responses to Evaluation Items (*N = *5)*

Item	Strongly disagree	Disagree	Agree	Strongly agree
The overall goals of the panel meeting were clear.		1[a]	4	
The panel meeting was well organized.			3	2
The background information and example(s) provided the information I needed to complete my tasks.		1[a]	4	
Overall, I believe my opinions were considered and valued by the group.			1	4
Overall, the group's discussions were open and honest.				5
Overall, I believe the postsecondary opportunities we discussed covered the full range available for students with significant cognitive disabilities.			2	3
Overall, I believe the skills we discussed covered the full breadth necessary for students with significant cognitive disabilities to access postsecondary opportunities.			4	1
Overall, I believe the skills we discussed are reflective of what is currently taught to students with significant cognitive disabilities.	1	1		3
Overall, I valued the panel meeting as a professional development experience.			1	4

Note. [a] On the paper evaluations, *disagree* ratings had been marked on the line between *disagree* and *agree*.

Data Processing

After the meeting, researchers engaged in several iterations of data processing to be fully prepared for the next phase of the study. After postpanel assignments were completed, researchers transferred all data from separate worksheets per opportunity to a single spreadsheet to allow for sorting and organizing. One team member entered the data that were handwritten, and a second team member checked the entries against the original data sheets. When panelists chose to complete their worksheets electronically, those records were transferred directly to the master spreadsheet. Each component (i.e., opportunity, responsibilities, KSUs, academic skills) was entered into a separate column. For each opportunity, there were multiple rows of data with one row for each unique combination of responsibility and academic skill. Panelists identified multiple academic skills for some KSUs, as illustrated in Table 4.4. Finally, the soft skills and associated academic skills identified through group discussion (see Appendix 4.C) were included in the master spreadsheet.

Table 4.4
Example Opportunities

Opportunity	Responsibility	Knowledge, skills, and understandings (KSUs)	Academic skills
Landscaper	Maintain equipment	Safety (eye care, fingers, heat, burns, long points [sharp objects], chemicals)	Chemical reactions
			Safety words
		Proportions of gas/oil mix	Proportions
			Formulas
Baking Assistant	Follow multi-step directions	Read recipe	Vocabulary
			Order of Events

Final Versions of Academic Skill Statements

To prepare for the next phase of the study, in which a panel reviewed the relationship between the academic skill statements and DLM PLDs (see Chapter 5), the final versions of academic skill statements needed to use consistent language to describe the same skill across multiple responsibilities; and be clear enough so a new panel could imagine someone demonstrating the academic skill without being so specific that the skill could only be applied in the context of a single postsecondary opportunity. We first conducted internal reviews of the academic skill statements to evaluate whether they were specific, consistent, and of a similar grain size. Given that many panelists had expertise in transition but not academics, some academic statements were unclear and others were incomplete. For example, the skills in Table 4.4 show the academic content but not what a person would be expected to do with that content. Internal project staff conducted a limited review process that led to some proposed revisions and expansions. To guard against developing final academic skill statements that contained language too close to that of the DLM Essential Elements (EEs) or PLDs, external subject-matter experts rather than project staff conducted the final review and revision of KSUs and academic skill statements. Internal and external review processes are described next.

Internal Review

First, an ATLAS research associate with experience teaching all content to middle school students with SCD and a research-project manager who taught all content to students with SCD in prekindergarten through grade 12 reviewed the opportunities, responsibilities, KSUs, and academic skills. Neither staff member had deep familiarity with the EEs or PLDs. Where needed, they restated the academic skills using their content background knowledge to ensure statements used consistent language and had equivalent grain size. They worked independently and met during two prescheduled meetings to compare, clarify, and review each other's work.

Next, one ATLAS test-development specialist from each subject reviewed all opportunities, responsibilities, KSUs, and academic statements for their subject area. Researchers instructed the specialists to review the academic statements to ensure they captured what the responsibilities and KSUs described across opportunities. Where necessary, specialists reworded existing academic statements to capture what was described. They were also instructed to record any additional academic skills necessary to capture the full breadth of the opportunity, responsibilities, and KSUs provided by the panelists. They did not alter or delete any opportunity, responsibility, or KSU statements.

Subject-Matter-Expert Review

Subject-matter experts with doctoral degrees in their content areas of expertise (i.e., ELA, mathematics), and who were neither involved in DLM test development nor responsible for the panel study, completed a review of the opportunities, responsibilities, KSUs, and academic skills in the version of the data after test-development staff completed their review. Table 4.5 provides a description of each expert's professional experience.

Table 4.5
Subject-Matter Experts' Professional Experience

Subject-matter expert	Experience
ELA	Ph.D. in urban literacy curriculum and instruction Clinical assistant professor 22 years as a reading / ELA teacher Specific ELA content expert experience State alignment coding for content standards Alternate assessment design Statewide K–3 formative assessment
Mathematics	Ph.D. in mathematics education Associate researcher Nine years in mathematics education Specific mathematics content expert experience Alternate assessment design and development Instructional resource development Assessment-item review Mathematics instruction for preservice elementary teachers Curriculum development assistant

The subject-matter experts reviewed every responsibility, KSU, and associated academic skill statements for whether the academic skill statements captured the responsibilities and KSUs described for each opportunity. They had access to the panelists' original academic skill statements and (where applicable) revisions proposed by ATLAS staff. Using their professional judgment, subject-matter experts made several types of adjustments.

1. They determined whether the statements were specific enough to be observed in a workplace or educational setting. If not, they reworded academic skill statements.
2. They determined whether statements were written at a consistent grain size and with consistent language. When a skill was essentially the same across different opportunities and responsibilities, but the original skill statement language varied slightly, the subject-matter expert revised language so it was identical across opportunities.

3. Where academic skill statements were missing, the experts wrote statements based on the context that the responsibility and KSU(s) provided.
4. If the opportunity and responsibility did not have any obvious academic skills, the subject-matter expert indicated that the skill statements were not academic and provided a brief rationale.

Table 4.6 provides examples of the refinements the subject-matter experts applied across one responsibility for each of two separate opportunities. The academic skill lists were considered final after the external subject-matter experts finished their work and all statements were revised as needed, confirmed to be academic, or confirmed not to be academic. For a description of the process for science please see *Aligned Academic Achievement Standards to Support Pursuit of Postsecondary Opportunities: Instructionally Embedded Model* (Karvonen et al., 2020).

Table 4.6
Example Academic Skill Statement Refinement Across Internal and Subject-Matter-Expert Reviews

Opportunity	Responsibilities	Knowledge, skills, and understandings	Panel 1 academic statement	Internal review academic statement	Final subject-matter expert academic statement	Subject
Baking assistant	Follow multistep directions.	Read recipe.	Vocabulary	Demonstrate knowledge of word meanings across multiple contexts.	Demonstrate knowledge of word meanings across multiple contexts.	ELA
		Use measuring instruments.	Ordinal/ratio	Express quantities of measurement.	Express quantities of measurement in appropriate units.	Mathematics
Veterinary assistant	Feed animals and monitor if animal is eating.	Know which food goes for each animal.	Describe and compare measurement attributes	Describe and compare measurement attributes.	Classify items by common attributes.	ELA
					Use graphs and charts to interpret data.	Mathematics

Results

Panelists identified responsibilities and academic skills for 48 employment opportunities, eight education responsibilities used across seven postsecondary education opportunities, and five broad skill sets. Table 4.7 displays the final number of employment and education opportunities, responsibilities, KSUs, and academic skills for ELA and mathematics. Academic skills are presented both in terms of the percent of KSU statements that were confirmed to be academic by the end of the subject-matter expert review, and the number of unique (i.e., unduplicated) academic skills.

Table 4.7 also shows the panel results disaggregated by employment and education, and for the subset of academic skills that were associated with the soft skills (e.g., self-advocacy). The skills are not additive within a subject because the same skills were identified across multiple education and employment opportunities.

Table 4.7
Summary of Opportunities, Responsibilities, and Academic Skills Across Subjects

Subject	Opportunities	Responsibilities	Total KSUs	Total academic skills (% of KSUs)	Unique academic skills
ELA	54	246	649	454 (70%)	50
Employment	46	205	478	369 (77%)	47
Education	8	41	141	76 (54%)	12
Soft skills	—	5	30	9 (30%)	8
Mathematics	55	184	392	289 (74%)	41
Employment	47	157	319	252 (79%)	40
Education	8	27	53	23 (43%)	7
Soft skills	—	3	21	15 (71%)	13

Note. KSUs = knowledge, skills, and understandings.

When subject-matter experts were unable to clarify or reflect an academic skill given the provided context of the opportunity, responsibilities, and KSUs, they were asked to provide a rationale. The most common reason for ELA (99%) and mathematics (82%) was that the KSU did not represent an academic skill. For example, in ELA, “understand rules,” “art skills around perspective [understanding art perspective],” and “identify problem” were all skills that the ELA expert determined were nonacademic in the context of the opportunity. The mathematics expert determined “perform online bill payment” and “organizational skills” were not academic skills.

We retained all unique ELA and mathematics academic skills for the next phase of the study (see Chapter 5).

Summary

This chapter describes the steps taken to identify postsecondary education and employment opportunities and the related academic skills needed to fulfill the responsibilities for these opportunities. Panelists with experience in secondary transition, postsecondary employment and/or education, and competitive integrated employment identified 57 example postsecondary employment opportunities and seven example postsecondary education opportunities for

students with SCD. They then identified responsibilities associated with the opportunities and the KSUs required to fulfill those responsibilities. Finally, they identified academic skills within the KSUs. The panel identified academic skills within soft skills such as self-management. Subject-matter experts reviewed and revised the academic skill statements using several criteria so the final academic skill statements would be usable for the next panel. This process resulted in 50 ELA skills, and 41 mathematics skills to be carried forward for the final phase of the study (described in Chapter 5). For information on the science skills, see *Aligned Academic Achievement Standards to Support Pursuit of Postsecondary Opportunities: Instructionally Embedded Model* (Karvonen et al., 2020).

5. Ratings of Academic Skills With Alternate Academic Achievement Standards

Purpose

This chapter describes the final phase of a study to evaluate the extent to which the Dynamic Learning Maps® (DLM®) alternate academic achievement standards in the year-end model meet this criterion: “The alternate academic achievement standards are aligned to ensure that a student who meets the alternate academic achievement standards is on track to pursue postsecondary education or competitive integrated employment” (Office of Elementary and Secondary Education, 2018).

This phase of the study began with the academic skills needed to pursue postsecondary opportunities, as identified in the first panel (see Chapter 4, Final Academic Skills). These included 50 ELA skills and 41 mathematics skills. The second panel examined the relationship between the panel-identified academic skills and the kinds of academic knowledge, skills, and understandings (KSUs) typically associated with meeting the DLM alternate academic achievement standards (i.e., achieving At Target). This panel evaluated the **academic skills** and the year-end model **DLM performance level descriptors (PLDs).** We used the PLDs instead of the Essential Elements (EEs, or extended content standards) because the PLDs are more directly related to the academic KSUs expected for students whose achievement is At Target on DLM assessments. (Content standards like EEs set expectations for what students should learn in each grade, while achievement standards indicate how much academic knowledge a student demonstrates on an assessment.)

Panels determined the lowest grade where a student who achieves At Target is likely to consistently demonstrate the academic skills identified by the first panel. According to the DLM theory of action, the range of postsecondary options students might pursue, and the goal of balancing rigor and access (see Chapter 1), we formed two hypotheses:

1. The academic skills needed for postsecondary education opportunities will be aligned with At Target PLDs at a range of grades between grade 3 and high school.
2. Because academic skills may be associated with multiple opportunities and with soft skills needed for employment and education, we expected Hypothesis 1 to hold for academic skills associated with employment opportunities, education opportunities, and soft skills.

By identifying the lowest grade where a student achieving At Target is likely to consistently demonstrate the academic skill, panels identified the first point where students would be ready to pursue postsecondary opportunities that required the least complex application of the skill. Given the vertical alignment of DLM content and achievement standards, students are expected to continue their learning in subsequent grades and be ready for more-complex applications of the academic skills by the time they transition into postsecondary education and employment.

This chapter describes the two virtual subject-specific meetings, where panels of educators used their professional subject-matter knowledge and knowledge of the student population to rate the academic skills identified in Chapter 4 (see Final Academic Skills) against the DLM alternate academic achievement standards.

Methods

We conducted virtual panel meetings for each subject (i.e., ELA and mathematics). Each single-day, subject-specific panel included pre-event training and self-evaluation, panel-day training, ratings and discussion of academic skills with alternate achievement standards, and a panel-evaluation questionnaire. When time permitted, we also conducted a brief, post-rating panel focus group.

Participants

We provided a recruitment brochure to DLM state partners to recruit potential panelists within their states (see Appendix 5.A). States were asked to recruit educators who ideally had expertise across more than one grade band, specifically general educators who had some familiarity with DLM alternate assessments and special educators who taught students who take DLM assessments and who had strong knowledge of at least one academic subject. Other priorities in recruitment and selection included (a) individuals' ability to meet the obligations required for a virtual panel meeting (described in Appendix 5.A), (b) forming panels with representation of content and special education expertise, (c) variety and years of experience within panels, and (d) variety in state representation within panels.

Potential participants were asked to fill out a preliminary questionnaire that asked their title, grade band(s) taught, primary area of subject expertise, and years of experience. It also asked special education teachers if they had provided transition planning for any students who take the DLM assessments and their licensure. The recruitment yielded 114 applicants. From these applicants, we chose 12 for mathematics and 11 for ELA whose background and experience met the panel needs, with attention given to ensure coverage across grade bands and representation from general education and special education. Of those selected, five people provided consent and completed the mandatory pre-event training for the ELA panel and nine did so for the mathematics panel. Table 5.1 shows the distribution across states of all panelists and panelist characteristics. Panelists represented seven states, with the majority from Pennsylvania and New York. Seven of the panelists self-identified as a special education teacher, and five as a dual licensed teacher.

Table 5.1
*Panelist Characteristics (*N = *14)*

Characteristic	*n*
State	
Illinois	1
Maryland	1
New Jersey	1
New York	4
Pennsylvania	5
Utah	1
West Virginia	1
Gender	
Male	3
Female	11
Title	
Special education teacher	7
Dual licensed teacher	5
General education teacher	0
Other	2
Highest degree earned	
Bachelor's	2
Master's	5
Master's plus	5
Doctorate	2
Years of experience	
1–5	1
6–10	3
11–15	4
16–20	2
21+	4
Experience with transition planning	6

Table 5.2 shows the number of panelists for each subject with primary expertise in each grade band. Across all subjects, several panelists indicated expertise in more than one grade band.

Table 5.2
*Number of Panelists per Subject and Grade Band (*N = *14)*

Panel	Primary expertise (*n*)	Other expertise (*n*)
ELA		
Elementary	1	2
Middle school	2	3
High school	2	0
Total	5	
Mathematics		
Elementary	5	3
Middle school	1	5
High school	3	2
Total	9	

Panel Facilitators

The primary panel facilitator was a staff member in Accessible Teaching, Learning, and Assessment Systems (ATLAS) with more than 20 years of experience facilitating focus groups and panel-type studies (e.g., alignment, standard setting) and 20 years of experience in alternate assessment. The secondary facilitator was an ATLAS staff member with more than 12 years of experience with disability-related research and training projects, and an additional 12 years of experience in mental health practice/teaching/research/training, and with expertise in issues impacting transition to adulthood for individuals with complex needs. A third ATLAS staff member with expertise supporting meetings and special events provided technical support and managed the online meeting software, materials, and recording.

Panel Activities

To be eligible for the panel event, panelists were required to complete advance training. More training was provided the day of the panel ratings, followed by ratings and discussion of academic skills and a panel-evaluation questionnaire. When all rating activities were complete, we conducted a brief focus group when time permitted.

Training

The purpose of advance training was to ensure all panelists, regardless of prior experience with DLM assessments, had the equivalent background information they needed about the DLM assessment system and the student population to prepare them to learn about the panel procedures.

All advance training activities were provided in a Moodle course, consisting of seven videos describing

1. students with SCD
2. postsecondary opportunities for students who take DLM assessments
3. DLM EEs
4. what DLM assessments measure
5. how skill mastery is defined for DLM assessments
6. information contained in a score report
7. DLM PLDs

After watching the videos, panelists completed a self-evaluation that allowed them to judge their level of understanding of the material and ask questions before their panel. Panelists rated their understanding of topics as excellent or good for each topic (93% to 100% per topic, across panels).

Additional panelist training took place at the beginning of the virtual panel meeting. This training began with a review of less-familiar concepts that panelists had identified in the advance training self-evaluation survey. The purpose of panel-day training was to prepare panelists for their responsibilities during the virtual panel meeting. Topics covered during on-site training included

- the purpose of the panel event
- a refresher on DLM PLDs
- participant and facilitator roles and responsibilities
- an overview of postsecondary opportunities, responsibilities, and how we developed the academic skill statements
- an overview of the rating procedures
- a review of the key resources

See Appendix 5.B for a copy of the ELA panel slide deck as an example.

Materials

Before the panel meeting, panelists were given hard copies of materials needed for use during the ratings (e.g., rating guide, PLDs). Other materials (e.g., discussion guidelines) were provided electronically. A description of these materials follows.

Performance Level Descriptors

DLM PLDs provide an overview of the KSUs students demonstrate at specific performance levels on DLM assessments. PLDs for each grade and subject are posted on the DLM website at https://dynamiclearningmaps.org/assessment-results. For this study, raters used the PLD document when rating each academic skill statement, but focused primarily on the At Target PLD for each grade. The PLDs for ELA and mathematics are provided in Appendix 1.A.

Rating Guide

Panelists received a copy of the rating guide with the specific codes and definitions they would use when making their ratings. The rating guide, shown in Figure 5.1, provides the panelists' guiding question: "Using your professional judgment, what is the lowest grade in which a student who achieves At Target on the DLM alternate assessment is **80% or more likely** to be able to demonstrate this skill?"

Figure 5.1
ELA Rating Guide

Ratings of Academic Skills with Alternate Achievement Standards
Rating Guide

Guiding Question: Using your professional judgment, what is the lowest grade in which a student who achieves At Target on the DLM alternate assessment is **80% or more likely** to be able to demonstrate this skill?

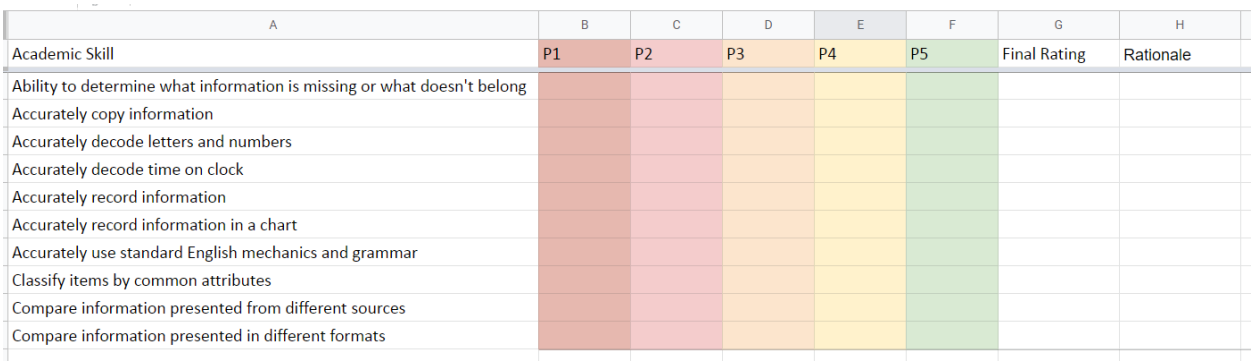
Rating	Definition
0	A student is at least 80% likely to be able to demonstrate the skill before achieving At Target in 3rd grade
3-11	A student is at least 80% likely to be able to demonstrate the skill if they achieve At Target in _____ grade
13	A student is unlikely to be able to demonstrate the skill until after achieving At Target in 11th grade
99	Academic skill statement is not specific or clear enough to support any rating (even after reviewing opportunity list)

DO think about:	**DO NOT** think about:
• How the skill could be used for a range of postsecondary opportunities	• Whether students you personally know could demonstrate the skill • How much support a student might need to show that skill in the workplace or an educational setting • How well the skill aligns to language in the PLD
Remember: • If needed, you can ask, via **chat**, for example opportunities where the skill would be used. *Always ask for example opportunities before assigning a value of 99.* • If the skill falls outside the content described in the PLDs (e.g., a speaking or listening skill, where PLDs focus on reading and writing), pick the best grade based on your professional judgment, relying on your knowledge of the skills included in the PLDs and how those relate to the skill not included.	

