2018–2019 Technical Manual Update

Delaware Supplement

February 2020

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1. Introduction

During the 2018–2019 academic year, the Dynamic Learning Maps® (DLM®) Alternate Assessment System offered assessments of student achievement in mathematics, English language arts (ELA), and science for students with the most significant cognitive disabilities in grades 3 through 8 and high school.

A complete technical manual was created for the first year of operational administration for ELA and mathematics (Dynamic Learning Maps Consortium [DLM Consortium], 2016). Additionally, the 2018–2019 update to the ELA and mathematics technical manual provides updated information for the 2018–2019 administration, including only sections with changes (DLM Consortium, 2019a). This volume provides state-specific information for two of those chapters. For a complete description of the DLM system, refer to the *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2016). For a complete description of DLM science assessments, refer to the *2015–2016 Technical Manual—Science* (DLM Consortium, 2017b).

1.1. State-Specific Supplement Overview

Chapter 1 provides an overview of the contents of the Delaware state-specific supplement.

Chapter 2 and Chapter 3 do not include data specific to a single state and are not included in the state-specific supplement.

Chapter 4 provides an update on test administration for Delaware during the 2018–2019 year. The chapter provides updated Personal Needs and Preferences Profile selections, a summary of administration time, an updated writing testlet assignment process, updated adaptive routing analyses and teacher survey results regarding educator experience and system accessibility.

Chapter 5 and Chapter 6 do not include data specific to a single state and are not included in the state-specific supplement.

Chapter 7 reports the 2018–2019 operational results for Delaware, including student participation data. The chapter details the percentage of students at each performance level; subgroup performance by gender, race, ethnicity, and English learner status; and the percentage of students who showed mastery at each linkage level. Finally, the chapter provides descriptions of changes to data files during the 2018–2019 administration.

Chapter 8, Chapter 9, Chapter 10, and Chapter 11 are not included in the state-specific supplement. For a complete summary, see the *2018–2019 Technical Manual Update—Year-End Model* (DLM Consortium, 2019a).

2. Map Development

Learning map models are a unique key feature of the Dynamic Learning Maps® (DLM®) Alternate Assessment System and drive the development of all other components. For a description of the process used to develop the map models, including the detailed work necessary to establish and refine the DLM maps in light of the Common Core State Standards and the needs of the student population, see Chapter 2 of the *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2016).

3. Item and Test Development

For a description of updates to the Dynamic Learning Maps® (DLM®) Alternate Assessment System's item and test development for the 2018–2019 academic year, including a summary of external reviews of items and testlets for content, bias, and accessibility; a description of the operational assessments; and a description of field tests, see Chapter 3 of the *2018–2019 Technical Manual Update—Year-End Model* (DLM Consortium, 2019a).

For a complete description of item and test development, including information on the use of evidence-centered design and Universal Design for Learning in the creation of concept maps to guide test development; external review of content; and information on the pool of items available for the pilot, field tests, and 2014–2015 administration, see the *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2016).

4. Test Administration

Chapter 4 of the Dynamic Learning Maps® (DLM®) Alternate Assessment System *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2016) describes general test administration and monitoring procedures. This chapter describes updated procedures and data collected in 2018–2019 for the state of Delaware, including a summary of administration time, writing testlet assignment, adaptive routing, Personal Needs and Preferences (PNP) profile selections, and teacher survey responses regarding user experience and accessibility.

For a complete description of test administration for DLM assessments, including information on available resources and materials and information on monitoring assessment administration, see the *2014–15 Technical Manual—Year-End Model* (DLM Consortium, 2016).

4.1. Administration Evidence

This section describes evidence collected during the spring 2019 operational administration of the DLM alternate assessment. The categories of evidence include data relating to administration time, the adaptive delivery of testlets in the spring window, assignment of writing testlets, and administration incidents.

4.1.1. Administration Time

Estimated administration time varies by student and subject. During the spring testing window, the estimated total testing time is 60–75 minutes per student in English language arts and 35–50 minutes in mathematics.