Rating Sheet

Individual web-based rating sheets were created for each panelist. Panelists were sent a link to their ratings sheet via Zoom individual direct messages during the meeting. The sheet contained a list of the academic skills they would be rating and a column for their rating and comments they could refer to during discussion. The sheet settings did not allow them to edit or reorder the academic skills and only allowed the codes from the ratings guide to be entered as ratings. Each sheet linked back to a master ratings sheet that only the facilitators could access. The master ratings sheet was populated with the panelists' ratings (i.e., P_1 through P_n) and had columns for the final rating and rationale. Figure 5.2 provides a snapshot of the master ratings sheet for ELA. The rating sheets contained all academic skills for each subject.

Figure 5.2
Master Ratings Sheet for ELA Ratings Panel



	A	B	C	D	E	F	G	H
	Academic Skill	P1	P2	P3	P4	P5	Final Rating	Rationale
	Ability to determine what information is missing or what doesn't belong							
	Accurately copy information							
	Accurately decode letters and numbers							
	Accurately decode time on clock							
	Accurately record information							
	Accurately record information in a chart							
	Accurately use standard English mechanics and grammar							
	Classify items by common attributes							
	Compare information presented from different sources							
	Compare information presented in different formats							

Virtual Meeting Checklist

The virtual meeting checklist (see Appendix 5.C) provided reminders about the required technology and private meeting-space requirements for the virtual panel meeting.

Guidelines for Productive Virtual Group Discussions

Given the need for discussion of ratings, combined with the virtual nature of the panel meetings, the guidelines for group discussion (see Appendix 5.D) provided panelists with specific procedures to orient them to the expectations for how to interact in the virtual panel.

Opportunities List (Facilitators Only)

Facilitators had an electronic copy of the list of opportunities, responsibilities, and KSUs associated with the academic skill statements (see example in Chapter 4, Table 4.4). Panelists did not have this list but were able to ask facilitators for examples from the list before deciding a skill was not ratable, as described in the rating procedures below.

Ratings of Academic Skills With Alternate Achievement Standards

This section details procedures for calibration, general rating procedures, and discussion after independent ratings.

Calibration

The purpose of calibration activities was to ensure panelists understood the ratings process and were able to apply any decision rules when making their independent ratings. Calibration activities also allowed all panelists to explain their ratings and hear others' explanations, which allowed them to adjust their own rules and understandings before providing their independent ratings. Discussion continued until the panel reached consensus on a final rating. Consensus was defined as general agreement by a majority of panelists and, if there was still dissent, the panelist with a non-majority viewpoint was comfortable with the majority viewpoint and could accept it as the final rating.

Panelists independently reviewed the At Target PLDs across all grades and then discussed with the group what distinguished the At Target KSUs across grade levels. This discussion oriented panelists to the skill progressions in the PLDs before they began to rate the academic skill statements. Next, the facilitator led the panel through one independent rating and group discussion of the first skill in the rating sheet. During this process, panelists independently rated the skill on their rating sheet and described the rationale for their rating. The lead facilitator

sought explanations for different opinions and listened for signs that panelists were using the guiding question as expected. When necessary, the facilitator reoriented them to the guiding question. The facilitator then recorded the final consensus rating for the skill.

After discussion of the first skill led to consensus, the panelists rated the next five skills independently. Led by the facilitator, they repeated steps 2 and 3. After discussion of the five skills concluded, the panelists indicated via Zoom-meeting voting tools or text chat whether they were comfortable moving on with independent ratings. All panelists indicated readiness to rate after the first five skills.

General Rating Procedures

Panelists determined the lowest grade at which they believed a student achieving At Target is at least 80% likely to be able to demonstrate each skill. Panelists began by evaluating each academic skill statement against the At Target level in grade 3 and worked their way up the grades until they reached the grade-level PLD that best matched the skill statement. When skills were not directly stated in the PLDs, panelists were instructed to use their professional judgment to determine if a skill was something a student would typically be able to demonstrate if they could demonstrate most of the other skills in the PLD. For skills that were not represented in the grade-level PLDs, panelists were given three additional rating options: (a) the skill falls below the range of the At Target PLDs (code = 0), (b) the skill falls above the range of the At Target PLDs (code = 13), and (c) the skill is not specific or clear enough to be rated (code = 99).

Panelists were instructed to use their professional judgment and keep in mind that the skills could be used to pursue a variety of postsecondary opportunities. They were cautioned against thinking about whether students they knew personally could demonstrate a skill, how much support a student may need to perform a specific skill in an employment or educational setting, or how well the skill aligned to the PLDs. Panelists used the At Target PLDs to rate each statement. Before determining that a skill was not ratable, they were instructed to ask the facilitator via text chat for examples of opportunities associated with the skill. Only when a panelist believed the skill was not specific or clear enough, even with example opportunities, would they code the skill as not ratable. After each panel completed independent ratings, facilitators checked for agreement and flagged skills that required discussion because at least half the panelists could not agree.

Each panelist rated most academic skills. Due to time constraints some panelists were directed to prioritize ratings only for certain skills and those prioritized assignments varied across panelists to ensure each skill was rated by at least 4 panelists in ELA and 7 panelists in mathematics.

Discussion After Independent Ratings

Facilitators identified skills for further discussion when there was not clear agreement across at least half the panelists who rated the skill. The lead facilitator led discussions of 22 (53.6%) ELA skills, and 17 (53.1%) mathematics skills. Discussions centered on panelists' interpretation of the skills and the rationales for their ratings. The final rating was determined by consensus.

Through the discussions, there were two cases when the panels were split into two subgroups with different consensus ratings because of different interpretations of the skill statements. To reach consensus, the panel divided those skills into two separate skill statements with different ratings. In these cases, the additional skill was typically at a different level of complexity and added clarifying language to accurately identify the skill that was being rated. In the ELA panel,

“Accurately copy information,” was split into “Accurately copy information (e.g. words) with understanding” and “Accurately copy information (e.g. words) without understanding” and rated at a higher level (i.e., 4) than the initial skill (i.e., 3). In the mathematics panel, “Add and subtract multi-digit numbers” was split into “Add and subtract multi-digit numbers with regrouping”, and "Add and subtract multi-digit numbers without regrouping”.

Panels also modified some academic skills to provide a more specific level of detail to come to consensus on a rating. ELA panelists modified eight skills and split one skill, and mathematics panelists split one skill. Table 5.3 displays the initial skill, and the final skill statements after the panel modified them.

Table 5.3
Academic Skill Statements Modified During Discussions

Initial skill	Final skill
Ability to determine what information is missing or what doesn’t belong	Ability to determine what information is missing or what doesn’t belong in fiction or nonfiction texts
Accurately decode letters and numbers	Accurately decode letters and numbers in common words
Accurately decoded time on a clock	Accurately decode time on a digital clock that includes numbers and am/pm
Accurately use standard English mechanics and grammar	Accurately use standard English mechanics and grammar in simple sentences
Compare information presented from different sources	Compare information and details presented from different sources
Compare information presented in different formats	Compare information (perspective) presented in different formats (including: between two texts)
Discern fact from opinion	Discern fact from opinion in a claim
Read aloud with accuracy and understanding	Read aloud with accuracy and understanding (i.e. comprehension)

Data Preparation and Analysis

Before data analysis, the skills that were added and modified for each panel were updated across each subject’s opportunities list. A staff member familiar with the panel-rating process checked these changes for accuracy and completeness before the data were analyzed. Additionally, each master rating sheet (i.e., for ELA, mathematics) was matched with each subject’s opportunity data file using the academic skill statement as the match key. Academic

skill statements often occurred more than once across opportunities. Duplicate skill statements were removed within opportunities; that is, if an academic skill statement occurred more than once across the responsibilities identified for a given opportunity, it was counted only once for the opportunity.

For each subject, the frequency distribution of academic skills was calculated across all rating categories (0–13, 99; see Table 5.3) and reported as percentages. Frequency distributions were also disaggregated by education and employment opportunities, and by the broad skill categories identified in Chapter 4 (e.g., social skills).

Focus Groups

After the ELA and mathematics panels completed their ratings, panelists participated in a brief focus group to gather high-level impressions of academic skills and postsecondary opportunities for students who take DLM assessments. The focus groups provided a check on the social validity (i.e., relevance and significance) of the study's topic. The meeting facilitator led each focus group using a semistructured approach. Focus-group questions were supplemented with additional probes where applicable.

Focus-group questions included:

1. Think about the academic statements you rated. To what extent do you think those are important skills for people to use in postsecondary education and employment settings? [not limited to students with significant cognitive disabilities]
2. Before we started the ratings, you heard about some postsecondary opportunities and learned about students with significant cognitive disabilities. In your opinion, to what extent did those opportunities reflect high expectations for students with significant cognitive disabilities?
3. Thinking about the goal of this study and the ratings your panel made, in general do you think students who achieve At Target or above are on track to pursue postsecondary opportunities, including competitive integrated employment, with supports as needed? Why or why not?

The mathematics panel only responded to the third-focus group question due to time constraints. Focus-group transcripts were reviewed together to identify common themes. Themes were then summarized across questions.

Results

Panel Ratings

Due to time constraints, 41 of 51 (80.4%) ELA skills, and 32 of 42 (76.2%) mathematics skills had associated final ratings. See Appendix 5.E for a sampling of academic skills and their final ratings.

In this section we report the distribution of ratings across grades by subject, ratings disaggregated according the skills' association to employment or education opportunities, and ratings for academic skills associated with soft skills.

Distribution Across Grades

Figure 5.3 displays the distribution of final ratings for all ratable ELA skills. A majority of ELA academic skills were rated as between below grade 3 through grade 5 (n = 27; 65.9%). In other words, the panel decided that more than half of the skills would first be commonly demonstrated

by students achieving At Target at or before grade 5. When making their ratings, panelists sometimes defined terms in the skills differently, leading to discussion of how they conceptualized the skill before coming to consensus. For example, for the statement "Demonstrate comprehension of information presented in a chart," panelists discussed the level of complexity of comprehension, determining that the simplest form does not include drawing conclusions or making inferences, and ultimately rating at Grade 3. Similarly, when deciding on the rating for "Accurately use standard English mechanics and grammar," panelists spent time analyzing where the expectation of accurate use of mechanics and grammar occurs before adding in "simple sentences" to the skill statement, and ultimately deciding on grade 9.

Figure 5.3
Distribution of ELA Skills Across the Lowest Grades in Which a Student At Target Is Likely to First Demonstrate the Skill

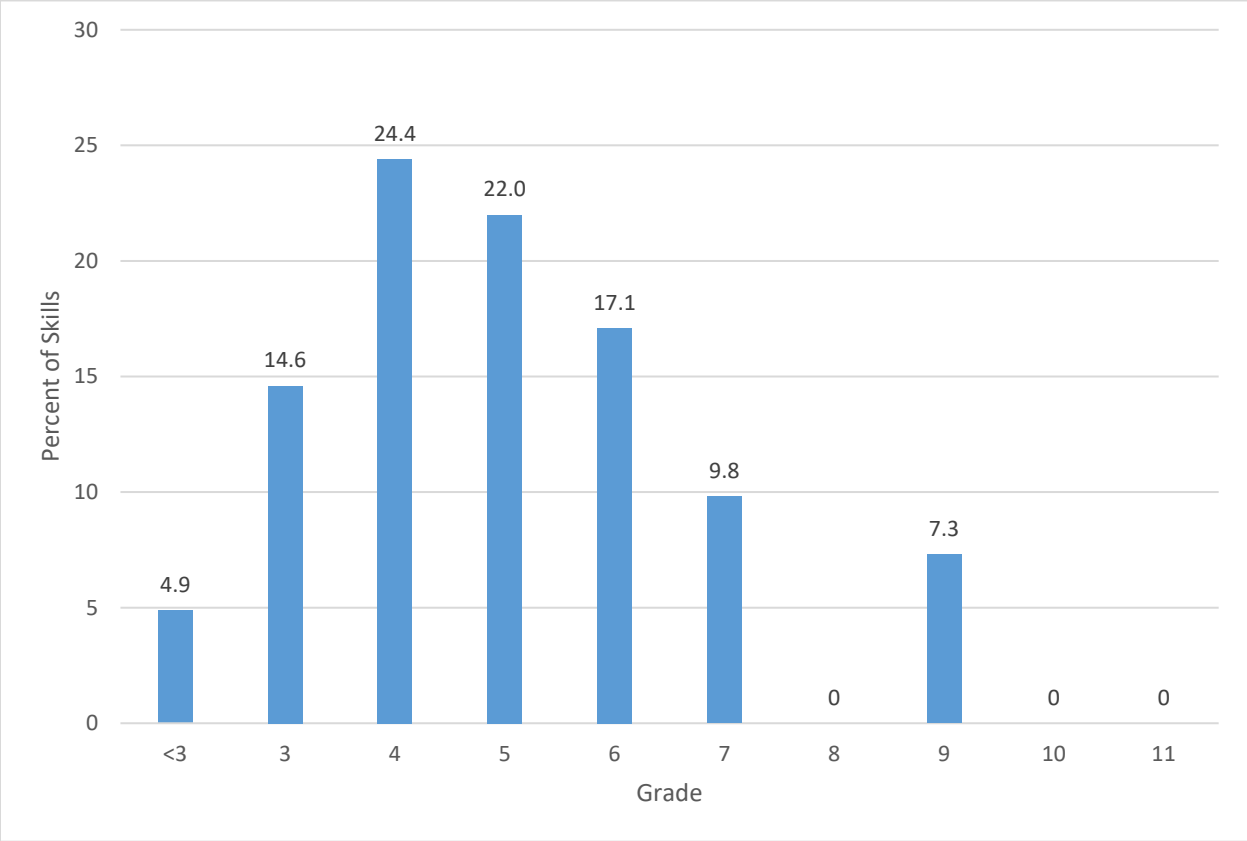
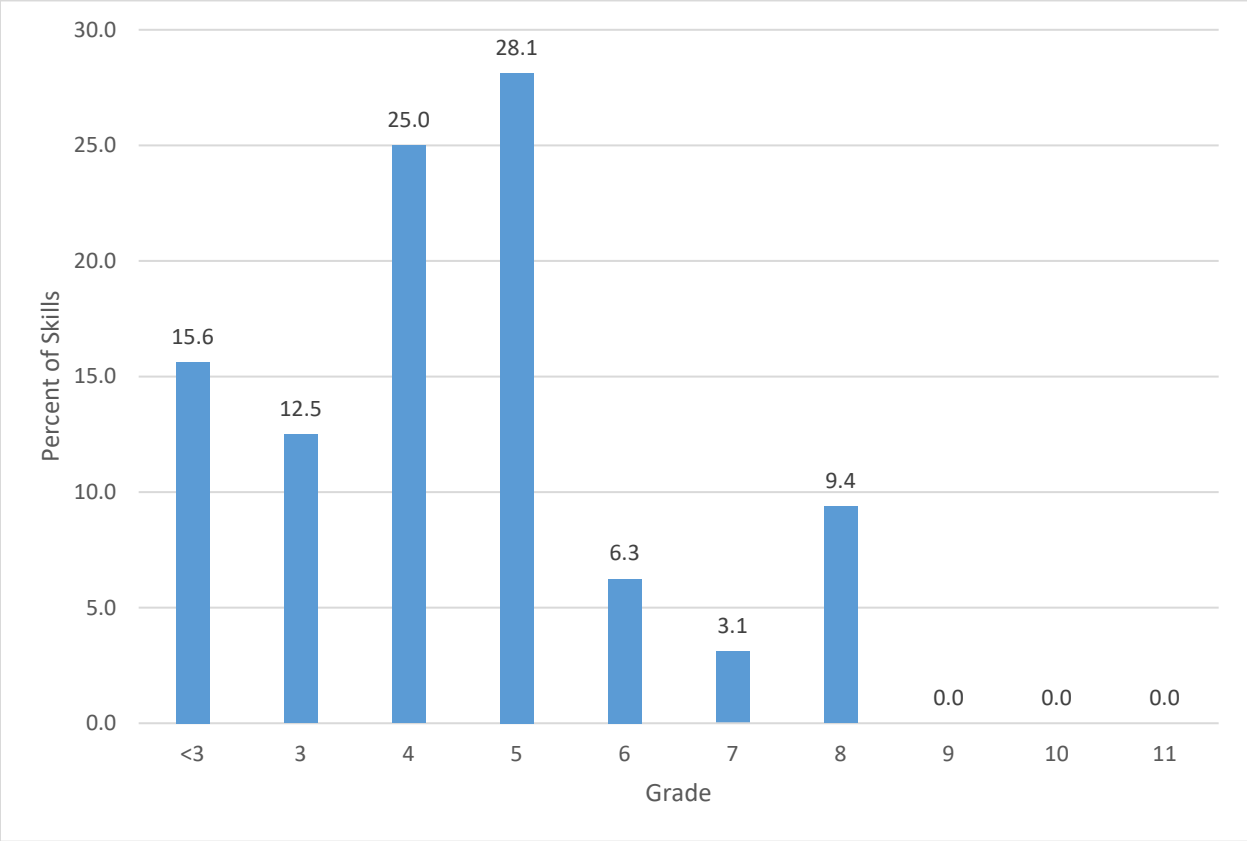


Figure 5.4 shows the distribution of ratings of mathematics skills. Most skills were rated as first appearing at grade 5 or below (n = 26; 81.3%). None were first associated with high school PLDs. Panelists had difficulty with rating three of the skills dealing with estimation because estimation is not emphasized on the DLM blueprint (and therefore not mentioned in the PLDs). Some panelists viewed estimation as a more difficult skill requiring higher-level mathematics to accomplish, but others described interpretations in which estimation was a simpler skill. After discussion, the three skills involving estimation resulted in ratings ranging from grade 4 to grade 5. Panelists also had difficulty with rating the skills that dealt with the utilization of money and time, through addition, subtraction and division. Panelists had differing opinions on which foundational skills were needed in order to complete these PLDs, and had varying opinions on

when a student would be able to demonstrate the selected skill. Some panelists viewed functions relating to time and money as requiring higher level mathematical concepts to accomplish (e.g. fractions and ratios), but others described interpretations in which these were simpler skills. Ultimately ratings ranged from grade 6 to grade 8.

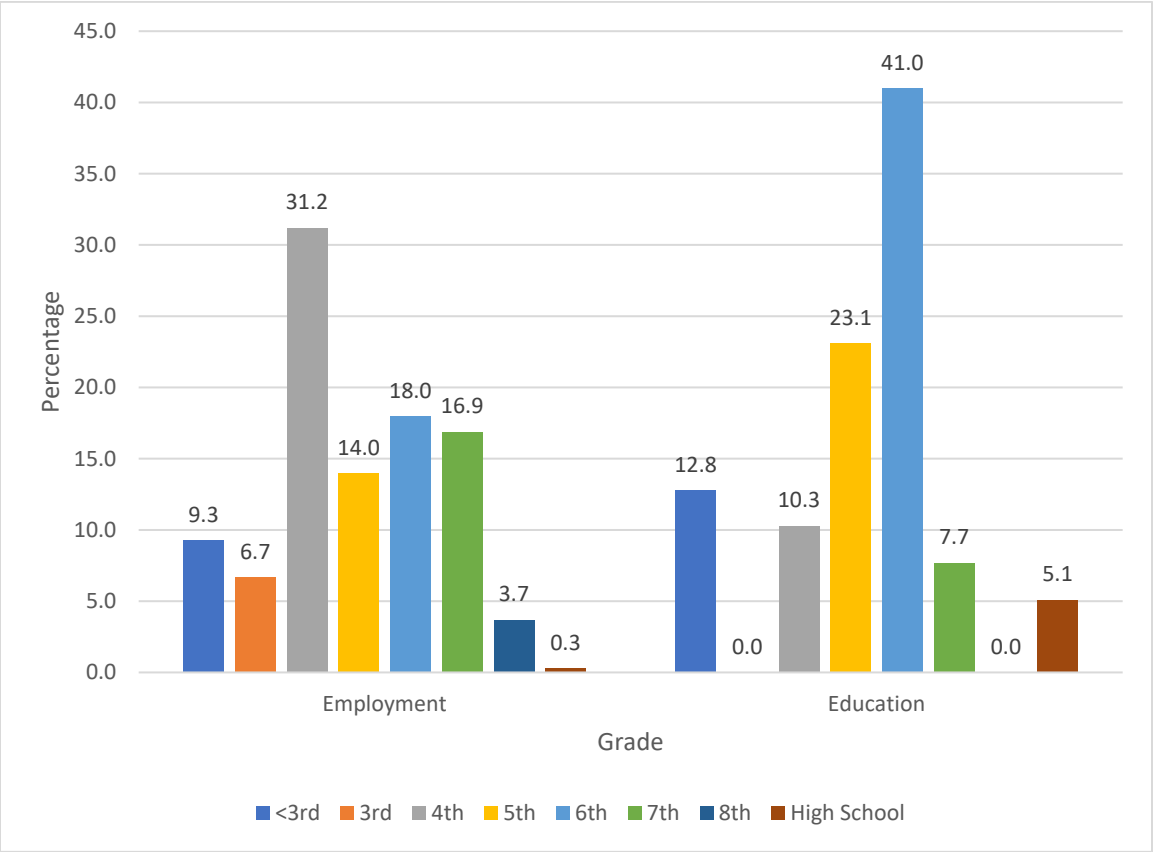
Figure 5.4
Distribution of Mathematics Skills Across the Lowest Grades in Which a Student At Target Is Likely to Demonstrate the Skill



Skills for Employment and Education

As described in Chapter 4, some academic skills are applicable across both employment and education settings, while others may be unique to one of those settings. We explored the distributions of the ratings of academic skills across all subjects by employment (*n* = 356) and education (*n* = 39) categories (see Figure 5.5). Over 61% of the academic skills were rated grade 5 or below across employment opportunities. Less than half (46.2)% were rated grade 5 or below across education opportunities, however, the number increases to 87.2% when including grade 6. Taken together, the data suggests that most skills needed to access postsecondary outcomes are introduced early in students' academic careers, and students build on these skills as they progress through school. Only about 0.3% of the employment skills and 5.1% of education skills were determined to be skills that are not demonstrated until high school by students who are At Target. No skills were rated as occurring for the first time beyond the highest high school PLD.

Figure 5.5
Distribution of Academic Skills Across the Lowest Grades in Which a Student At Target Is Likely to Demonstrate the Skill, by Employment and Education Opportunities



Soft Skills

Soft skills, such as social skills (see Chapter 4), require academic skills that are applicable across both employment and education opportunities. Panels determined that the majority of the 18 academic skills associated with the soft skills (*n* = 10; 55.5%) would be demonstrated by students who performed At Target at or before grade 5 (see Table 5.4).

Table 5.4
*Distribution of Ratings of Academic Skills Associated With Soft Skills (*N = *23)*

Grade	*n*	%
Below 3	2	11.1
3	2	11.1
4	2	11.1
5	4	22.2
6	3	16.7
7	2	11.1
8	2	11.1
9	1	5.6

Evaluation Survey

At the conclusion of each panel, 13 of 14 panelists (92.9%) completed a postpanel evaluation survey. Panelists responded to the questions using a 4-point Likert scale, choosing from strongly disagree, disagree, agree, or strongly agree. Table 5.5 shows that all panelists agreed or strongly agreed that the meeting was well organized, they were prepared to complete their ratings, and they used the PLDs when making their ratings. Furthermore, panelists felt the meeting produced realistic evaluations of the academic skills, group discussions were open and honest, and the meeting was valued as a positive professional development experience. Individual comments from the evaluation survey were positive. Panelists noted that they enjoyed hearing different perspectives from the other panelists, that they felt respected during the discussions, and that they increased their knowledge of DLM assessments.

Table 5.5
Panelist Evaluation Survey Results (N = 13)

Item	Strongly disagree	Disagree	Agree	Strongly agree	Agree + Strongly agree (%)
The overall goals of the ratings panel meeting were clear.	0	0	4	9	100%
The meeting was well organized.	0	0	0	13	100%
The advance and meeting-day training prepared me to complete my activities.	0	0	5	8	100%
I used the ***performance level descriptors*** when I evaluated each academic skill.	0	0	1	12	100%
I considered the ***other panelists' opinions*** when discussing academic skill ratings as a group.	0	0	1	12	100%
I used my professional judgment about the content and student population when I evaluated each academic skill.	0	0	1	12	100%
I am confident that the meeting produced realistic evaluations of the academic skills.	0	0	4	9	100%
Overall, I believe my opinions were considered and valued by the group.	0	1	1	11	92%
Overall, my group's discussions were open and honest.	0	0	2	11	100%
The facilitator was effective at guiding our panel through the ratings process.	0	0	1	12	100%
Participating in the process increased my understanding of the DLM assessment system.	0	1	1	11	92%
Overall, I valued the panel meeting as a professional development experience.	0	0	0	13	100%

Focus Groups

Overall panelists felt that academic skills that they rated were important skills that students needed to pursue postsecondary opportunities.

One panelist noted that students do not all have to reach the same skills in the same way, and that educators can focus on the earliest point a student demonstrates that skill. Another panelist noted that not all academic skills may be essential to master depending on what postsecondary opportunity a student may pursue. Panelists generally agreed that the range of opportunities reflect high expectations for students with SCD. One panelist noted that although the expectations were high, they are feasible to achieve. Another panelist noted that the high expectations were feasible and noted that they had students currently transitioning into postsecondary employment options.

When asked whether students who were At Target were generally on track to pursue postsecondary opportunities, panelists generally agreed. Some panelists indicated that the students achieving At Target are mastering skills that they would use in their postsecondary employment. One panelist agreed, assuming that students had access to necessary supports. Another panelist mentioned that while the academic skills are essential, they are not enough to be on track by themselves. Panelists noted the importance of students making connections between skills, as well as connecting skills to real world applications. Panelists also had some difficulty reconciling high expectations with the lower ratings of skills. They were reminded that students who are At Target for skills in lower grades have the opportunity to continue to build on those skills in more complex ways, and that people use academic skills at various levels of complexity when pursing postsecondary opportunities, so the lower grade ratings indicate where the students can apply the least complex versions of skills.

Panelists also discussed the relationship of the At Target PLDs as grades increase. Some panelists generally agreed that PLDs progressed linearly, although some panelists felt that the progressions weren't as clear.

Summary

This chapter describes virtual panel events in which academic skills were rated against the alternate academic achievement standards for ELA and mathematics. Educators with subject area expertise independently rated and then participated in discussions to reach consensus on the lowest grade level in which students who were At Target could first demonstrate those skills. Panels modified some academic skill statements and added others when they felt it was needed to rate the skill and gain consensus. Results include distributions of ratings by subject and by opportunity type. Overall, students achieving At Target in lower grade levels demonstrate the least complex application of the ELA and mathematics academic skills. Nearly two-thirds (66%) of ELA skills and 81% of mathematics skills were rated at grade 5 or below. The majority of academic skills are expected of students achieving At Target by grade 5 for employment opportunities and grade 6 for education opportunities. In other words, the least complex version of many skills needed in postsecondary employment and education opportunities are associated with meeting achievement standards (i.e., At Target) before high school.

Chapter 6 describes the implications of these results as they pertain to Critical Element 6.3: "*The alternate academic achievement standards are aligned to ensure that a student who meets the alternate academic achievement standards is on track to pursue postsecondary education or competitive integrated employment.*"

6. Conclusion

This report describes evidence of the extent to which Dynamic Learning Maps® (DLM®) year-end model alternate academic achievement standards are aligned to ensure that a student with significant cognitive disabilities (SCD) who meets the alternate academic achievement standards is on track to pursue postsecondary education or competitive integrated employment. Findings support our hypotheses that:

1. The academic skills needed for postsecondary education opportunities will be aligned with At Target PLDs at a range of grades between grade 3 and high school.
2. Because academic skills may be associated with multiple opportunities and with soft skills needed for employment and education, we expected Hypothesis 1 to hold for academic skills associated with employment opportunities, education opportunities, and soft skills.

Students who achieve At Target on the DLM alternate assessments possess a range of academic knowledge, skills, and understandings (KSUs) that are necessary to pursue a variety of postsecondary education and employment opportunities.

This study is grounded in a view of postsecondary opportunities consistent with the Individuals with Disabilities Education Act (IDEA) goal that children with disabilities receive an education that prepares them for "further education, employment, and independent living" (IDEA, 34 C.F.R. §300.1) and the Workforce Innovation and Opportunity Act requirement that individuals with the most significant cognitive disabilities have opportunities to pursue competitive integrated employment. The first panel identified a wide range of opportunities across postsecondary education and several employment sectors. All of the identified employment opportunities can meet the definition of "competitive integrated employment" when the right employer conditions and individualized supports are in place. Panelists identified opportunities that historically may not have been pursued by most students with SCD because the opportunities were inaccessible or because students did not leave high school with the necessary skills. The panel also identified academic skills embedded within soft skills, which are important for a range of purposes including citizenship and community integration.

Although the study is based on a sampling of postsecondary opportunities that reflect high expectations for what students with SCD may pursue in the future, it also accounted for the fact that individuals with SCD need a range of options to access those opportunities. As those access points vary, so does the complexity of the academic skills needed to pursue the opportunities. We asked panelists to identify the lowest grade in which a student who meets the achievement standard was likely to have the skill, in order to ensure students would be able to access to opportunities requiring the least complex version of the skill. In both subjects (ELA, mathematics), students who meet achievement standards in elementary grades can demonstrate the least complex versions of some of the academic skills needed to pursue postsecondary opportunities. Fewer academic skills were first associated with At Target achievement in middle and high school grades.

According to the evidence of vertical alignment of the Essential Elements and the alternate achievement standards, students who achieve At Target in a lower grade are expected to continue learning and make progress toward more-complex applications of the academic skills. For example, panelists rated "add and subtract multi-digit numbers without regrouping" as one that a student who achieved At Target in grade 4 would be able to demonstrate. That skill

provides access to an opportunity to work as a stock clerk. But the student who learns to apply that skill in more-complex ways will have access to other employment opportunities (see Table 6.1 and Table 6.2).

Table 6.1
Example Progression of a Mathematics Skill and Application in Postsecondary Opportunities

Grade	Skill	Use in postsecondary opportunities
4	Add and subtract multidigit numbers without regrouping.	Check inventory, stock items.
7	Apply the properties of addition or multiplication to solve problems.	Calculate perimeter of garden to determine how much fence is needed.
10	Represent and solve real-world problems.	Determine profit on sold merchandise and calculate how much more inventory can be ordered.

Note: The grade 4 skill was rated by panelists. Grade 7 and 10 skills are represented in the performance level descriptors.

Table 6.2
Example Progression of an English language Arts Skill and Application in Postsecondary Opportunities

Grade	Skill	Use in postsecondary opportunities
3	Accurately copy information (e.g., words) without understanding	Enter information into a database
6	Accurately record information in a chart	Record information about inventory of stock in a chart
9	Use technology to gather information	Run query to generate inventory restock report

Note: The grade 3 and 6 skills were rated by panelists. The grade 9 skill is represented in the performance level descriptors.

Students who achieve At Target in high school are academically prepared to pursue postsecondary education or competitive integrated employment that requires more-complex demonstrations of academic skills. Even if a student achieves At Target in lower grades but reaches only Approaching the Target by high school, that student would still have built on their earlier mastery of a variety of academic skills necessary to pursue postsecondary opportunities. For example, consider a student who achieved At Target in grade 5 mathematics and by high school was interested in pursuing a postsecondary employment opportunity that requires mathematics skills. By grade 5, the student would have mastered about half of the mathematics skills associated with opportunities identified in this study (see Figure 5.4). That student would be able to continue developing and integrating those skills in middle and high school and, upon completing high school, be ready to pursue postsecondary employment in a position that requires those math skills to fulfill the position's responsibilities. The same premise holds for academic learning across grades for all students, not just those with SCD.

Strengths and Limitations

Until the 2018 revision to U.S. Department of Education peer review Critical Element 6.3, there was no historic precedent for evaluating whether alternate academic achievement standards support student readiness to pursue postsecondary opportunities. This study borrowed from well-established methodologies on related topics (e.g., alignment, standard setting) where possible and was designed to be consistent with the goals and assumptions in the DLM Consortium's theory of action. New methods (e.g., panel rating of academic skills) were piloted and refined before panel meetings. Procedural evidence (e.g., panel evaluations) was collected through both panel studies. A member of the DLM Technical Advisory Committee (TAC) externally reviewed materials, trainings, meeting recordings, and results of the academic skills ratings process and provided feedback to the full TAC (see Appendix 6.A). Overall, the TAC member determined that the panel was well-planned and accommodating; panels were implemented with fidelity; and discussion was encouraged and all voices were considered. Finally, the DLM TAC advised on overall study design and reviewed results and interpretations based on the earlier body of vertical alignment evidence and the new panel studies. The TAC determined that the methodology was sound and the results were likely to be useful to DLM partner states (see Appendix 6.B).

Despite the study's strengths, there are also some limitations. The study is based on a sample of opportunities and responsibilities, not the entire range of what students with SCD may pursue after high school. While the sample was broad, there are likely other academic skills applicable in other settings that were not identified and evaluated in this study. We relied on panelists with deep expertise in postsecondary transition to identify postsecondary opportunities and associated responsibilities. These panelists were less well-versed in the language of academic content standards and PLDs, so the initial descriptions of academic skills were more generic and repetitive than anticipated. We added the step whereby subject-matter experts refined the academic skill statements to ensure the skills were of the right grain size for the second panel to evaluate. In the future, a similar study may benefit from a panel composed of experts in transition, postsecondary education and employment, and academic instruction. Given more time and resources, job-analysis techniques could be used to generate more-complete lists of responsibilities and more context-dependent academic skill statements.

The panel that rated academic skills had a cognitively challenging task. Although the procedural evidence supported the overall trustworthiness of the results, the panels had more difficulty with their ratings in two situations. Consensus discussions were more extensive when panelists defaulted to thinking about when they introduced topics in their own classrooms rather than when a student who is At Target would be able to demonstrate the skill. There was also more discussion when the academic skill was more distal to the language of the PLD because the topic was not emphasized in DLM assessments (e.g., estimation in mathematics). When panelists were not able to come to agreement after some discussion, they were given examples of opportunities in which the skill might be used. This added context was important for helping them reach consensus.

Implications and Future Studies

This study highlights the importance of academics for students with SCD as they pursue a wider range of postsecondary opportunities, and how DLM assessment results can provide evidence that students who meet achievement standards are on track to pursue those opportunities.

State partners can use these results to target technical assistance to districts and emphasize partnerships with state and district transition specialists to effectively combine relevant and challenging academic instruction with transition education.

This study was delimited to evaluation of the academic skills needed to access postsecondary opportunities. There are many other factors that affect whether an individual is successful in their pursuits, such as self-determination, family attitudes and supports, and community contexts. While students may leave school ready to pursue postsecondary opportunities and are able to continue learning, employers may lack awareness of what individuals with SCD can do. Professionals who work with students with SCD (e.g., transition specialists, vocational rehabilitation staff) can play an important role in educating employers so they provide more opportunities. Revising high school curricula to better integrate academics with transition could also help bridge the gap between student readiness and postsecondary employer/educator readiness to provide opportunities. To gain a more complete view of how students' academic KSUs and nonacademic experiences in high school support access to postsecondary opportunities, researchers could track students through high school and into their postsecondary pursuits.