The published estimated total testing time per testlet is around 5–10 minutes in mathematics, 10–15 minutes in reading, and 10–20 minutes for writing. Published estimates are slightly longer than anticipated real testing times because of the assumption that teachers need time for setup. Actual testing time per testlet varies depending on each student's unique characteristics.

Kite® Student Portal captured start and end dates and time stamps for every testlet. To calculate the actual testing time per testlet, the difference between these start and end times was calculated for the spring 2019 operational administration. Table 4.1 summarizes the distribution of test times per testlet. Most testlets took around 5 minutes or less to complete, with mathematics testlets generally taking less time than English language arts testlets. Testlets time out after 90 minutes.

Table 4.1. Distribution of Response Times per Testlet in Minutes

Grade	Min	Median	Mean	Max	25Q	75Q	IQR
English language arts							
3	0.20	3.52	4.29	47.12	2.43	5.31	2.88
4	0.28	3.97	4.98	41.73	2.62	6.58	3.96
5	0.25	3.82	4.77	32.87	2.50	5.92	3.42
6	0.10	4.70	5.59	53.28	3.00	7.22	4.22
7	0.35	4.40	5.28	51.23	3.05	6.30	3.25
8	0.20	4.88	5.74	74.27	3.20	6.95	3.75
9	3.00	3.88	6.76	21.90	3.43	4.45	1.02
10	2.75	3.87	3.94	6.38	3.33	4.05	0.72
11	0.17	4.65	6.47	62.83	3.37	6.85	3.48
Mathematics							
3	0.10	2.00	3.03	63.43	0.98	3.77	2.79
4	0.12	1.75	2.67	64.72	0.98	3.03	2.05
5	0.15	1.93	2.93	55.82	1.17	3.35	2.18
6	0.10	2.45	3.04	28.78	1.48	3.88	2.40
7	0.10	2.08	2.69	13.23	1.33	3.44	2.11
8	0.18	1.92	2.65	35.70	1.22	3.20	1.98
9	0.60	2.16	2.25	4.08	0.95	3.49	2.54
10	0.53	1.36	2.30	9.25	0.91	3.42	2.51
11	0.13	2.02	2.72	16.77	1.18	3.43	2.25

Note.   25Q = lower quartile; 75Q = upper quartile; IQR = interquartile range.

4.1.2. Adaptive Delivery

During the spring 2019 test administration, the ELA and mathematics assessments were adaptive between testlets, following the same routing rules applied in prior years. That is, the linkage level associated with the next testlet a student received was based on the student's performance on the most recently administered testlet, with the specific goal of maximizing the match of student knowledge and skill to the appropriate linkage level content.

- The system adapted up one linkage level if the student responded correctly to at least 80% of the items measuring the previously tested EE. If the previous testlet was at the highest linkage level (i.e., Successor), the student remained at that level.
- The system adapted down one linkage level if the student responded correctly to less than 35% of the items measuring the previously tested EE. If the previous testlet was at the lowest linkage level (i.e., Initial Precursor), the student remained at that level.
- Testlets remained at the same linkage level if the student responded correctly to between 35% and 80% of the items on the previously tested EE.
- When a testlet contained items aligned to more than one EE, a percentage of items answered correctly was calculated for each group of items measuring the same EE. The minimum of these values was then used to determine the next linkage level, based on the above thresholds.

The linkage level of the first testlet assigned to a student was based on First Contact survey responses. The correspondence between the First Contact complexity bands and first assigned linkage levels are shown in Table 4.2.

Table 4.2. Correspondence of Complexity Bands and Linkage Level

First Contact complexity band	Linkage level
Foundational	Initial Precursor
1	Distal Precursor
2	Proximal Precursor
3	Target

For a complete description of adaptive delivery procedures, see Chapter 4 of the *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2016).