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Aligned Academic Achievement Standards to Support Pursuit of Postsecondary Opportunities: *Year-End Model* – Appendices

Contents

DLM® Performance Level Descriptors–ELA: Grade 3

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically can identify familiar people, objects, or places; identify feeling words; identify sequences; and identify text structure when reading literature and informational text. The student indicates and identifies familiar people, objects, or places associated with a text by • recognizing similar and different physical characteristics of objects • understanding words for absent objects or people • attending to object characteristics when verbally cued • seeking objects that are absent or are of interest to the student The student identifies feeling words by • identifying personal feelings The student identifies sequences and text structure by • noticing new objects • identifying forward sequences from familiar routines When writing, the student • attends to objects, people, or pictures • makes a choice between two objects
Approaching the Target	A student who achieves at the **approaching the target** performance level typically can identify details and facts, demonstrate an understanding of language, identify feeling words, and identify text structure when reading literature and informational text. The student identifies details and facts by • recognizing similar or different physical characteristics of objects • identifying and understanding relationships between concrete details • answering who or what questions about texts The student demonstrates an understanding of language by • identifying words with the same, similar, or different meanings • identifying real-world uses of words The student identifies and understands feeling words by • identifying the feelings of characters The student identifies text structure by • recognizing pictures from familiar texts When writing, the student • selects a familiar topic • connects two or more words

At Target	A student who achieves at the **at target** performance level typically can identify details and facts, demonstrate an understanding of language, identify feelings, and recognize text structure when reading literature and informational text. The student identifies details and facts by • identifying concrete details • answering who, what, when, where, or why questions The student demonstrates an understanding of language by • determining words or phrases that complete literal sentences from texts The student identifies feelings by • identifying personal feelings • identifying character feelings The student identifies text structure by • determining which event comes first in a text • using text features to locate information • identifying common elements in two texts When writing, the student • uses facts and details to write about a topic • expresses more than one idea
Advanced	A student who achieves at the **advanced** performance level typically can recognize details, facts, and supporting points and reasons made by the author; demonstrate an understanding of language; identify feelings; and recognize text structure when reading literature and informational text. The student recognizes details, facts, and supporting points and reasons made by the author by • associating concrete details with events The student demonstrates an understanding of language by • understanding definitions for unambiguous words in a text • identifying words or phrases to complete literal sentences The student identifies feelings by • relating characters' feelings to their actions The student identifies text structure by • identifying the temporal order of information or events in a text • using text features to locate information • comparing elements of two texts When writing, the student • selects an informational topic • includes information from resources to support the topic • expresses complete thoughts

DLM Performance Level Descriptors–ELA: Grade 4

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically can identify familiar people, objects, or places; identify text elements; and demonstrate an understanding of language when reading literature and informational text. The student identifies people, objects, or places associated with a text by • attending longer to a new object that has been added to a pair of familiar, identical objects • indicating a similar object from a group of two similar objects and one different object • indicating a different object from a group of two identical objects and one different object • naming objects from pictures • indicating objects or pictures from named categories • indicating familiar people, objects, or places The student identifies text elements by • identifying character actions • identifying major events The student demonstrates an understanding of language by • identifying words with similar or different meanings When writing, the student • identifies familiar people, objects, or places • understands object names • understands that letters are used to write words • identifies the first letter of their name • recognizes when a letter is uppercase or lowercase

Approaching the Target	A student who achieves at the **approaching the target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • describing characters • identifying how characters' actions result in consequences • identifying the theme of a familiar story The student demonstrates an understanding of language by • providing real-world connections between words and their uses The student identifies text structure by • using pictures or objects related to the text to learn additional information • identifying the beginning, middle, and end of a text • determining when two different texts on the same topic make a similar statement When writing, the student • identifies words that describe familiar people, objects, or places • uses letters to create words • demonstrates an understanding of capitalization
At Target	A student who achieves at the **at target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying details related to people, events, or ideas • comparing key details • identifying the theme of a familiar story The student demonstrates an understanding of language by • identifying words with opposite meanings • determining which words in a text relate to explicit information The student identifies text structure by • determining when two different texts on the same topic make a similar statement When writing, the student • identifies words, facts, details, or other information related to a topic • spells words phonetically using letter-sound knowledge and common spelling patterns • capitalizes the first letter of a sentence

Advanced	A student who achieves at the **advanced** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • using details to describe characters, settings, and events • using details to answer questions • identifying the overall topic of a text The student demonstrates an understanding of language by • identifying words with similar meanings The student identifies text structure by • determining if a text provides information about events, gives directions, or provides information on a topic • comparing and contrasting details in two texts When writing, the student • provides facts, details, or other information related to the topic • spells words with inflectional endings • uses correct capitalization when writing a title

DLM Performance Level Descriptors–ELA: Grade 5

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically can identify familiar people, objects, or places associated with a text; identify text elements; demonstrate an understanding of language; and identify text structure when reading literature and informational text. The student identifies familiar people, objects, or places associated with a text by • identifying an object associated with a familiar routine • indicating objects with a given property • interacting with an object in an expected way • indicating objects that are the same • identifying familiar people, objects, or places The student indicates text elements by • identifying character actions in a story • identifying major events in a familiar story • identifying the setting of a familiar story • understanding the relationship among multiple concrete facts or details The student demonstrates an understanding of language by • identifying real-world uses of words • identifying words with similar or different meanings The student identifies text structure by • identifying objects or illustrations from familiar texts When writing, the student • identifies words that describe familiar people, objects, or places • makes a choice between two objects • demonstrates an understanding of who, what, when, where, or why questions

Approaching the Target	A student who achieves at the **approaching the target** performance level typically can identify objects associated with a text, identify text elements, and demonstrate an understanding of language when reading literature and informational text. The student identifies objects associated with a text by • identifying objects within a category The student identifies text elements by • identifying and comparing characters • identifying details • identifying the setting • identifying major events • identifying the narrator • identifying how a character's actions result in consequences • finding similarities between key details • identifying two points made by the author, how they relate to each other, and reasons that support them The student demonstrates an understanding of language by • determining the meaning of unambiguous words When writing, the student • identifies details related to a personal experience • produces facts and details about a topic

At Target	A student who achieves at the **at target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • comparing different characters • finding similarities and differences between key details • identifying reasons that support points made by the author • determining the narrator's point of view The student demonstrates an understanding of language by • using sentence context to identify a missing word • using context clues to determine meaning • identifying domain-specific words The student identifies text structure by • using text features to locate information • comparing and contrasting details in two texts When writing, the student • introduces an informational topic • conveys information about the topic • provides facts or details related to the topic
Advanced	A student who achieves at the **advanced** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • contrasting different characters • determining which details contribute to the main idea of a paragraph • identifying examples that support the points made by the author The student demonstrates an understanding of language by • understanding the use of word choice to influence the meaning of a text The student identifies text structure by • comparing and contrasting the main points of two texts When writing, the student • introduces an informational topic • includes one or more facts or details related to the topic • conveys both ideas and information

DLM Performance Level Descriptors–ELA: Grade 6

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically can identify familiar people, objects, places, or routines; demonstrate an understanding of language; and identify text structure when reading literature and informational text. The student identifies familiar people, objects, places, or routines associated with a text by • identifying actions in familiar routines • identifying similar or different objects • identifying objects within a category The student demonstrates an understanding of language by • understanding action words • using property words to identify familiar objects • identifying descriptive words • determining words that complete literal sentences in texts The student identifies text structure by • differentiating between text and pictures • identifying illustrations from familiar texts When writing, the student • makes a choice between two objects • identifies words that describe familiar people, objects, or things • demonstrates an understanding of who, what, when, where, or why questions • identifies details about a personally relevant photograph or object

Approaching	A student who achieves at the **approaching the target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying character feelings and associated actions • identifying details • identifying events The student demonstrates an understanding of language by • identifying words with opposite meanings • identifying words with multiple meanings • determining word meaning using context clues The student identifies text structure by • understanding the purpose of a text's structure When writing, the student • selects a topic • includes one fact about the topic
At Target	A student who achieves at the **at target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying the main idea • determining explicit and implicit details • identifying details that defend a claim The student demonstrates an understanding of language by • understanding words with similar or different meanings • understanding the meaning of similes and metaphors The student identifies text structure by • recognizing that titles reflect text structure • comparing perspectives between two texts When writing, the student • introduces an informational topic • includes facts and details related to the topic

Advanced	A student who achieves at the **advanced** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying the consequences of character actions • identifying the author's point of view • identifying details that support claims • identifying explicit information and where inferences can be drawn The student demonstrates an understanding of language by • using semantic clues to identify word meaning • identifying synonyms and antonyms • identifying figures of speech The student identifies text structure by • determining how facts, steps, or events fit the text structure When writing, the student • introduces a topic and uses clear organization • includes one or more facts or details related to the topic

DLM Performance Level Descriptors–ELA: Grade 7

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically can identify familiar people or objects, identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies familiar people or objects associated with a text by • understanding the function of objects • anticipating the consequences of a pattern of actions with objects The student identifies text elements by • identifying characters • identifying details • identifying the setting • identifying major events The student demonstrates an understanding of language by • understanding words for absent objects or people The student identifies text structure by • differentiating between text and pictures • matching a picture representation with a real object When writing, the student • makes a choice between two objects • identifies words that describe familiar people, places, things, or events • understands that specific members belong to categories • understands that objects have a function • identifies the first letter in their name • demonstrates understanding of who, what, when, where, or why questions • identifies functional words to describe common people, places, objects, or events • draws conclusions based on category knowledge • recognizes the first word to read on a page • uses letters to create words

Approaching the Target	A student who achieves at the **approaching the target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • answering explicit questions • identifying key points made in a text • recognizing the main idea of a paragraph The student demonstrates an understanding of language by • identifying the definition of a word The student identifies text structure by • identifying the beginning and end of a familiar text • determining the structure of a text • recognizing that titles reflect text structure and purpose • identifying common elements in two texts on the same subject When writing, the student • includes information about a topic • strengthens the message of written work by adding more information • recognizes domain-specific words in text • recognizes end punctuation • uses spelling patterns in familiar words to spell new words

At Target	A student who achieves at the **at target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying the main idea • understanding the relationship among individuals, events, or ideas The student demonstrates an understanding of language by • understanding the meaning of idioms and figures of speech • using context to identify the meaning of multiple-meaning words The student identifies text structure by • understanding sequencing • understanding how parts of the text affect overall text structure • identifying similarities or differences between two texts When writing, the student • introduces an informational topic and conveys ideas and information • provides facts, details, or information related to the topic • selects domain-specific vocabulary • uses end punctuation • spells words phonetically using letter-sound knowledge and common spelling patterns

Advanced	A student who achieves at the **advanced** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • understanding the relationship between story elements • summarizing a familiar informative text The student demonstrates an understanding of language by • determining how word choice persuades or informs The student identifies text structure by • comparing and contrasting details between two texts When writing, the student • introduces a topic and uses clear organization • includes one or more facts or details related to the topic • uses domain-specific vocabulary • uses commas • spells words with inflectional endings

DLM Performance Level Descriptors–ELA: Grade 8

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically can identify familiar people or objects, identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies familiar people or objects associated with a text by • understanding the functions of objects • identifying objects associated with a familiar routine or purpose • identifying objects within a category • identifying familiar people The student identifies text elements by • understanding personal opinions The student demonstrates an understanding of language by • identifying descriptive words • identifying similar or different meanings of words The student identifies text structure by • identifying a forward sequence in a familiar routine When writing, the student • makes a choice between two objects • identifies words that describe familiar people, places, things, or events • uses single words to communicate • identifies when objects belong in a broader category • identifies the end of a familiar routine • understands who, what, when, where, or why questions • identifies perceptual words to describe common people, places, objects, or events • produces a two-word message • draws conclusions based on category knowledge • indicates an ending

Approaching the Target	A student who achieves at the **approaching the target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying details • identifying character actions • identifying a character's response to a challenge • identifying emotional change in characters • identifying the main points of a text • identifying details that support the main ideas The student demonstrates an understanding of language by • determining the literal meaning of words and phrases The student identifies text structure by • identifying the beginning, middle, and end of a familiar story When writing, the student • includes information about a topic • provides facts, details, or other information related to the topic • connects two or more words • selects domain-specific vocabulary • produces a concluding sentence
At Target	A student who achieves at the **at target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • associating character actions with their causes • identifying multiple main ideas in a text • identifying the relationship between points and supporting reasons • identifying implicit information in a story • identifying the author's point of view and purpose for writing a text The student demonstrates an understanding of language by • using context to identify the meaning of multiple-meaning words The student identifies text structure by • identifying structural similarities between two texts When writing, the student • introduces an informational topic and conveys ideas and information • includes one or more facts or details related to the topic • expresses a complete thought • uses domain-specific vocabulary • produces a conclusion

Advanced	A student who achieves at the **advanced** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying inferred information • identifying a summary of a text that uses details • comparing theme, plot, or story elements of two stories • comparing authors' viewpoints in two texts The student demonstrates an understanding of language by • determining the connotative meaning of words and phrases The student identifies text structure by • identifying deviations from chronological order in a text • identifying the structural similarities or differences between two texts • comparing and contrasting two different types of text When writing, the student • introduces a topic clearly and uses clear organization • uses facts or details to develop a topic • produces grammatically correct simple sentences • uses domain-specific vocabulary to strengthen claims • produces a relevant conclusion

DLM Performance Level Descriptors–ELA: Grade 9

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically can identify objects associated with a text, identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies objects associated with a text by • using property words to identify familiar objects • identifying objects within a category • understanding subgroups of objects within a category The student identifies text elements by • identifying details • understanding personal opinions The student demonstrates an understanding of language by • identifying descriptive words The student identifies text structure by • identifying actions in a familiar routine • identifying a sequence of events When writing, the student • responds to yes/no questions • identifies functional words to describe nouns • produces a two-word message • understands that broad categories contain subgroups • identifies the end of a familiar routine • identifies a topic and composes a message with one fact • identifies categorical words to describe nouns • connects two or more words • recognizes domain-specific words • indicates an ending

Approaching the Target	A student who achieves at the **approaching the target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying characters' feelings in a familiar story • determining internal and external character traits • identifying the relationships between details • answering who or what questions by referring to a text • identifying an author's points • identifying the evidence that supports explicit information in a text The student demonstrates an understanding of language by • using context to determine words or phrases that complete literal sentences • identifying words when given their definitions • determining the meaning of idioms and figures of speech The student identifies text structure by • identifying the beginning and end of a story • determining which event comes first in a text • identifying story elements that change When writing, the student • introduces and conveys information about a topic • includes one or more facts or details about a topic • expresses a complete thought • uses domain-specific vocabulary • produces a concluding sentence

At Target	A student who achieves at the **at target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying inferred information • distinguishing between explicit and implicit information • identifying the evidence for a claim • summarizing a familiar informative text The student demonstrates an understanding of language by • using semantic clues to identify word meaning • identifying the intended meaning of multiple-meaning words • determining the figurative meaning of words and phrases The student identifies text structure by • identifying deviations from chronological order • understanding and determining evidence for a claim When writing, the student • introduces and writes about a topic clearly • uses facts or details to develop a topic • produces grammatically correct simple sentences • uses domain-specific vocabulary to strengthen claims • produces a conclusion

Advanced	A student who achieves at the **advanced** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying changes in details • determining the explicit and implicit meaning of a text • differentiating between evidence-based and non–evidence-based claims The student demonstrates an understanding of language by • using semantic clues to identify phrase meaning The student identifies text structure by • understanding how text structure contributes to a claim When writing, the student • introduces a topic clearly to convey information • develops a topic by using appropriate information • produces grammatically correct compound sentences • uses academic words in informative writing • produces a relevant conclusion

DLM Performance Level Descriptors–ELA: Grade 10

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically can identify objects associated with a text, identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies objects associated with a text by • using property words to identify familiar objects • identifying objects within a category • understanding subgroups of objects within a category The student identifies text elements by • identifying details in a familiar text • understanding personal opinions The student demonstrates an understanding of language by • identifying descriptive words The student identifies text structure by • identifying actions in a familiar routine • identifying a sequence of events When writing, the student • responds to yes/no questions • identifies functional words to describe nouns • produces a two-word message • understands that broad categories contain subgroups • identifies the end of a familiar routine • identifies a topic and composes a message with one fact • identifies categorical words to describe nouns • connects two or more words • recognizes domain-specific words • indicates an ending

Approaching the Target	A student who achieves at the **approaching the target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying characters' feelings in a familiar story • determining internal and external character traits • identifying the relationships between details • answering who or what questions by referring to a text • identifying an author's points The student demonstrates an understanding of language by • using context to determine words or phrases that complete literal sentences • identifying words when given their definitions • determining the meaning of idioms and figures of speech The student identifies text structure by • identifying the beginning and end of a story • determining which event comes first in a text • identifying story elements that change When writing, the student • introduces and conveys information about a topic • includes one or more facts or details about a topic • expresses a complete thought • uses domain-specific vocabulary • produces a concluding sentence

At Target	A student who achieves at the **at target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying how a character changes or develops • identifying changes in details • identifying inferred information in a text • distinguishing between explicit and implicit information • identifying the evidence that supports explicit information in a text • identifying the evidence for a claim • summarizing a familiar informative text The student demonstrates an understanding of language by • using semantic clues to identify word meaning • identifying the intended meaning of multiple-meaning words • determining the figurative meaning of words and phrases The student identifies text structure by • identifying deviations from chronological order in a text • understanding and determining evidence for a claim When writing, the student • introduces and writes about a topic clearly • uses facts or details to develop a topic • produces grammatically correct simple sentences • uses domain-specific vocabulary to strengthen claims • produces a conclusion

Advanced	A student who achieves at the **advanced** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • determining the explicit and implicit meaning of a text • differentiating between evidence-based and non–evidence-based claims The student demonstrates an understanding of language by • understanding the meaning of words and phrases in a text • using semantic clues to identify phrase meaning The student identifies text structure by • understanding how text structure contributes to a claim When writing, the student • introduces a topic clearly to convey information • develops a topic by using appropriate information • produces grammatically correct compound sentences • uses academic words in informative writing • produces a relevant conclusion

DLM Performance Level Descriptors–ELA: Grade 11

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically can identify objects associated with a text, identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies objects associated with a text by • identifying objects within a category • using property words to identify familiar objects The student identifies text elements by • understanding personal opinions • identifying concrete details • identifying major events in a familiar story The student demonstrates an understanding of language by • identifying real-world uses of words The student identifies text structure by • identifying actions in familiar routines When writing, the student • demonstrates an understanding of who, what, where, when, and why questions • identifies functional words to describe nouns • produces a two-word message • draws conclusions based on category knowledge • identifies the end of a familiar routine • identifies the first letter in their name • includes facts and details about a topic • identifies categorical words to describe nouns • connects two or more words • selects domain-specific vocabulary in topical writing • indicates an ending • uses letters to create words

Approaching the Target	A student who achieves at the **approaching the target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying characters and determining how they change or develop • identifying details • identifying the setting • identifying major events • using details from a text to answer questions • identifying related points in a text • identifying details that defend a claim • identifying events relevant to the theme • identifying the theme • summarizing an informational text The student demonstrates an understanding of language by • identifying words when given their definitions • understanding similar meanings of words • using context to identify word meaning and missing words • identifying the figurative meaning of words or phrases The student identifies text structure by • identifying linear parts of a text • identifying the structure and how it influences meaning When writing, the student • introduces a topic and includes information about the topic • identifies quotes that provide relevant topic information • produces grammatically correct simple sentences • uses domain-specific vocabulary • produces a concluding sentence • represents the initial sound in a word with a letter

At Target	A student who achieves at the **at target** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying changes in characters, details, setting, and events • identifying how the end of a story affects its meaning • identifying inferred information in a text • identifying evidence for a claim • using key details to summarize an informational text • identifying main events related to the theme • identifying evidence for an argument or the meaning of a story • determining if the claims support the author's argument The student demonstrates an understanding of language by • determining the meaning of words and phrases • using semantic clues to identify word meaning • determining how words and phrases affect text meaning The student identifies text structure by • determining how text structure supports claims • comparing and contrasting arguments between two texts When writing, the student • introduces a topic clearly to convey information • includes quotes from print sources • produces grammatically correct simple, compound, and complex sentences • uses domain-specific vocabulary to strengthen claims • produces a conclusion • spells single-syllable words conventionally and phonetically

Advanced	A student who achieves at the **advanced** performance level typically can identify text elements, demonstrate an understanding of language, and identify text structure when reading literature and informational text. The student identifies text elements by • identifying textual evidence The student demonstrates an understanding of language by • using semantic clues to identify phrase meaning The student identifies text structure by • comparing the arguments of two different texts When writing, the student • uses clear organization and presentation to write about a topic • develops a topic by using appropriate information • produces grammatically correct compound-complex sentences • uses academic words in informative writing • produces a relevant conclusion • spells irregular words correctly

DLM® Performance Level Descriptors–Math: Grade 3

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically uses attributes or characteristics to identify and sort familiar objects into sets. The student uses attributes or characteristics to identify and sort familiar objects into sets by • recognizing sets of objects and determining if the objects in a set are the same or different based on a given attribute (for example, size, shape, or texture) • understanding the combining and dividing of objects by attending to a particular set of objects and then moving the objects either to create a group or to create separate sets
Approaching the Target	A student who achieves at the **approaching the target** performance level typically represents and solves problems using an understanding of abstract math concepts and symbols. The student represents and solves problems using an understanding of abstract math concepts and symbols by • recognizing how numbers appear in a sequence (for example, 5, 6, 7) and counting to 30 • communicating basic place-value knowledge by recognizing ten objects as a tens unit • comparing length when shown two similar objects • classifying shapes based on a given attribute (for example, number of sides)

At Target	A student who achieves at the **at target** performance level typically uses attributes or characteristics to identify and sort familiar objects into sets, makes sense of problems and perseveres in solving them, identifies repeating calculations or patterns, and uses mathematical terms and identifies connections between mathematical concepts. The student uses attributes or characteristics to identify and sort familiar objects into sets by • understanding the difference between parts of objects and whole objects The student makes sense of problems and solves them by • identifying the place value of two-digit numbers to the tens place • selecting appropriate tools for measuring • calculating the length of objects using informal units of measurement • identifying shapes divided into fractional parts • recognizing the structure of a picture or bar graph • identifying symbols used in equations (for example, =, –, +) The student identifies repeating calculations or patterns by • classifying data based on given attributes (for example, number of objects) • skip counting by tens (for example, 10, 20, 30) The student uses mathematical terms and identifies connections between mathematical concepts by • communicating length in inches and feet
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately and makes sense of problems and perseveres in solving them. The student calculates accurately by • solving repeated addition problems (for example, 2 + 2 + 2 or 3 + 3 + 3) • solving basic addition and subtraction problems with solutions up to 20 • multiplying numbers 1 through 5 The student makes sense of problems and solves them by • answering questions about the data displayed in a graph

DLM Performance Level Descriptors–Math: Grade 4

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically looks for and makes use of mathematical structures (for example, patterns and attributes of shapes). The student looks for and makes use of mathematical structures by • recognizing objects or shapes that are whole or in separate parts • recognizing that a set is a group of objects or shapes with similar or different characteristics • arranging objects or shapes into pairs based on attributes • identifying objects based on attributes • recognizing shapes divided into two or more parts
Approaching the Target	A student who achieves at the **approaching the target** performance level typically looks for and makes use of mathematical structures and attends to precision in computation and measurement. The student looks for and makes use of mathematical structures by • attending to objects and shapes • recognizing enclosures or boundaries The student attends to precision in computation and measurement by • comparing the weight or volume of two objects

At Target	A student who achieves at the **at target** performance level typically calculates accurately, reasons abstractly, makes sense of problems and perseveres in solving them, looks for and makes use of mathematical structures, and attends to precision in computation and measurement. The student calculates accurately by • adding and subtracting numbers within 20 • adding or subtracting two-digit numbers up to 100 The student reasons abstractly, makes sense of problems, and perseveres in solving them by • identifying the core unit of a repeating number or symbol pattern (for example, in 123123123, the core unit is 123) • comparing types of angles (for example, acute, obtuse, and right) • counting unit squares to calculate area • identifying fractions up to one-fourth • identifying coin names and values of coins (pennies, nickels, dimes, and quarters) and one-dollar bills The student looks for and makes use of mathematical structures by • understanding the combining and dividing of objects by moving them to create a group or to create separate sets The student attends to precision in computation and measurement by • counting objects • recognizing patterns of numbers and symbols
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, reasons abstractly, explains reasoning, and uses appropriate tools to solve problems. The student calculates accurately by • adding or subtracting two-digit numbers with regrouping The student reasons abstractly, makes sense of problems, and perseveres in solving them by • working through word problems with solutions up to 100 The student reasons abstractly and explains reasoning by • extending a pattern that uses numbers or symbols • comparing and ordering angles from largest to smallest or smallest to largest • estimating the weight or volume of objects by comparing them to familiar objects in the environment The student uses appropriate tools to solve problems by • choosing and using tools (for example, scales, tiles, or measuring cups) to measure the weight, area, or volume of different objects • recognizing the hour hand and minute hand on an analog clock • recognizing hours and minutes on a digital clock

DLM Performance Level Descriptors–Math: Grade 5

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically attends to and seeks objects and looks for and makes use of mathematical structures (for example, patterns and attributes of shapes). The student attends to and seeks objects by • identifying familiar objects and communicating whether the objects are grouped together or are separate The student looks for and makes use of mathematical structures by • identifying objects that are in a set • recognizing the number of objects in a set • recognizing equal shares of objects (for example, a shape divided into two equal parts)
Approaching	A student who achieves at the **approaching the target** performance level typically identifies repeated calculations, models with mathematics, and makes sense of problems and perseveres in solving them. The student identifies repeated calculations by • recognizing that repeated addition problems are made up of a set of numbers (for example, 2 + 2 + 2) • demonstrating the concept of multiplication The student models with mathematics by • identifying two-dimensional and three-dimensional shapes and their attributes • recognizing fractions • arranging objects in pairs • classifying objects or shapes by a given attribute (for example, number of sides) The student makes sense of problems and perseveres in solving them by • demonstrating number sense with numbers up to 10 • communicating place value of numbers to the tens place • comparing two sets of up to ten objects

At Target	A student who achieves at the **at target** performance level typically attends to and seeks objects, calculates accurately, reasons abstractly, interprets data, explains reasoning, and makes sense of problems and perseveres in solving them. The student attends to and seeks objects by • recognizing objects that are the same or different The student calculates accurately by • multiplying numbers 1 through 5 The student reasons abstractly by • identifying three-dimensional shapes • sorting two-dimensional shapes that are the same size The student interprets data by • using information from bar, picture, or line plot graphs to answer questions • reading the data on a graph or chart The student makes sense of problems and perseveres in solving them by • comparing numerals up to 10 The student explains reasoning by • demonstrating and expanding math vocabulary by using terms (for example, same, different, more, and fewer)
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, reasons abstractly, explains reasoning, interprets real-world problems, and models solutions. The student calculates accurately by • identifying fractions with denominators to 10 The student reasons abstractly by • demonstrating number sense up to 100 by comparing two numerals up to 100 • ordering numbers from least to greatest • recognizing proper fractions on an area-model representation (for example, a garden divided into four equal parts) The student explains reasoning by • communicating the relationship between multiplication and division (for example, connecting $2 \times 5 = 10$ and $10 \div 2 = 5$) The student interprets data by • representing data on bar, picture, or line plot graphs The student interprets real-world problems and models their solutions by • rounding whole numbers to the nearest hundred

DLM Performance Level Descriptors–Math: Grade 6

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically attends to and seeks objects or people and looks for and makes use of mathematical structures (for example, patterns and attributes of shapes). The student attends to and seeks objects by • recognizing sets of objects • recognizing groups of objects that are separated • recognizing objects that are whole and objects in parts • recognizing a unit The student looks for and makes use of mathematical structures by • classifying objects by attributes (for example, size and shape) • ordering objects using a rule or pattern • recognizing objects inside and outside of an enclosure
Approaching the Target	A student who achieves at the **approaching the target** performance level typically attends to and seeks objects, looks for and makes use of mathematical structures, reasons abstractly, and interprets data. The student attends to and seeks objects by • arranging objects into sets • recognizing the amount *some* The student looks for and makes use of mathematical structures by • identifying equal parts of objects (for example, shapes, markers, and toys) • combining and comparing sets of objects The student reasons abstractly by • explaining volume as a composition of unit cubes The student interprets data by • recognizing the distribution of data by its shape • identifying outliers in a data distribution

At Target	A student who achieves at the **at target** performance level typically calculates accurately, reasons abstractly, and interprets data. The student calculates accurately by • solving equations with positive and negative numbers • packing unit cubes to calculate volume of rectangular prisms The student reasons abstractly by • explaining the relationships between unit fractions • explaining opposite numbers (for example, –2 and 2) • explaining the relationship between a unit square and area The student interprets data by • recognizing the overall shape of data in a graph
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, reasons abstractly, explains reasoning, and uses mathematical tools to solve problems. The student calculates accurately by • using tiling to find the area of a rectangle • solving for the unknown value in expressions • adding, comparing, and decomposing fractions (for example, 2/4 = 1/4 + 1/4) The student reasons abstractly by • explaining decimals • recognizing equivalent expressions that involve addition or subtraction The student explains reasoning by • communicating measurements of center by using data distribution (for example, a graph or line plot) The student uses mathematical tools to solve problems by • calculating area with unit squares and tiling

DLM Performance Level Descriptors–Math: Grade 7

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically looks for and makes use of mathematical structures (for example, patterns and attributes of shapes). The student looks for and makes use of mathematical structures by • recognizing separate objects and objects in a set
Approaching	A student who achieves at the **approaching the target** performance level typically attends to and seeks objects, identifies repeated calculations, looks for and makes use of mathematical structures, calculates accurately, and models with mathematics. The student attends to and seeks objects by • recognizing measurable attributes of an object (for example, size, shape, and number of sides) • identifying objects that are the same and objects that are different The student identifies repeated calculations by • modeling, solving, and explaining repeated addition (for example, 2 + 2 + 2 or 4 + 4 + 4) • modeling, solving, and explaining repeated subtraction (for example, 10 – 2 – 2 – 2 – 2) The student models with mathematics by • recognizing two-dimensional and three-dimensional shapes The student looks for and makes use of mathematical structures by • combining and partitioning, or dividing, objects into sets The student calculates accurately by • decomposing fractions (for example, 2/4 = 1/4 + 1/4) • demonstrating the concept of multiplication

At Target	A student who achieves at the **at target** performance level typically calculates accurately and explains reasoning. The student calculates accurately by • adding and subtracting fractions with common denominators (for example, 2/5 + 1/5) • demonstrating the concept of division • multiplying numbers 1–20 by numbers 1–5 and 10 The student explains their reasoning by • describing attributes of shapes (for example, size and number of sides) • explaining length and perimeter
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately and reasons abstractly. The student calculates accurately by • demonstrating the relationship between multiplication and division • adding and subtracting fractions with denominators of 10 and 100 (for example, 4/10 + 60/100) • dividing numbers 1–20 by numbers 1–5 and 10 The student reasons abstractly by • applying the properties of addition and multiplication to solve problems

DLM Performance Level Descriptors–Math: Grade 8

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically looks for and makes use of mathematical structures (for example, patterns and attributes of shapes). The student looks for and makes use of mathematical structures by • recognizing a set of objects • recognizing objects that are separate from a set • classifying objects and ordering objects by attribute • recognizing attribute values of shapes (for example, size and number of sides)
Approaching the Target	A student who achieves at the **approaching the target** performance level typically looks for and makes use of mathematical structures, reasons abstractly, and interprets data. The student looks for and makes use of mathematical structures by • combining and partitioning, or dividing, sets of objects • forming pairs of objects and ordering objects • combining two parts or two sets to make a whole • using sets of objects to demonstrate the concept of addition • recognizing tenths and one-tenth in decimal and fraction form (for example, .10 and 1/10) • recognizing angles of different degrees (for example, acute, obtuse, and right) The student reasons abstractly by • explaining decimals The student interprets data by • recognizing bar graphs, picture graphs, line graphs, and charts • using graphs or charts to answer questions

At Target	A student who achieves at the **at target** performance level typically makes sense of problems and perseveres in solving them, calculates accurately, reasons abstractly, and interprets data. The student makes sense of problems and calculates accurately by • subtracting two fractions with the same denominator • finding the unknown value in an equation • representing fractions as decimals • using formulas to calculate area, perimeter, and volume The student reasons abstractly by • recognizing increasing and decreasing patterns • extending a pattern • comparing angles to a right angle The student interprets data by • reading data on graphs and charts • generating ordered pairs • explaining coordinate pairs
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, attends to precision in calculations, interprets real-world problems, models solutions, and interprets data. The student calculates accurately and attends to precision by • solving word problems involving addition, subtraction, or multiplication • solving linear inequalities • adding and subtracting fractions with unlike denominators of 10 and 100 (for example, 4/10 + 60/100) The student interprets real-world problems and models their solutions by • recognizing geometric sequences • explaining complementary angles • using symbols to compare decimals with thousandths (for example, 0.002 < 0.005) The student interprets data by • making predictions using data on graphs and charts • representing data on graphs and charts • recognizing covariation

DLM Performance Level Descriptors–Math: Grade 9

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically looks for and makes use of mathematical structures (for example, patterns and attributes of shapes) and calculates accurately. The student looks for and makes use of mathematical structures by • recognizing sets and subsets of objects • recognizing objects that are separate • recognizing objects as the same or different • matching two-dimensional and three-dimensional shapes The student calculates accurately by • understanding place value (for example, that 1 ten equals 10 ones)
Approaching the Target	A student who achieves at the **approaching the target** performance level typically calculates accurately, looks for and makes use of mathematical structures, and reasons abstractly. The student calculates accurately by • using repeated addition to solve problems (for example, 2 + 2 + 2 or 4 + 4 + 4) • multiplying without a calculator The student looks for and makes use of mathematical structures by • recognizing two-dimensional and three-dimensional shapes • identifying points, rays, and right angles • partitioning, or dividing, and combining objects or shapes • recognizing attributes of shapes (for example, size and number of sides) The student reasons abstractly by • using geometric shape names to describe real-world objects

At Target	A student who achieves at the **at target** performance level typically makes sense of problems and perseveres in solving them, calculates accurately, and looks for and makes use of mathematical structures. The student makes sense of problems, perseveres in solving them, and calculates accurately by • solving multiplication word problems • finding the unknown value in multiplication and division equations • solving real-world problems with rational numbers • demonstrating an understanding of multiplication and division • applying the associative and commutative properties of addition and multiplication to solve problems The student looks for and makes use of mathematical structures by • representing linear equations that contain one variable • recognizing circles, perpendicular lines, and parallel lines
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, attends to precision in calculations, and looks for and makes use of mathematical structures. The student calculates accurately and attends to precision by • solving multistep word problems The student looks for and makes use of mathematical structures by • identifying vertical, straight, and adjacent angles

DLM Performance Level Descriptors–Math: Grade 10

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically looks for and makes use of mathematical structures (for example, patterns and attributes of shapes). The student looks for and makes use of mathematical structures by • recognizing objects or shapes that are the same or different • communicating the number of objects (up to ten) in a set without counting • comparing objects in a set based on attributes (for example, size, shape, and number of sides) • ordering objects using a rule • recognizing attributes of objects (for example, shape, size, and number of sides) • classifying objects based on attributes (for example, size, shape, and number of sides)
Approaching	A student who achieves at the **approaching the target** performance level typically calculates accurately, looks for and makes use of mathematical structures, and interprets data. The student calculates accurately by • rounding decimals to the tenths and hundredths places • using different operations (for example, addition and subtraction) to solve problems • representing and solving real-world problems The student looks for and makes use of mathematical structures by • combining and partitioning, or dividing, objects into sets • matching two-dimensional and three-dimensional shapes of the same size and different orientation • forming pairs of objects • recognizing transformations of congruent figures • understanding and recognizing congruent shapes The student interprets data by • identifying types of bar, picture, or line graphs

At Target	A student who achieves at the **at target** performance level typically makes sense of problems and perseveres in solving them, calculates accurately, reasons abstractly, and interprets data. The student makes sense of problems, perseveres in solving them, and calculates accurately by • solving linear inequalities • reporting numerical answers with a degree of precision • solving problems using rational numbers • writing equations using different operations (for example, addition and subtraction) The student reasons abstractly by • communicating if an event outcome is possible or impossible The student interprets data by • using graphs to interpret concrete information • communicating an understanding of bar graphs, picture graphs, line plots, and pie charts • explaining the *x*-coordinate and *y*-coordinate • interpreting a point within a line on a graph • recognizing covariation within a data set • reading and communicating data from bar and picture graphs
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, attends to precision in calculations, reasons abstractly, and interprets data. The student calculates accurately and attends to precision by • solving multistep word problems The student reasons abstractly by • synthesizing information presented in word problems • using transformations to describe compound events • explaining compound events • communicating whether an event is independent or dependent The student interprets data by • calculating the mean of a data set

DLM Performance Level Descriptors–Math: Grade 11

Year-End Model

Emerging	A student who achieves at the **emerging** performance level typically looks for and makes use of mathematical structures (for example, patterns and attributes of shapes). The student looks for and makes use of mathematical structures by • combining and comparing object pairs • classifying objects or shapes by attribute (for example, size, shape, and number of sides) • combining two parts to make a whole • communicating if an object is the same or different • identifying objects that are the same and objects that are different • ordering objects using a rule
Approaching the Target	A student who achieves at the **approaching the target** performance level typically calculates accurately, looks for and makes use of mathematical structures, interprets data, and reasons abstractly. The student calculates accurately by • solving and explaining repeated addition problems (for example, 2 + 2 + 2 or 4 + 4 + 4) The student looks for and makes use of mathematical structures by • forming pairs of objects • matching two-dimensional and three-dimensional shapes The student interprets data by • identifying bar graphs, picture graphs, line plots, and pie charts The student reasons abstractly by • identifying all possible outcomes of an event

At Target	A student who achieves at the **at target** performance level typically makes sense of problems, perseveres in solving them, models with mathematics, reasons abstractly, interprets data, calculates accurately, and looks for and makes use of mathematical structures. The student makes sense of problems and perseveres in solving them by • recognizing the recursive rule in an equation or an arithmetic sequence The student models with mathematics by • recognizing similar and congruent figures The student reasons abstractly by • identifying the theoretical probability of an event The student interprets data by • reading data and using it to make inferences • understanding covariation • using math vocabulary related to graphing to solve problems (for example, variability, peak of data, and outlier) • explaining coordinate pairs • explaining the *x*-coordinate and *y*-coordinate • analyzing graphs, tables, and data distributions The student calculates accurately by • recognizing a sample space (all possible outcomes of an event) The student looks for and makes use of mathematical structures by • recognizing patterns and sequences of numbers or symbols • simplifying expressions with exponents
Advanced	A student who achieves at the **advanced** performance level typically calculates accurately, attends to precision in calculations, reasons abstractly, interprets data, and models with mathematics. The student calculates accurately and attends to precision by • applying a sequencing rule • extending arithmetic sequences • finding perfect squares and cubes The student reasons abstractly by • relating transformations to congruent and similar shapes • applying theoretical probability to simple events The student interprets data by • comparing data sets to draw inferences The student models with mathematics by • explaining similar and congruent figures • recognizing and extending arithmetic sequences

Appendix 1.B: Opportunities and Skills Framework Development and Refinement

Drawing from the existing literature, we developed a framework highlighting predictors of postsecondary education, employment, citizenship, and community involvement for students with significant cognitive disabilities (SCD), with the purpose of showing how academic knowledge, skills, and opportunities (KSUs) support postsecondary opportunities. We did not find examples of academic achievement as predictors of postsecondary access to opportunities; thus we used a position paper by Kearns et al. (2010) to emphasize instruction of general academic skills needed in various postsecondary employment and educational settings, including reading, writing, and mathematics skills. In addition to addressing known predictors, such as paid work experience in high school (e.g., Carter et al., 2012; Simonsen & Neubert, 2012) and parents and teachers having high expectations (e.g., Carter et al., 2012; Papay & Bambara, 2014), we identified examples of academic skills that may be used in entry-level employment and postsecondary education settings, such as “recognizes if there is enough inventory to get through a specified unit of time” or “when writing in team messaging apps or classroom learning management systems is able to convey information and ask and answer questions,” and included them as examples in the framework. Additionally, our framework identified a range of postsecondary education opportunities, as well as factors that may affect an individual’s access to opportunities, for example, transportation barriers or communities that lack resources or opportunities.

To validate the postsecondary opportunities and skills framework, we interviewed key informants. We wanted to gather perspectives on the opportunities available to students with the most significant cognitive disabilities after they graduate or leave high school, as well as on the academic skills needed to pursue them.

Methods

Key informants were identified through a purposeful case-sampling approach based on relevant publications and professional activities related to (a) postsecondary education, (b) secondary transition, (c) vocational rehabilitation, or (d) students with SCD. We sent 11 email invitations to potential participants. Six people agreed to participate, two declined, and three did not respond.

We also wanted to recruit a young adult with SCD and/or their parent(s) to obtain their unique perspectives on the impact of academic achievement on postsecondary employment and education experiences. We contacted one young adult through his mother, who said his work schedule was too unpredictable and offered to be interviewed in his place.

Table B.1 presents the pseudonyms and expertise of the key informants.