Following the spring 2019 administration, analyses were conducted to determine the mean percentage of testlets that adapted up a linkage level, stayed at the same linkage level, or adapted down a linkage level from the first to second testlet administered for students within a grade, subject, and complexity band. The aggregated results can be seen in Table 4.3 and Table 4.4 for ELA and mathematics, respectively.

Due to small sample size, data regarding the adaptation of linkage levels for ELA was only available for Delaware students in Complexity Band 1 for grades 3 and 4, Complexity Band 2 for grades 3 through 8 and grade 11, and Complexity Band 3 for grade 11. Similarly for math, adaptation data was only available for students in Complexity Band 1 for grades 3 and 4 and Complexity Band 2 for grades 3 through 8 and grade 11. Distributions across these grades, complexity bands, and subjects were variable, and consistent patterns were not apparent.

The 2018–2019 results build on earlier findings from the pilot study and the previous years of operational assessment administration (see Chapter 3 and Chapter 4 of the *2014–2015 Technical Manual—Year-End Model*, respectively, as well as Chapter 3 and Chapter 4 of the annual technical manual updates). Results indicate that linkage levels of students assigned to higher complexity bands are more variable with respect to the direction in which students move between the first and second testlets. Several factors may help explain these results, including more variability in student characteristics within this group and content-based differences across grades and subjects. Further exploration with larger sample sizes is needed in this area.

Table 4.3. Adaptation of Linkage Levels Between First and Second English Language Arts Testlets (N = 1,043)

Grade	Foundational		Band 1			Band 2			Band 3		
	Adapted Up (%)	Did Not Adapt (%)	Adapted Up (%)	Did Not Adapt (%)	Adapted Down (%)	Adapted Up (%)	Did Not Adapt (%)	Adapted Down (%)	Adapted Up (%)	Did Not Adapt (%)	Adapted Down (%)
Grade 3	*	*	23.7	52.5	23.7	65.0	20.0	15.0	*	*	*
Grade 4	*	*	13.4	50.7	35.8	28.1	40.4	31.6	*	*	*
Grade 5	*	*	*	*	*	53.3	28.0	18.7	*	*	*
Grade 6	*	*	*	*	*	29.9	29.9	40.3	*	*	*
Grade 7	*	*	*	*	*	28.6	40.0	31.4	*	*	*
Grade 8	*	*	*	*	*	42.9	50.8	6.3	*	*	*
Grade 9	*	*	*	*	*	*	*	*	*	*	*
Grade 10	*	*	*	*	*	*	*	*	*	*	*
Grade 11	*	*	*	*	*	24.1	38.9	37.0	32.2	49.2	18.6

* These data were suppressed because n < 50.
Note. Foundational is the lowest complexity band, so testlets could not adapt down a linkage level.

Table 4.4. Adaptation of Linkage Levels Between First and Second Mathematics Testlets (*N* = 1,042)

Grade	Foundational		Band 1			Band 2			Band 3		
	Adapted Up (%)	Did Not Adapt (%)	Adapted Up (%)	Did Not Adapt (%)	Adapted Down (%)	Adapted Up (%)	Did Not Adapt (%)	Adapted Down (%)	Adapted Up (%)	Did Not Adapt (%)	Adapted Down (%)
Grade 3	*	*	0.0	28.8	71.2	3.1	17.2	79.7	*	*	*
Grade 4	*	*	32.3	17.7	50.0	53.4	19.0	27.6	*	*	*
Grade 5	*	*	*	*	*	9.1	12.1	78.8	*	*	*
Grade 6	*	*	*	*	*	8.2	32.8	59.0	*	*	*
Grade 7	*	*	*	*	*	34.8	34.8	30.3	*	*	*
Grade 8	*	*	*	*	*	3.3	3.3	93.3	*	*	*
Grade 9	*	*	*	*	*	*	*	*	*	*	*
Grade 10	*	*	*	*	*	*	*	*	*	*	*
Grade 11	*	*	*	*	*	1.6	33.9	64.5	*	*	*

* These data were suppressed because *n* < 50.
Note. Foundational is the lowest complexity band, so testlets could not adapt down a linkage level.