Table B.1
Key Informants' Expertise

Key informant (pseudonym)	Expertise
Lee	Postsecondary employment; secondary transition; vocational rehabilitation; research, training, and technical assistance centered around transition; students with significant cognitive disabilities
Kim	Secondary transition, evidence-based practices and predictors of postsecondary success for secondary students with disabilities, interagency collaboration
Tish	Alternate assessment for students with significant cognitive disabilities, content area instruction for students with intellectual disabilities, inclusive education for students with significant cognitive disabilities
Julie	Curriculum and instruction, access to the general education curriculum, and transition to employment for students with severe cognitive disabilities
Kelly	Postsecondary education for students with intellectual disabilities, secondary transition, postsecondary employment
Erin	Postsecondary education for students with intellectual disabilities, secondary transition, postsecondary outcomes
Darla	Parenting a young adult with an intellectual disability who participated in Dynamic Learning Maps assessments while in high school and who was in his senior year in a postsecondary education program at the time of the interview

Study Activities

Interview protocols were developed in advance of the interviews. Questions for experts focused on defining individuals with SCD, academic skills needed to pursue both postsecondary education and employment, and components of students' individualized education program and school day that may help prepare them for postsecondary opportunities. Questions for parents focused on their adult child's high school program and current employment and educational experiences.

Two researchers conducted the semistructured interviews via Zoom videoconferencing. Participant written consent was gathered before the interviews and then reviewed before each interview. Participants were informed that the interview was being recorded, that it would later be transcribed, and that no identifying information would be used. The interviewers asked the questions from the interview protocol but also posed probing questions for further clarification or as additional topics emerged. Each interview lasted approximately one hour.

The two interviewers debriefed immediately after each interview, highlighting the key points gathered and adjusting the interview protocol as needed. They also evaluated the quantity of new information gathered in each interview to determine if more interviews were needed.

Findings

Interviewees shared a range of insights and explanations related to factors that may lead to greater access to postsecondary education and employment opportunities for individuals with SCD. Responses to interview questions were fairly consistent in describing students with SCD, students' school-day activities as they progress through high school, challenges in preparing students with SCD to be college and career ready, and the importance of parental involvement. However, their perceptions of academic skills and their role in preparing students for college and careers differed.

At the beginning of each interview, experts were asked to describe a student with SCD. This was to ensure they were attuned to the population of interest, as well as to set the stage for the rest of the interview. Respondents collectively described individuals with SCD as students who have historically been deemed unemployable because of their disability and who have typically received instruction in functional, independent living skills rather than academic skills. These students are assessed with an alternate assessment of alternate academic achievement standards, require some level of living support throughout their lifespan, and learn more slowly but are able to learn skills with modeling and prompting, allowing them to participate in inclusive living and employment communities.

Interviewees described students' school days in self-contained settings in which they receive instruction that emphasizes functional skills; programs with more resources may provide instruction in community-based settings. Early literacy and math skills, ideally provided with peer supports in inclusive settings, are likely the primary academic foci for students. Literacy-skills instruction may focus on deciphering symbols in picture format for some students. Students typically receive more academic instruction in ninth and tenth grades than in eleventh and twelfth grades, when they often transition to vocational and independent living skills. Interviewees generally believed high school should provide employment or other meaningful experiences that help students develop skills and interests and guide their postsecondary planning.

When considering potential challenges in preparing students with SCD for college and career, "Kim" and "Julie" cited a lack of inclusive practices and limited access to the general education curriculum, both of which may affect student opportunities in postsecondary education programs. In some instances, interviewees stated teachers' philosophical beliefs suggest that SCD do not need to be taught academic skills, and low expectations for SCD provide a greater barrier than any related to a student's abilities. "Tish" stated that parents do not always understand that opportunities are available, thus they do not have the expectation that their child can access opportunities. Other panelists spoke of teachers' low expectations for students with SCD. "Darla" experienced this with her child from sixth grade through high school; she felt he was never challenged and thus did not learn much academically during that time.

Overwhelmingly, our interviewees stated that parents' expectations that their child could work is imperative in facilitating their success toward attaining competitive, integrated employment. Additionally, parents should be involved in transition planning, as they will typically be able to support students in achieving postsecondary goals. However, Kim pointed out that many parents are fearful of their child working or attending college without the protection they had in high school; thus she felt teachers should help parents learn about the available options, beyond sheltered workshops, for their child to contribute to the community. Similarly, Darla felt a

shortcoming in the public school system was the lack of information provided about postsecondary education programs. She found herself informing many other parents of the options and thought many parents believed *secondary transition* referred only to employment.

Interviewees conceptualized the meaning of *academics* differently. Some saw academics as more than reading, writing, and mathematics, also encompassing social skills, social communication, organizational skills, and activities of daily living. Among the more important skills students need to navigate postsecondary life, interviewees identified skills related to counting money, reading skills that may include symbol support (i.e., visual supports) and some ability to write or otherwise communicate their own wants and needs. Darla felt that her son's educational experience provided a strong academic foundation in elementary school, where he was in regular classes and did not receive modifications. He then regressed in middle school, and his high school experience focused more on social learning. She attributed his regression to a lack of expectations by his educators.

Some interviewees perceived the determination that certain academic skills are necessary for access to employment or education as gatekeeping. That is, they did not want the description of any needed academic skills to be seen as a minimum requirement. They feared that requiring individuals be able to read basic sight words for access to postsecondary employment or education opportunities would automatically exclude individuals without that skill. "Lee" echoed their mindset with the belief that while some students will plateau in their learning during or before high school, they should not be excluded from access to the job market.

Ultimately, although key informants did not believe specific academic skills are a baseline requirement for postsecondary employment and educational success for SCD, they did think that communication skills—whether speech or appropriate augmentative or alternative communication—are integral for greater access to opportunities. Especially important are communication skills related to advocating for their needs in employment or educational settings. Another recurring theme was social communication, in other words, how to interact with school personnel and other students in a school setting; these skills would generalize to the greater community after high school. These skills may also include making eye contact, smiling, and other behavior that makes one seem approachable. Kim believed students should be taught communication for different situations, such as navigating a college campus or experiencing recreational opportunities. In postsecondary educational settings, it will be important for students to be able to communicate their understandings in a variety of ways. "Kelly" believed academic skills provide students with the foundation needed to understand work situations and allow them to demonstrate that they know how to learn. She also thought it important to balance increasing reading skills with teaching citizenship and community-awareness skills.

At the conclusion of each interview, we presented the opportunities and skills framework (see Figure 1.2), explained how it was developed and the components contained within it, and asked for a reaction. We wanted to know if anything was missing or if anything in it was misstated. The interviewees agreed that all nonacademic indicators were important and belonged in the framework. Lee was the most critical about the inclusion of academics in the framework. He pointed out that there would be no place for science instruction within the academic or career preparation for some students. He also suggested that the lack of empirical research on specific academic predictors is because for many students, academics are not typically part of their curriculum and ELA, mathematics, and science might be given too much value given the actual experiences of students with SCD. Julie was concerned that the framework indicated the

academics were a minimum requirement and that given limited time with students, there may be other things more important to be taught to some students. “Erin” initially expressed the same concern regarding a baseline requirement but through our conversation, she realized we were not asking to define a minimum requirement but rather trying to gain a broad perspective of the kinds of academic skills that may be used in postsecondary environments.

As a result of feedback from key informants, we added information to the community involvement section centered on opportunities to access social networks in high school. No additions related to academic achievement were made. After the interviews were completed and the minor revision was made to the framework, we used the framework to plan the next phase of this study.

Appendix 4.A: Primary Employment Sector and Employment Opportunities

Sector	Opportunity
Agriculture, food, and natural resources	Dairy farm assistant Dog walker Farmhand Pet sitter Veterinary assistant Wildlife rescue worker
Architecture and construction	Handyperson Landscaper
Arts, audio visual technology, and communications	Artist Audio-visual assistant Jewelry maker Musician Photographer YouTuber
Business management and administration	Administrative clerk Data entry clerk Entrepreneur Library aide Paper shredder (self-employed) Receptionist Record scanner
Education and training	Assistant coach Motivational speaker Teaching assistant (preschool)
Health science	Certified medical assistant Certified nursing assistant Hospital guide Patient transportation assistant Surgical sterilization technician
Hospitality and tourism	Baking assistant Environmental services worker Event setup assistant Food deliverer (app based) Food preparer Food service worker Recreational center assistant Vending machine attendant

Sector	Opportunity
Human services	Childcare worker Greeter
Information technology	Gamer (monetized) Help desk technician IT programmer
Law, public safety, corrections, and security	Security assistant
Manufacturing	Assembly-line worker Quality assurance assistant
Marketing	Etsy merchant Flower shop assistant Retail salesperson Self-employed: salesperson (new items) Self-employed: salesperson (resale items) Stock clerk
Transportation, distribution, and logistics	Auto detailer Auto porter Automotive assistant Delivery person Lyft driver Mechanic assistant

Note: Sectors are from the Career Technical Education (CTE) National Career Clusters® Advance CTE (2020) framework. ONETonline.org was used to verify the opportunities within the sectors.

Appendix 4.B: Example Opportunity and Academic Skills Identified by a Panelist

Opportunity: Paper Shredder – Self Employed

Step 1	Step 2	Step 3
What are the responsibilities related to this opportunity?	**What are the knowledge, skills, and understandings required?**	**Which specific academic skill(s) and content area(s) does each relate to?**
Maintaining equipment	Understand mechanical systems and safety Oiling the machine	ELA reading comprehension Task Analysis following step-by-step directions
Maintaining confidentiality	Reading Social skills	ELA word recognition Mathematics number identification
Weighing items to be shredded	Zeroing a scale Reading a scale Choosing the correct unit Placing items on a scale	Mathematics measurement of weights understanding units for weights, metric or customary
Keeping accurate records	Writing Reading Number identification	ELA written expression Reading reading comprehension Mathematics number comprehension understanding a chart recording items in a chart
Shredding items	How to operate machinery Safety with shredding devices Shredding Removing	ELA reading following step-by-step directions listening comprehension following verbally stated directions
Disposing of shredding items	Bagging shredding Sweeping shredding	ELA reading comprehension following step-by-step directions

Step 1	Step 2	Step 3
What are the responsibilities related to this opportunity?	**What are the knowledge, skills, and understandings required?**	**Which specific academic skill(s) and content area(s) does each relate to?**
Billing customers	Tracking orders Calculating bill Following up with customers to pay	ELA reading comprehension written expression listening comprehension decoding Mathematics estimation counting greater or less than
Managing a point of sale system for charge cards only	Process bills, Enter sale into machine. Process credit card	ELA reading comprehension written expression decoding Mathematics number identification
Managing a point of sale system for cash and check	Process bills, Enter sale into machine Process sale Give change Basic computer skills	ELA reading writing documenting
Marketing services on social media	Post items on social media platforms Navigate multiple social media platforms Take photos Design posts using various social media platforms. Basic computer skills	ELA reading comprehension decoding sight-word reading responding to messages written expression Mathematics understanding proportions

Appendix 4.C: Sampling of Soft Skills and Associated Knowledge, Skills, and Understandings Identified by Panelists

Soft skill	Knowledge, skills, and understandings
Social skills	Understands context Listening comprehension Topic choice Asks complex questions
Self-advocacy	Appropriate word choice Asks for help Expresses wants and needs Communicates preferences Summarizes information
Budgeting	Reads a chart Understands interest Understands how to use apps to send and receive money
Organizing	Realizes sequential order of completing tasks Estimates time Assigns time to steps Determines next steps Writes to-do list

DLM Ratings of Academic Skills with Alternate Achievement Standards

VIRTUAL MEETING INFO

The Dynamic Learning Maps® (DLM®) Consortium requests your participation in a research study evaluating achievement standards for students with significant cognitive disabilities. Activities include rating academic skills and participating in post-ratings focus groups on the ratings process and postsecondary opportunities for individuals with significant cognitive disabilities. Your state education agency indicated you have experience with either the DLM alternate assessment student population or content area expertise in English language arts or mathematics. We are reaching out to see if you are interested in participating in a one-day, virtual panel meeting on Monday, June 20, 8:30 AM CT–4:30 PM CT (mathematics) or Thursday, June 23, 8:30 AM CT–4:30 PM CT (English language arts). You would need to independently complete a 1.5 to 2 hour online training before the day of the panel meeting and commit to attending a full-day, virtual panel meeting on your assigned date. You will be compensated $350 for completing training and the panel meeting.

Your participation in this study is voluntary. If at any time you discontinue the study, your ratings up to that point will be retained. The results of the research study may be published, but all results will be provided in aggregate form. No names or identifying information will be used.

No risks are anticipated as a result of participating in this study. It is possible, however, that through the virtual panel, through intent or accident someone other than the intended recipient may access your responses that are transmitted electronically, or that others present in your location may observe the panel. The benefits of participating in this study include gaining an understanding of academic achievement standards and postsecondary opportunities for individuals with significant cognitive disabilities.

To participate, please visit https://kusurvey.ca1.qualtrics.com/jfe/form/SV_cYFPyC1VcmFrQVg and provide some information about your expertise. **Please complete this survey by May 26 to be considered.** We will follow up to confirm panel assignments in late May.

If you have any questions regarding the study or your participation, please contact dlm@ku.edu.

VIRTUAL MEETING COMMITMENTS

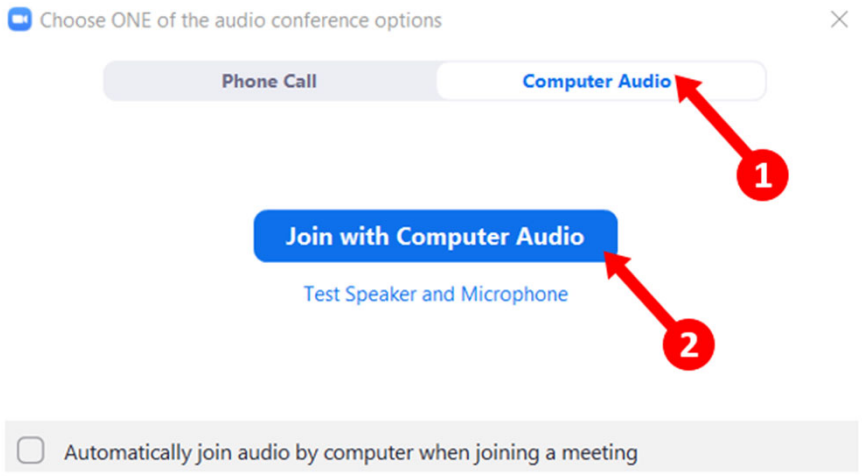
- Join from a quiet, private space that is free of distractions for the entirety of the meeting. You will be able to take breaks at scheduled times throughout the day.
- Have access to a computer, tablet, or smartphone with a functional video camera and audio headset or earbuds with a microphone.
  - If you use a smartphone for video conferencing, you must also have a computer to manage the work required for the panel.
  - Computer must have an up-to-date browser installed (Chrome, Safari, Firefox).
- Turn off messaging and other notifications during focused time slots on the agenda.
- Have access to a stable, high-speed internet connection that allows for video conferencing.

DYNAMIC® LEARNING MAPS

@atlas4learning

Panel meetings use Zoom for audio, video, and screensharing.

Join the computer audio and turn on video. We will begin shortly.



If computer audio fails, audio can be accessed via the phone number, meeting ID, and password in the agenda.

1

Academic Skills to Support Pursuit of Postsecondary Opportunities

Panel Meeting
June 2022

2

DYNAMIC LEARNING MAPS

2

Welcome and Introductions: Panelists

- Who you are
- Where you are from
- What you do in life
- Something good about your summer

Welcome and Introductions: Facilitators

- Who you are
- Where you are from
- What you do in life
- Something good about your summer

Roles and Responsibilities

Panelists

- Bring your expertise to each part of the panel process
- Use professional expertise and panel training to make ratings
- Use group discussion guidelines and virtual meeting guidelines to help the day run smoothly

Facilitators

- Present a little more training
- Guide you through the process
- Answer your questions
- Facilitate group discussions
- Help you troubleshoot in case of technology issues

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Housekeeping

Materials you need today:

- Agenda
- Performance level descriptors
- Rating guide
- Blank paper for notes (optional)

Other materials you reviewed before the meeting:

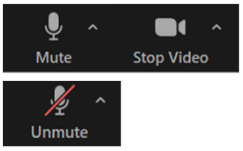
- Virtual meeting checklist
- Guidelines for group discussion

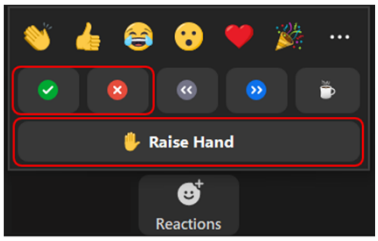
We will stick to time slots for breaks as best we can

6

How We Will Use Zoom Today

- Video on (except during breaks)
- Mic muted unless talking
- Use voting buttons, thumbs up/down, and raise hand when asked to do so





DYNAMIC LEARNING MAPS

How We Will Use Zoom Today

- Text chat is okay for:
  - Asking facilitators for help
  - Asking a clarifying question
  - Asking for an example postsecondary opportunity during ratings
- Avoid using text chat privately for side conversations or starting long threads that run parallel to the voice conversation

DYNAMIC LEARNING MAPS

Other Reminders

- Be present for this meeting during active meeting time
  - Turn off notifications
  - Ignore phone except in case of emergency
- Remember the guidelines for group discussion
- Remember the informed consent information
  - The process and discussion are confidential; we need you to help keep it that way
  - We are recording the meeting to help with documentation of the procedures and discussions

Why are we here today?

A series of steps leading to the US Department of Education peer review evidence for Dynamic Learning Maps® (DLM®) alternate assessments:

The alternate academic achievement standards are aligned to ensure that a student who meets the alternate academic achievement standards is on track to pursue postsecondary education or competitive integrated employment.

What are we doing today?

1. Training
2. Practice + getting on the same page
3. Main panel activities (ratings, discussion)
4. Post-panel evaluation survey
5. Focus group

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Follow-ups from Advance Training

- Students with the most significant cognitive disabilities are held to high expectations based on alternate academic content standards (Essential Elements).
- Students' results from DLM alternate assessments can be summarized as their overall achievement level in each subject.
  - There are four levels
  - Performance level descriptors (PLDs) describe what students at each achievement level typically know and can do

12

Follow-ups from Advance Training

- By the time students leave high school we want them to be prepared for a range of postsecondary opportunities.
- There are many different factors that contribute to student readiness to pursue postsecondary opportunities. Academics are one factor.

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Based on Your Comments + Questions

- We'll be supplementing the advance training with other training today
- Linkage levels vs achievement levels
- Number of testlets per subject

- Happy to answer other questions if time allows at the end

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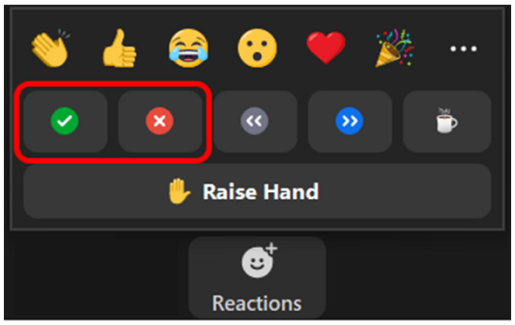
Ready to learn about rating?

Vote with buttons



15

15

OVERVIEW OF THE RATINGS

16

16

What You Are Rating

Evaluate **academic skill statements** relative to **performance level descriptors** (PLDs)

17

Key Question

Using your professional judgment, what is the lowest grade in which a student who achieves At Target on the DLM alternate assessment is 80% or more likely to be able to demonstrate this skill?

18

DLM Performance Level Descriptors

- Grade- and subject-specific descriptions of what students typically can do if they achieve at these levels:
  - Emerging
  - Approaching the Target
  - At Target
  - Advanced
- Does NOT mean all students can do these things
- Does NOT mean a student can do all of these things

Students who are At Target are proficient and meeting achievement standards.

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At Target	A student who achieves at the **at target** performance level typically can identify details and facts, demonstrate an understanding of language, identify feelings, and recognize text structure when reading literature and informational text. The student identifies details and facts by • identifying concrete details • answering who, what, when, where, or why questions The student demonstrates an understanding of language by • determining words or phrases that complete literal sentences from texts The student identifies feelings by • identifying personal feelings • identifying character feelings The student identifies text structure by • determining which event comes first in a text • using text features to locate information • identifying common elements in two texts When writing, the student • uses facts and details to write about a topic • expresses more than one idea

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Academic Skill Statements

- Derived from postsecondary opportunities identified by a previous panel
  - Employment opportunities
  - Education opportunities
- Each opportunity has associated responsibilities
- Some responsibilities require academic knowledge, skills, or understandings (KSUs)
  - We will call them "skills" for shorthand

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DYNAMIC LEARNING MAPS

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Range of Postsecondary Opportunities

- Postsecondary Employment
  - Veterinary assistant
  - Security assistant
  - Assembly line worker
  - Food delivery person
  - Auto detailer
  - Data entry clerk
  - Baking assistant
  - Certified nursing assistant
  - Receptionist
- Postsecondary Education
  - College program
  - Vocational courses that lead to a certification
  - Apprenticeship
  - Internship
  - Lifelong learning/continuing education
  - Community-based classes

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DYNAMIC LEARNING MAPS

22

Example: Baking Assistant

Responsibilities

- Follow multi-step directions (for example, to read a recipe)
- Clean
- Use equipment

Academic KSUs

- Mix of English language arts (ELA), mathematics, and science
- Examples from ELA:
  - Retell and follow a process in proper order
  - Demonstrate knowledge of word meanings across multiple contexts
  - Demonstrate understanding and comprehension of directions

Academic skill statements

23

23

What is the lowest grade in which a student who achieves At Target is 80% or more likely to be able to demonstrate this skill?

Retell and follow a process in proper order

?

At Target in Grade Levels

- Before Grade 3
- Grade 3
- Grade 4
- Grade 5
- Grade 6
- Grade 7
- Grade 8
- Grade 9–10
- Grade 11–12
- After Grade 11–12

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REVIEW THE PLDS

25

PLDs for This Project

Independent activity:

- Spend a few minutes reviewing the grade levels
  - Make notes or mark signs of progressions
  - What seems to differentiate performance at the grade levels?

We will discuss your observations as a group

26

RATING PROCEDURES

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Materials You Need

- Rating guide
- PLDs
- Rating workbook (google worksheets)
  - You will receive an email with a link to your worksheet during this training
- You may want scratch paper

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Panel Process

1. Each panelist completes independent ratings
   - Ask yourself the key question for each academic skill
2. Facilitator reviews consolidated ratings, checks correspondence
3. Panel discusses where needed, seeking consensus
   - Does not require unanimous agreement
   - May end up with multiple answers by adding a second version of the skill statement (more on that later)

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Rating Process

- Evaluate each academic skill statement against the At Target level in Grade 3
- Ask yourself the key question
- Work your way up the grade levels until you find the lowest grade where a student is likely to have that skill

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For Each Skill

1. Record a rating in the online rating sheet
2. Optional: make notes about your rationale, interpretation, etc.
   - Especially helpful if you can think of different ways to interpret the skill

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Key Question

Using your professional judgment, what is the lowest grade in which a student who achieves At Target is 80% or more likely to be able to demonstrate this skill?

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Unpacking the Key Question

Using your professional judgment, what is the lowest grade in which a student who achieves At Target is 80% or more likely to be able to demonstrate this skill?

Least complex version of the skill

Likely to use the skill consistently

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Rating Options

Rating	Definition
0	A student is at least 80% likely to be able to demonstrate the skill **before** achieving At Target in Grade 3.
3–11	A student is at least 80% likely to be able to demonstrate the skill if they achieve At Target in Grade _____.
13	A student is unlikely to be able to demonstrate the skill until after achieving At Target in Grade 11.
99	Academic skill statement is not specific or clear enough to support any rating (even after reviewing opportunity list).

34

Think About…

DO think about:	DO NOT think about:
• How the skill could be used for a range of postsecondary opportunities	• Whether students you personally know could demonstrate the skill • How much support a student might need to show that skill in the workplace or an educational setting • How well the skill aligns to language in the PLD

Other Pitfalls to Avoid

- Thinking about when topics are introduced in the curriculum
- Using performance levels other than At Target to make inferences (especially across grades)

Before you Choose "99"

- We want to use 99 as a last resort, if the skill isn't ratable
- If you need examples of the opportunities where the student might use this skill, ask via the chat tool and we will give an example or two
- If you still can't see the relationship to any grade, rate it 99 and leave a note about why

37

Example Rating Sheet

Academic Skill	PL Code	Notes
Accurately copy information	3	Assumed written words
Accurately decode letters, numbers	4	
Accurately decode time on clock	3	
Classify items by common attributes	0	
Spell correctly when writing	11	

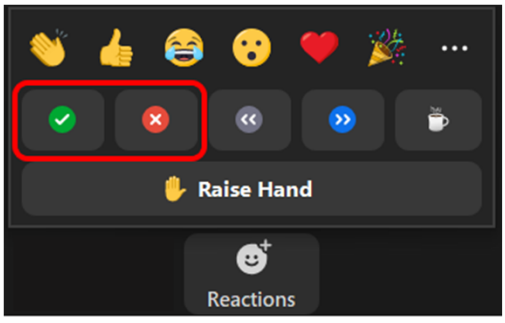
38

Questions before we get started?

39

Ready to try it?

Vote with buttons

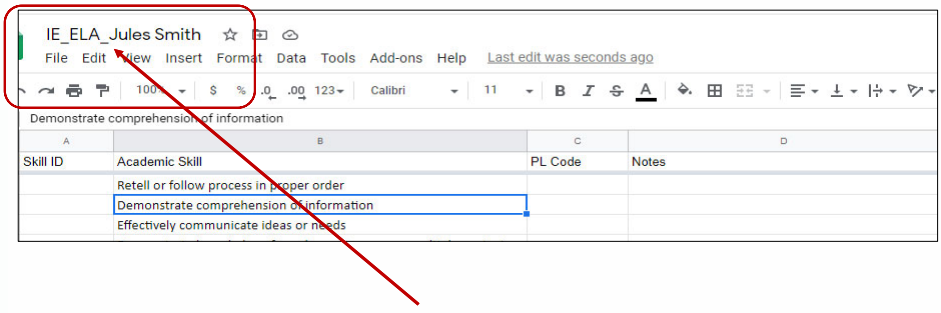


40

LET'S TRY IT!

41

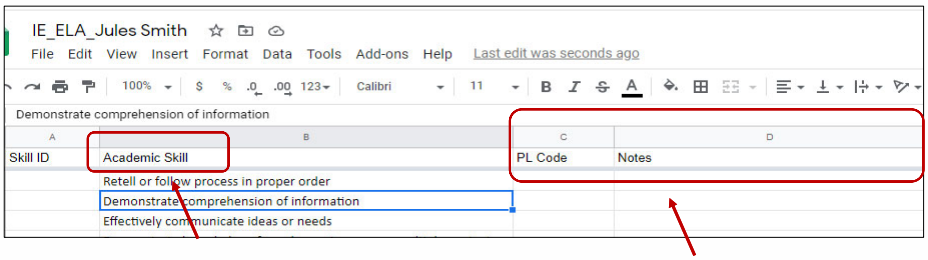
Find Your Rating Sheet



Check your zoom chat for a link to your personalized Google sheet.

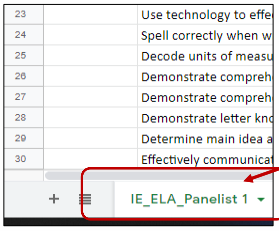
42

About Your Rating Sheet



You cannot edit this column.

You can edit these columns.



Do NOT rename this tab.

DYNAMIC LEARNING MAPS

43

Let's Do the First One Together

- Look at the statement
- Look at the PLDs
- Answer the key question
- Decide what your code would be
- Let us know when you're ready to discuss 
- Discuss ratings

DYNAMIC LEARNING MAPS

44

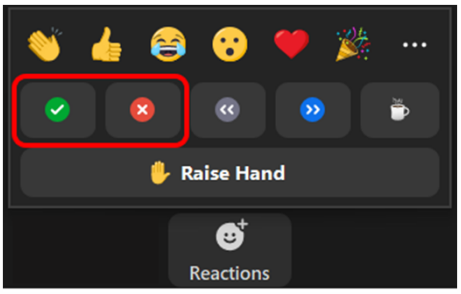
Key Question

Using your professional judgment, what is the lowest grade in which a student who achieves At Target is 80% or more likely to be able to demonstrate this skill?

45

Ready to try it on your own?

Vote with buttons



46

Next Step

Code the next five skills on your own

- Look at the statement
- Look at the PLDs
- Answer the key question
- Record your code
  - Add notes to help with our discussion

We will discuss again when everyone is done

47

Discussion of First Set

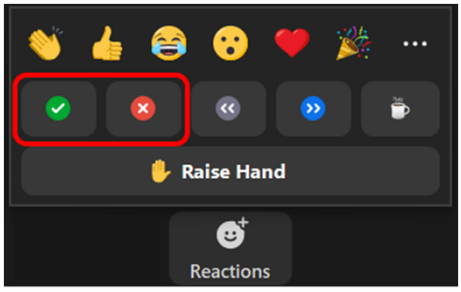
48

Next Step

49

Ready for independent ratings?

Vote with buttons



50

TRANSITION TO INDEPENDENT RATINGS

51

51

How It Works

- Work independently through the rest of the skills list
  - Facilitators can see your progress in your rating sheet
- You can go off-camera/muted and manage your own breaks
- If you need help, ask via text chat to the whole group or voice chat
- Facilitators will give time checks and answer questions via **text chat** while everyone works; please monitor

52

52

Key Question

Using your professional judgment, what is the lowest grade in which a student who achieves At Target is 80% or more likely to be able to demonstrate this skill?

53

Think About…

DO think about:	DO NOT think about:
• How the skill could be used for a range of postsecondary opportunities	• Whether students you personally know could demonstrate the skill • How much support a student might need to show that skill in the workplace or an educational setting • How well the skill aligns to language in the PLD

54

Hints and Reminders

- Ask for example opportunities when you think a skill is not ratable
  - Text chat to whole group or unmute and ask out loud
- Record your notes to help you remember the reasons for your ratings
- Think about the least complex version of the skill
- Use the "do/do not think about" list if you find yourself down a rabbit hole

55

55

Independent Ratings In Progress

56

56

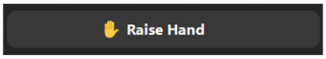
GROUP DISCUSSION

Goals for Discussion

- Review skills for which we didn't have a clear majority from independent ratings
- Facilitator will show the combined ratings
- For each skill we discuss
  - Share the rationale for your rating
  - Listen to each other's perspectives

Discussion Reminders

- Follow group discussion guidelines
- Remember the extra steps needed to make this work in Zoom
- Voice + text are okay for this phase
  - Facilitator will read aloud anything shared via the text chat
  - Raise your hand if you want to speak without interrupting



- Do NOT edit your own sheets now

Options for Group Decisions

1. By consensus, identify a final rating for the skill
   - Will check agreement with voting buttons
   - Does not have to be unanimous
   - We can make notes about the decision including dissenting views
2. Split the skill, make two versions
   - Useful if the panel is split between interpretations that lead to different ratings

Group Discussion In Progress

61

PANEL RATINGS: WRAP-UP

62

Materials and Reminders

- Papers are not secure materials. You may keep or recycle
- Electronic documents are not secure materials. You may keep or delete
- Rating sheets **ARE** secure materials. Do not download, copy, take screen shots, etc.
- Keep ratings and discussion confidential

63

Evaluation

Please log in to the training course and complete the panel evaluation.

training.dynamiclearningmaps.org

Once everyone completes the evaluation, we will come back together for the focus group. Let us know when you're ready: 

64

FOCUS GROUP

65

Purpose

- Take a step back from the ratings
- Get your impressions of academic skills and postsecondary opportunities for students who take DLM assessments

66

How it Works

- We have several questions but it is more like a conversation
- Not a round-robin, but we hope everyone will share their opinions
- Please use **voice only** for this section
  - Raise your hand if you want to speak without interrupting

67

Focus Group In Progress

68

MEETING WRAP-UP

69

First: Thank You!

70

What Happens Next

- Information from your panel is analyzed and written up for a chapter in the technical report
  - Share with states and the DLM Technical Advisory Committee
- The whole big tech report is posted on the website in late fall and goes to the US Department of Education in December 2022 for peer review

71

What Happens Next: Payment

- You will receive a link to the honorarium form to start the payment process. The link will be sent within a week from atlasoperations@ku.edu.
- Payments usually take 8-10 weeks for processing

72

Final Questions or Observations?

73

We're Done!

Thank You So Much!

74

DLM Ratings of Academic Skills with Alternate Achievement Standards

Virtual Meeting Checklist

Before your panel meeting starts, make sure you have / have done the following:

Technology

- ❒ Computer, tablet, or smartphone with a functional video camera and audio headset or earbuds with a microphone.
  - If you use a smartphone for videoconferencing, your computer is set up to complete your work as a panelist.
  - Computer must have up-to-date browser installed (Chrome, Safari, Firefox).
- ❒ Secure, stable high-speed internet connection that allows for videoconferencing.

Other

- ❒ Quiet, private space that is free of distractions for the entirety of the meeting. (You will be able to take breaks at scheduled times throughout the day.)
- ❒ Turn off messaging and notifications during focused time slots on the agenda.
- ❒ Familiarize yourself with the materials mailed to you and those provided in Moodle and have them accessible during the group meeting.

Support

- ❒ On the day of the panel meeting, you can contact DLM staff at (785) 864-7461 if you need assistance joining the Zoom call.
- ❒ If you have any questions regarding the study or your participation, please contact dlm@ku.edu.

Guidelines for Productive Virtual Group Discussions

1. **Share responsibility for including all voices in the conversation.** If you tend to have a lot to say, make sure you leave sufficient space to hear from others. If you tend to stay quiet in group discussions, challenge yourself to contribute so others can learn from you.
2. **Listen respectfully.** Do not interrupt or engage in other conversations while others are speaking. Comments that you make (whether asking for clarification, sharing critiques, or expanding on a point) should reflect that you have paid attention to the previous speakers' comments.
3. **Be open to changing your perspectives based on what you learn from others.** Try to explore new ideas and possibilities. Think critically about the factors that have shaped your perspectives. Seriously consider points-of-view that differ from your current thinking.
    a. Strive for intellectual humility. Be willing to grapple with challenging ideas.
    b. Let go of personal, anecdotal evidence and look at broader group-level patterns.
4. **Understand that we are bound to make mistakes in this space**, as anyone does when approaching complex tasks or learning new skills. Strive to see your mistakes and others' as valuable elements of the learning process.
5. **Understand that your words have effects on others.** Speak with care. If you learn that something you've said was experienced as disrespectful or marginalizing, listen carefully and try to understand that perspective. Learn how you can do better in the future.
6. **Take pair work or small group work seriously.** Remember that your peers' learning is partly dependent upon your engagement.
7. **Understand that others will come to these discussions with different experiences from yours.** Be careful about assumptions and generalizations you make based only on your own experience. Be open to hearing and learning from other perspectives.
8. **Adjust your habits to fit the virtual environment.** Facial expressions and nonverbal cues can be harder to see during video meetings. If you are worried about interrupting, raise your hand or use the conference system's reaction tools to get other people's attention. Keep your mic on mute when you aren't speaking, to minimize background noise and make it easier to hear the conversation. Take steps to remove distractions from your environment so you can stay focused on the discussion. Let the people in your physical environment know when to expect you to be available and unavailable based on the meeting schedule.

Appendix 5.E: Sampling of Academic Skills and Final Ratings

Subject	Academic skill	Final rating
ELA	Demonstrate letter knowledge	0
	Sort items by common attributes	0
	Accurately copy information without understanding	3
	Classify items by common attributes	3
	Demonstrate comprehension of information presented in a chart	3
	Effectively communicate ideas in writing	3
	Accurately decode letters and numbers in common words	4
	Accurately decode time on a digital clock that includes numbers and am/pm	4
	Decode text	4
	Demonstrate understanding of topic	5
	Effectively communicate ideas or needs in writing	5
	Gather and accurately record information	5
	Demonstrate understanding of a text by determining main idea	6
	Retell or follow process in proper order	7
	Accurately use standard English mechanics and grammar in simple sentences	9
Mathematics	Classify items by common attributes	0
	Express number of objects with numerals	0
	Match items that share attributes	0
	Express quantities of measurement in appropriate units	3
	Identify data type	3
	Record data in an existing chart (e.g., categorical data)	3
	Add and subtract multi-digit numbers without regrouping	4
	Count coins and dollar bills	4
	Identify next task in a sequence of activities using ordinal numbers	4
	Multiply money by whole number (e.g., identify payment)	5
	Read scale on a thermometer to measure temperature	5
	Add and subtract money (e.g., identifying account balance for a specific period of time)	6
	Add and subtract time intervals (e.g., minutes or hours)	6
	Divide money by whole number (e.g., identifying payment)	7
	Add and subtract money (e.g., identifying payment and change from the payment)	8
	Identify percent of a quantity	8

UNC CHARLOTTE
CATO COLLEGE *of* EDUCATION

Department of Educational Leadership
9201 University City Blvd., Charlotte, NC 28223-0001

MEMORANDUM

TO: Dynamic Learning Maps (DLM)

FROM: Claudia Flowers, Professor Emeritus

DATE: August 30, 2022

RE: External Review of *2022 Year End Academic Skills to Support Pursuit of Postsecondary Opportunities Study*

I was asked to serve as an external reviewer for the *2022 Academic Skills to Support Pursuit of Postsecondary Opportunities Study.* I have over 17 years of experience working with alternate assessments that are designed for students with significant cognitive disabilities (SWSCD). I serve on DLM's Technical Advisory Committee, and I was the external reviewer for the *2020 Academic Skills to Support Pursuit of Postsecondary Opportunities* study. This memo is organized into five sections: (a) Purpose of the Study, (b) Implementation of Study, (c) Materials Reviewed, (d) External Review Results, and (e) Summary.

Purpose of Study

The *2022 Academic Skills to Support Pursuit of Postsecondary Opportunities* study was designed to provide evidence to address the U.S. Department of Education Standards, Assessment, and Accountability Peer Review Critical Element 6.3, which states:

> *The alternate academic achievement standards are aligned to ensure that a student who meets the alternate academic achievement standards is on track to pursue postsecondary education or competitive integrated employment.*

Special educators and mathematics/English Language Arts (ELA) content experts were asked to evaluate academic knowledge, skills, and understanding (KSUs) statements (i.e., academic skills associated with postsecondary opportunities) relative to the *at-target* performance level descriptors (PLDs) for the DLM year-end assessments. The key question for panelists was,

> *Using your professional judgment, what is the lowest grade in which a student who achieves "At Target" on the DLM alternate assessment is 80% or more likely to be able to demonstrate this skill?*

Panelists independently rated the correspondence between the 3rd to 11th grade PLDs to KSUs using the following scale:

- 0 = A student is at least 80% likely to be able to demonstrate the skill before achieving *At Target* in Grade 3.
- 3 to 11 = A student is at least 80% likely to be able to demonstrate the skill if they achieve *At Target* in Grade ____.
- 13 = A student is unlikely to be able to demonstrate the skill until after achieving *At Target* in Grade 11.
- 99 = Academic skill statement is not specific or clear enough to support any rating (even after reviewing opportunity list).