4.1.3. Writing Testlet Assignment

Student assignment to emergent and conventional writing testlets was adjusted for the spring 2019 administration to improve the match between student writing skills and complexity of the writing testlet. For a complete description of the two types of writing testlets, please see Chapter 3 of the *2016–2017 Technical Manual Update—Year-End Model* (DLM Consortium, 2017c).

Prior to the spring 2019 assessment administration, each student's spring writing testlet level was assigned via adaptive routing[1] based on performance on the preceding English language arts (ELA) reading testlet. Beginning in spring 2019, teacher responses to a First Contact Survey[2] item about students' writing skills were used to assign students to a writing testlet. The seven-option, multiple-choice item asked teachers to indicate the answer that most closely matched the student's highest level of writing skill, with responses ranging from "Scribbles or randomly writes/selects letters or symbols" to "Writes paragraph-length text without copying using spelling (with or without word prediction)." Delaware teachers most frequently responded that the student "scribbles or randomly writes/selects letters or symbols" (24%), followed by "writes by copying words or letters" (23%), and "writes words or simple phrases without copying using spelling" (19%). The full results are summarized in Table 4.5.

Table 4.5. Responses to Writing First Contact Item

Statement	*n*	%
Scribbles or randomly writes/selects letters or symbols	310	24.1
Writes by copying words or letters	294	22.9
Writes words or simple phrases without copying using spelling	242	18.8
Writes sentences or complete ideas without copying using spelling	216	16.8
Writes words using letters to accurately reflect some of the sounds	122	9.5
Writes using word banks or picture symbols	55	4.3
Writes paragraph-length text without copying using spelling	46	3.6

First Contact responses were used to assign the two types of writing testlets based on a review of emergent and conventional writing testlet content and prior student performance data. Students who teachers indicated they wrote by scribbling, copying or using word bands, or writing words corresponding to some sounds received an emergent-level testlet. Students whose teacher indicated they wrote words or simple phrases, sentences or complete ideas, or paragraph-length text without copying and using spelling received the conventional writing testlet. The number and percentage of Delaware students assigned to each level of writing testlet by grade in spring 2019 is summarized in Table 4.6. Overall, 61% of Delaware students were assigned to an emergent writing testlet and 39% of Delaware students were assigned to a conventional writing testlet.

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[1]For a complete description of adaptive routing, please see Chapter 4 of the *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2017c)

[2]For a complete description of the First Contact Survey, please see Chapter 4 of the *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2017c) and the First Contact census report (Nash et al., 2015)

Table 4.6. Students Assigned to Each Writing Testlet Level by Grade

Grade	Emergent		Conventional	
	n	%	*n*	%
Grade 3	118	82.5	25	17.5
Grade 4	108	75.0	36	25.0
Grade 5	90	63.4	52	36.6
Grade 6	86	62.8	51	37.2
Grade 7	80	52.3	73	47.7
Grade 8	76	48.7	80	51.3
Grade 9	0	0.0	1	100.0
Grade 10	2	100.0	0	0.0
Grade 11	73	47.4	81	52.6

4.1.4. Administration Incidents

As in all previous operational years, testlet assignment during the spring 2019 assessment window was monitored to ensure students were correctly assigned to testlets. Only two incidents were observed in 2018–2019 that had the potential to impact scoring.

The first incident involved a mathematics testlet that was administered with an incorrectly sized graphic due to a technology glitch. The size of the graphic may have impacted student responses to the item. Upon discovery, the item in question was immediately corrected. However, prior to the correction, one student in Delaware had taken the item. Because the size of the graphic may have impacted their answer selection, the total correct responses on the testlet may have impacted routing to the subsequent testlet. The second incident involved an ELA testlet in which an item was placed in the incorrect order within a text. Upon discovery this testlet was immediately removed from the window and replaced with an alternative testlet. Prior to this switch, four students in Delaware had taken the out-of-order testlet. Because the ordering of the testlet may have impacted student responses, the total correct responses on the testlet may have impacted routing to the subsequent testlet. For both incidents, state partners were given the option to revert students to the end of the testlet completed immediately prior to the testlet on which the incident occurred and resume testing, or to let students proceed forward as usual.

As in previous years, an Incident File was delivered to state partners with the General Research File (see Chapter 7 of the *2018–2019 Technical Manual—Year-End Model* (DLM Consortium, 2019a) for more information), which provided the list of all students potentially affected by either issue. States were able to use this file during the two-week review period to make decisions about invalidation of records at the student level based on state-specific accountability policies and practices. Assignment to testlets will continue to be monitored in subsequent years to track any potential incidents and report them to state partners.

4.2. Implementation Evidence

This section describes evidence collected during the spring 2019 operational implementation of the DLM alternate assessment. The categories of evidence include survey data relating to user experience

and accessibility.

4.2.1. User Experience With the DLM System

User experience with the spring 2019 assessments was evaluated through the spring 2019 survey, which was disseminated to teachers who had administered a DLM assessment during the spring window. This section summarizes Delaware users' experience with the Kite system. Additional survey responses are reported in the Accessibility section. For teacher responses to the 2014–2015 version of the survey, see Chapter 4 and Chapter 9 of the *2014–15 Technical Manual—Year-End Model* (DLM Consortium, 2016).

A total of 253 teachers from Delaware responded to the survey (with a response rate of 82.4%) for 814 students.

Participating Delaware teachers responded to surveys for between one and 14 students. Delaware teachers reported having an average of 11 years of experience in ELA, 10 years in mathematics, and 9 years with students with significant cognitive disabilities. The median response to the number of years of experience in ELA was 9 years, the median experience in mathematics was 9 years, and the median experience with students with significant cognitive disabilities was 6 years. Approximately 3% indicated they had experience administering the DLM assessment in all five operational years.

The remainder of this section describes Delaware teachers' responses to the portions of the survey addressing educators' experiences with DLM assessments and Kite Student Portal and Educator Portal.

4.2.1.1. Educator Experience

Survey respondents were asked to reflect on their own experience with the assessments as well as their comfort level and knowledge administering them. Most of the questions required teachers to respond on a four-point scale: *strongly disagree, disagree, agree,* or *strongly agree.* Responses are summarized in Table 4.7.

Nearly all Delaware teachers (97%) agreed or strongly agreed that they were confident administering DLM testlets. Most respondents (86%) agreed or strongly agreed that the required test administrator training prepared them for their responsibilities as test administrators. Most Delaware teachers also responded that they they used the manuals and the Educator Resources page (90%) and that they had access to curriculum aligned with the content measured by DLM assessments (86%).

Table 4.7. Teacher Responses Regarding Test Administration

Statement	SD		D		A		SA		A+SA	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
I was confident in my ability to deliver DLM testlets.	0	0.0	7	3.1	103	45.0	119	52.0	222	97.0
I used manuals and/or the DLM Educator Resource Page materials.	3	1.3	20	8.7	121	52.8	85	37.1	206	89.9
Required test administrator training prepared me for the responsibilities of a test administrator.	6	2.6	25	11.0	116	50.9	81	35.5	197	86.4
I have access to curriculum aligned with the content measured by DLM assessments.	6	2.6	27	11.8	120	52.4	76	33.2	196	85.6

Note. SD = strongly disagree; D = disagree; A = agree; SA = strongly agree; A+SA = agree and strongly agree.

4.2.1.1.1. Kite System

Teachers were asked questions regarding the technology used to administer testlets, including the ease of use of Kite Student Portal and Educator Portal.

The software used for the administration of DLM testlets is Kite Student Portal. Teachers were asked to consider their experiences with Kite Student Portal and respond to each question on a four-point scale: *very hard, somewhat hard, somewhat easy,* or *very easy.* Table 4.8 summarizes teacher responses to these questions.