The study was designed to examine two hypotheses: (1) Most KSUs are associated with grade 3 to high school *at-target* PLDs, and (2) Most employment opportunities, education opportunities, and soft skills KSUs will be associated with grade 3 to high school *at-target* PLDs.

Implementation of Study

Panelists participated in an asynchronous advanced training session and synchronous virtual online mathematics and ELA sessions. The asynchronous advanced training session required panelists to login into a training site and complete all activities at least one day before the virtual session. The mathematics and ELA panels followed the same virtual session implementation schedule:

- Introductions and Housekeeping
    - Welcome and Introductions
    - Roles and Responsibilities
    - Housekeeping – materials panelist would need, guidelines for group discussion, and virtual meeting checklist
    - Using Zoom – using video, muting mic if not talking, voting buttons, and use of chat
    - Reminder of why they were participating in this activity and the importance of the activities
    - A preview of upcoming activities
    - Follow-up to Advance Training
- Rating Activities
    - Review and discussion of PLDs (*At Target*) - What differentiates the levels?
    - Rate the first academic skill independently then meet as group to come to a consensus
    - Rate a set of 5 academic skills independently, then meet as group to come to a consensus (calibration)
    - Rate all remaining skills independently, then discuss items that required either consensus or editing/splitting the skill to accommodate different ratings
- Post Rating
    - Online Evaluation
    - Focus group

Videos and Materials Reviewed

Videos and materials for the mathematics and ELA asynchronous advanced training session were the same as those used for the *2020 Academic Skills to Support Pursuit of Postsecondary Opportunities Study* and consisted of:

- Seven videos
    - Who are students with significant cognitive disabilities? (14-minutes video)
    - Postsecondary opportunities for students who take DLM assessments (12-minutes video)
    - DLM Essential Elements (13-minutes video)
    - What do the DLM assessment measure (6 minutes)
    - What is skill mastery? (4 minutes)
    - What information is contained in a score report? (7 minutes)
    - DLM performance level descriptors (5 minutes)
- Self-evaluation after Advanced Training (7 items that asked panelist to rate their knowledge of content from the videos and one item that allowed panelist to write any questions that they might have to tailor the training for the virtual meeting)
- Confidentiality Statement
- Informed Consent
- Cover letter (providing times for upcoming virtual activities)
- Meeting Agenda
- Virtual Meeting Checklist
- Rating Guide
- Performance Level Descriptors
- Guidelines for Group Discussion

Materials and videos for the Mathematics and ELA virtual sessions included:

- Mathematics (7 hours) and ELA (5 hours) videos
- Example agenda and slide deck (ELA)
- Summary of panelist expertise/demographics
- Summaries of panelists evaluations
    - Self-evaluation collected after advanced training
    - Post-virtual meeting evaluations
- Panelist ratings
- PSO 3 Rating Guide
- Performance Level Descriptors

During the virtual sessions, panelists were provided a link to a Google sheet of the academic KSU statements on which to record their ratings. Ratings were monitored and aggregated by the session facilitators during the sessions for panelist discussion. At the end of the virtual session, panelists were directed to a 13-item questionnaire to evaluate their experiences in the virtual meeting. Panelists also participated in a focus group to discuss their experience in the sessions. Panelists responded to three questions: (1) To what extent do you think the KSUs are important skills for people to use in postsecondary education and employment settings? (2) To what extent did employment and educational opportunities reflect high expectations for students with significant cognitive disabilities? (3) Do you think students who achieve *at-target* or above are on track to

pursue postsecondary opportunities, including competitive integrated employment, with supports as needed?

Review Results

The external review results are organized into five sections: 1) Materials, 2) Training, 3) Panelists, 4) Facilitators, and 5) Implementation. This methodology is similar to evaluating standard setting and was used in the 2020 review.

Materials

The materials were reviewed based on the following three features: (a) appropriateness of content, (b) appropriateness of design and delivery, and (c) overall quality of materials. The advanced training videos and materials were the same as those used in the *2020 Academic Skills to Support Pursuit of Postsecondary Opportunities Study.*

Appropriateness of Content

All materials contributed to and enhanced an understanding needed for panelists to successfully participate in the study. The purpose, objectives and goals for the study were closely aligned to the materials. Advanced training materials provided the context, language, and rationale needed for the study. For example, videos presented the characteristics of SWSCD, postsecondary opportunities, DLM assessment, and PLDs. All relevant topics were presented and no content gaps were noted. The advanced training self-evaluation provided panelists an opportunity to ask for clarification, which was addressed in the virtual meeting. The more complex materials and activities (i.e., rating the KSUs to the PLDs) were presented at the beginning of the virtual meeting.

The organization of all materials built on the content previously presented. The materials were designed to provide enough information for panelists to meaningfully engage in the study while not overwhelming them. The PowerPoint slides provided an advanced organizer for panelists to gauge their progress. During the virtual training, the difficult points were given the most attention (i.e., rating activity, PLDs, and KSUs) and some parts of the DLM assessment system, which was not needed for rating, were de-emphasized (e.g., essential elements and linkage levels).

Appropriateness of Design and Delivery

Given the online nature of all activities, the organization and navigations of the advanced training materials and content were logically structured, engaging, accessible, easy to navigate, and addressed the study objectives. The training site was well designed with specific information easy to find. Technical support was provided for the advanced training and the virtual meetings.

The advanced training design and delivery were appropriate and allowed panelists to review the materials at their convenience. While the virtual session training was effective, I believe an in-person meeting would have been more effective for monitoring panelists, identifying potential misunderstanding, and progress at a faster pace. But given the pandemic, the virtual meeting training was appropriate and productive and resulted in high-quality results. The meeting checklist, PowerPoint presentation, and access to technical support provided the guidelines for how to

participate in the virtual environment and followed best practices for conducting online meetings (Harris, 2020). I only observed minor confusion about where the materials were located or how to access the rating forms, and these confusions were quickly resolved. Additionally, one facilitator was designated to address any technical problems during the virtual meetings, which prevented delays due to virtual environment problems or inability to find materials.

Overall Quality of Materials

The presentation and quality of all materials were technically sound, professional, and used language that panelists would understand. Important terms were defined and examples were provided. The videos were well produced, with both appealing visual and verbal descriptions that maintained the attention of the viewers. As an indirect measure of the quality of the materials, the self-reported indicators of advance training suggested the panelist had a good understanding of DLM assessment eligibility criteria (93% agreed), postsecondary opportunities for SWSCD (100% agreed), description of SWSCD(93% agreed), how skill mastery is defined in DLM (93% agreed), and description of DLM assessment results (93% agreed).

Training

All panelists participated in advanced training, training at the beginning of the virtual meeting, and calibration activities. Training was evaluated based on the following three features: (a) objectives clearly stated, (b) guidance clear, (c) evaluation conducted to assess panelists' readiness.

Clear Objective and Goals for Training

The objectives, rationale of study, and importance of training were clearly stated during the advanced training and the virtual meeting. The instructions and guidance provided by the facilitators were clear and included multiple opportunities to assess panelists' understanding. Panelists were reminded of the importance of their participation and every opinion was valued. At the end of advanced training, panelists had an opportunity to ask questions which were addressed in the virtual sessions. All the panelists (100%) reported on the evaluation survey that the overall goals of the ratings panel meeting were clear.

Quality of Guidance

Part of the virtual session training included a calibration session, which provided the opportunity for panelists to see the reasoning of other panelists. The facilitator asked panelists to independently rate one academic KSU then meet as a group for consensus building. Next, panelists rated 5 KSU statements independently, and again met as a group to come to a consensus. Panelists were offered another opportunity to rate another 5 KSUs if needed or to independently rate the remaining KSUs. None of the panels requested an additional calibration session. On the evaluation survey, all panelists (100%) reported that the advanced and virtual training prepared them to complete the activities.

Observations of the calibration activities suggested panelists increased their agreement or understood how their interpretation of the KSUs could create different ratings. For example, for the

KSU "add or subtract multi-digit numbers" panelists discussed how the number of digits and if grouping or ungrouping during the addition or subtraction could result in different grade-level PLD ratings. Panelists were encouraged to take notes in their ratings for potential modifications of the KSUs. Additionally, a support document was developed that reminded panelists that the focus of their ratings should be on how the skill could be used for postsecondary opportunities and panelists should not focus on specific students, supports, or the specification of the language in the PLDs.

The rating activities were very complex and exhausting for panelists given all activities were completed in a single day. Important steps were provided to panelists to help them logically step through the process and reduce the cognitive load required for panelists to complete the ratings.

Steps given to panelists:

1. Look at the academic statement
2. Look at the PLDs
3. Answer the key question (*Using your professional judgment, what is the lowest grade in which a student who achieves "At Target" on the DLM alternate assessment is 80% or more likely to be able to demonstrate this skill?*)
4. Decide what your code would be
5. Let us know when you are ready to discuss
6. Discuss ratings

Evaluation of Panelists Readiness

In the virtual sessions, panelists had multiple ways of asking questions, including using the chat box or asking during the session. Before moving to the next topic, panelists were polled on their understanding. The facilitators monitored panelists' participation and would call on specific panelists when differences in ratings were noted.

No panelist requested additional training beyond the planned calibration session. The evaluation results supported the effectiveness of the panelists readiness. Based on the evaluation results, all panelists (100%) reported that they agreed or strongly agreed that "The advance and meeting-day training prepared me to complete my activities."

Another indication of the quality of the training is the number of KSU statements that needed to be discussed at the end of independently rating all items. The panelists reached consensus without discussion on 42% (15 of 36 KSUs) of the mathematics and 50% (26 of 46 KSUs) of the ELA.

It should be noted that some panelists did not complete all ratings. In mathematics, out of the 41 KSUs one panelist rated 38 KSUs and another panelist rated 32 of the KSUs. In ELA, one panelist did not rate 4 of the 53 KSUs. This might not be an indication of the readiness of the panelists but an indication that panelists worked at different rates.

Panelists

DLM state partners were asked to identify special educators who taught students who took the DLM assessment or general educators who had expertise in more than one grade band and were familiar with DLM alternate assessment. Of the 114 applicants, 12 mathematics and 11 ELA panelists were selected based on coverage across grades and general and special educators. Panelists were evaluated based on the following two features: (a) representativeness of panelists and (b) knowledge and skill of panelists.

Representativeness of Panelists

There were 9 mathematic and 5 ELA panelists. Panelists were from 7 states and were primarily special educators or dual licensed teachers. There were no general education teachers. About half of the panelists had over 16 years of experience and had experience with transition training. Panelists were a mix of elementary, middle, and high school teachers or had expertise in multiple grade levels. The size of the ELA panel was small (N=5) but there was a diversity of opinions and ideas with rich discussion of the academic content. The original recruitment design consisted of 11 ELA panelists, but due to panelists dropping out at the last moment, it would have been difficult to increase the size of the ELA panel.

Knowledge and Skills of Panelists

Based on observations, all panelists were knowledgeable in their area and able to actively and meaningfully participate in all activities. During the virtual sessions, some panelists tended to focus on what their students were able to do at the different grade level when rating the KSUs but they were reminded to anchor their ratings in the content of the KSUs and PLDs. All panelists (100%) reported they were confident that the meeting produced realistic evaluation of the academic skills (from post virtual panelist evaluation).

Facilitators

There were three ATLAS staff members who facilitated the meetings. Two of the facilitators focused on implementing the rating activities and the third facilitator provided technical support and managed the online environment. Facilitators were evaluated based on the following two features: (a) facilitators knowledge of materials and rating process and (b) opportunity for panelists to voice opinion.

Facilitators Knowledge of Materials and Rating Process

From my observations, all facilitators were knowledgeable of the materials and the process. During discussions of the ratings, the lead facilitator would restate what she heard the panelists say to ensure she was capturing the panelists reasoning for the ratings. Panelists were reminded of the value of their opinion and the difficulty of the tasks. The lead facilitator would remind panelists to anchor their ratings on the content in the PLDs and not to think about what their students know and can do.

Effective strategies for engaging all panelists were used and methods for encouraging quieter panelists to engage in the discussion without pressuring or embarrassing panelists was implemented, especially if they had divergent opinions. The lead facilitator was able to tactfully either bring saturated discussions to a close or to let the discussion continue until a consensus was met. All of the panelists (100%) reported "The facilitator was effective at guiding our panel through the ratings process."

Opportunity for Panelists of Voice Opinion

All panelists were provided multiple opportunities to voice their opinions. The lead facilitator did not drive or dominate the discussions, and she created an environment where panelists' comments and opinions were respected and valued. The rating process was not rushed and the lead facilitator allowed sufficient wait time to ensure all panelists voiced their opinions.

The virtual session evaluation results confirmed that their panel discussion was open and honest (100%) and all panelists (100%) considered the other panelists' opinions when discussing academic skill ratings. There was one panelist who did not agree that their opinion was considered and valued by the group. Based on my observation, the lead facilitator intervened to ensure all opinions were heard and valued when there as a disagreement among the panelists.

Implementation

An agenda was created and given to all panelists. Implementation was evaluated based on the following three features: (a) fidelity of implementation, (b) time allocation and breaks for panelists, and (c) strategies for conducting all-day virtual meeting.

Fidelity of Implementation

There was a high level of implementation fidelity across all panels. The agenda schedule was followed and time was closely monitored. Facilitators knew exactly what needed to be discussed, estimated how much time was needed for each activity, and created breaks and down time for panelists to keep engaged. They also set ground rules that guided behaviors of panelists (see Virtual checklist) and asked panelists to use their video during the discussions and mute their mic when not talking. Facilitators developed strategies for getting everyone involved and helped them monitor their attention level while keeping them engaged.

Time Allocation and Breaks for Panelists

Adequate time was allocated for conducting the study. Most of the panelists completed all ratings and time was built into the schedule for panelists to take a break. The mathematics panel did not have time to answer all the focus group questions, which was the last activity of the day. Additionally, there was not enough time to discuss all the ratings that had diverse opinions but the most divergent opinions were discussed.

Strategies for Conducting All-day Virtual Meeting

Best practices for virtual meetings were used. Before the meeting, choice of technology, protection of privacy, testing of technology, and an agenda was provided (Harris, 2020). During the meeting, distractions were minimized, microphones were muted, chat box communication was activated, question and answer time was provided, and panelists were greeted and introduced. After the rating sessions, panelists concluded with a focus group asking about their experiences and an evaluation survey was conducted. Even given the complexity of the activities and the all-day online meeting, most panelists were able to maintain attention.

The focus group discussion provided additional evidence that enhanced the study. Most of the panelists clearly saw the strong connection between what they taught in K-12 schools and how important it is for preparing students for postsecondary school opportunities and success.

Summary

Based on observations, review of materials, and results of surveys, it is my opinion that the *2022 Academic Skills to Support Pursuit of Postsecondary Opportunities Study* was highly effective. It produced high-quality ratings based on the best judgement of a diverse group of experts and allowed an examination of the study's two hypotheses. Results of this study provide rich information about the relationship between DLM alternate assessment knowledge and skills and those knowledge, skills, and understandings expected for successful postschool opportunities. An important finding of this study is how the KSUs are being assessed at early grade levels, which provides a foundation for developing the most complex skills at the upper grade levels that are needed to successfully engage in postschool opportunities. The table below summarizes my findings.

Rating Elements	**Questions**	**Evaluation**
Materials	Were the materials appropriate and aligned to the objectives of the study?	All materials aligned to the purpose and objectives of the study. Information in the materials provided enough information for full participation in the study without overwhelming the panelists.
	Were the materials designed and delivered in a manner that was accessible and easy to understand?	Virtual design and delivery of materials were excellent. Panelists reported materials were accessible and easy to understand. For more complex materials, panelists were provided opportunities to ask questions.
	What was the overall quality of the materials?	All materials were technically sound, professional, and used

		language that educators understood.
Training	Were the objectives and goals clearly stated?	The objectives and goals of the training were stated during the advanced training and the beginning of the virtual training. 100% of panelists reported that the overall goals of the ratings were clear.
	Was the guidance clear?	Guidance was clear with multiple opportunities for panelists to check their understanding. The calibration sessions provided opportunities for panelists to evaluate their rating process and adjust as needed. Rating strategies and procedures helped panelists anchor their ratings in the KSUs and PLDs.
	Were evaluations conducted to assess the panelists' readiness to participate?	Evaluations were completed after Advanced Training and after completion of the virtual meeting. Readiness checks were also evaluated during the calibration sessions and training. 100% of panelists reported the training prepared them to complete the study activities.
Panelists	Were panelists recruited to be representative of important expertise and characteristics?	All panelists had an understanding of SWSCD and taught the subject areas they were rating. Panelists came from 7 states and taught across different grade levels. While the ELA panel was smaller than originally planned, the panel provided a range of diverse views.
	Did the panelists have the knowledge and skills to rate the KSU statements to the PLDs?	All panelists had the knowledge and skills to rate the alignment between the KSU statements and the PLDs. The special educators tended to focus on what their students know and can do but were able to redirect to the content in the KSUs and PLDs.

Facilitators	Were the facilitators knowledgeable of the materials and process?	The two ATLAS facilitators had a deep knowledge and understanding of all materials and processes. The third facilitator worked quietly behind the scenes to keep the online environment running smoothly for all participants.
	Did the facilitators provide opportunities for all panelists to voice their opinion?	All panelists were given opportunities to voice their opinion and there was no pressure to change their ratings. Because panelists' ratings were being electronically monitored, the facilitators were able to call on specific panelists to provide a rationale for their ratings.
	Did the facilitators create a virtual environment that valued panelist opinions?	The panelists were told at the beginning, during, and at the end of all activities that all opinions were valued. Given the challenges of conducting all day virtual meetings, DLM did an exceptional job organizing and implementing the virtual meetings. One panelist reported not feeling heard by the group, but I did not observe this in the video.
Implementation	Were the activities implemented as designed?	There was a high level of implementation fidelity across all panels.
	Was there sufficient time allotted to complete all activities?	There was sufficient time for the ELA panel but the mathematics panel had a truncated focus group (i.e., they only answered one focus group question). A few panelists did not rate all KSUs. Scheduled rest breaks were taken and during the independent rating session, panelists could take breaks as needed. Best practices were used to conduct the all-day virtual meeting.

	Were strategies used to overcome some of the challenges of conducting a virtual meeting?	

Data collected for this study provides richer actionable information about strengthening the alignment of alternate academic achievement standards to high expectations for postsecondary opportunities. Results of this study would provide information for transition experts and create an understanding of blending the in-school academic and functional achievements needed to facilitate students' movement from school to postsecondary endeavors.

Reference

Harris, K. (2020). How to have more efficient and productive meetings while working from home. *The Future of Work.* https://pe.gatech.edu/blog/future-work/virtual-meetings

Resolution of the Dynamic Learning Maps Technical Advisory Committee on the DLM Postsecondary Opportunities Study

The DLM TAC advised the DLM consortium regarding the postsecondary opportunities study in several ways.

1. The TAC provided DLM staff with advice on the design and implementation of the study from the initial conception to post-study review.
2. A member of the TAC reviewed the final set of panel meetings and provided her evaluation to the full TAC for discussion (see Appendix 6A).
3. The TAC reviewed the final study design, study results, and the technical report that described both the study design and study results.
4. Finally, the TAC discussed various interpretations and implications of the study.

Because of the care that went into the design and implementation of the study, the TAC believes that the study was implemented in a sound manner and the results will be useful to member states as they seek to enhance students' postsecondary education and career opportunities, including competitive integrated employment.

At its meeting on September 14, 2022, the TAC unanimously approved this resolution in support of the technical quality of the postsecondary opportunities study and the utility of the findings from the study.

Russell Almond
Karla Egan
Claudia Flowers
Robert Henson
Joan Herman
James Pellegrino
Ed Roeber, Chair
David Williamson
Phoebe Winter