Delaware respondents found it to be either *somewhat easy* or *very easy* to submit a completed testlet (97%), to record a response (97%), to navigate within a testlet (96%), to enter the site (94%), and to administer testlets on various devices (94%).

Table 4.8. Ease of Using Kite Student Portal

Statement	VH		SH		SE		VE		SE+VE	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Submit a completed testlet	0	0.0	5	2.6	72	38.1	112	59.3	184	97.4
Record a response	0	0.0	6	3.2	75	39.7	108	57.1	183	96.8
Navigate within a testlet	0	0.0	8	4.2	78	41.3	103	54.5	181	95.8
Enter the site	0	0.0	12	6.3	78	41.3	99	52.4	177	93.7
Administer testlets on various devices	1	0.5	11	5.8	84	44.4	93	49.2	177	93.6

Note. VH = very hard; SH = somewhat hard; SE = somewhat easy; VE = very easy; SE+VE = somewhat easy and very easy.

Educator Portal is an area of the Kite System used to store and manage student data and enter PNP and First Contact information. To address teachers' feedback from prior administrations, the appearance and functionality of Educator Portal was updated during the summer of 2018. The update focused on the improvement of user experience, accessibility, and a general improvement to the look, feel, and functionality of Educator Portal without causing undue disruption to how educators use the application. Updates made to Educator Portal during the summer of 2018 included: updating the user interface to be more intuitive, have a more logical flow, display auto-populated fields, and restrict users from saving incomplete records; reordering tabs to be more intuitive; updating the color scheme to be consistent across the application; and rewriting data upload error messages in nontechnical language instead of programming language.

Teachers were asked to assess the ease of navigating and using Educator Portal for its intended purposes. The data are summarized in Table 4.9 using the same scale used to rate experiences with Kite Student Portal. Overall, Delaware respondents' feedback was generally favorable: the majority of teachers found it to be either *somewhat easy* or *very easy* to enter PNP and First Contact information (91%), manage their accounts (89%), manage tests (85%), navigate the site (87%), or manage student data (86%). The percentages of respondents responding *somewhat easy* or *very easy* increased from 2017–2018, reflecting the improvements made to the system (DLM Consortium, 2018).

Table 4.9. Ease of Using Educator Portal

	VH		SH		SE		VE		SE+VE	
Statement	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Enter PNP/Access Profile and First Contact information	0	0.0	17	9.0	90	47.9	81	43.1	171	91.0
Manage my account	0	0.0	20	10.8	93	50.0	73	39.2	166	89.2
Navigate the site	4	2.1	20	10.6	93	49.5	71	37.8	164	87.3
Manage student data	2	1.1	24	12.8	90	47.9	72	38.3	162	86.2
Manage tests	2	1.1	26	13.8	85	45.2	75	39.9	160	85.1

Note. VH = very hard; SH = somewhat hard; SE = somewhat easy; VE = very easy; SE+VE = somewhat easy and very easy.

Finally, respondents were asked to rate their overall experience with Kite Student Portal and Educator Portal on a four-point scale: *poor, fair, good,* or *excellent*. Results are summarized in Table 4.10. The majority of respondents reported a positive experience with Kite Student Portal. A total of 88% of respondents rated their Student Portal experience as *good* or *excellent*, while 82% rated their overall experience with Educator Portal as *good* or *excellent.*

Table 4.10. Overall Experience With Kite Student Portal and Educator Portal

	Poor		Fair		Good		Excellent		Good + Excellent	
Statement	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Student Portal	2	1.1	20	10.6	86	45.5	81	42.9	167	88.4
Educator Portal	7	3.7	27	14.3	102	54.0	53	28.0	155	82.0

Overall, feedback from teachers indicated that Kite Student Portal was easy to navigate and user friendly. Teachers also provided useful feedback about how to continue to improve the Educator Portal user experience, which will be considered for technology development for 2019–2020 and beyond.

4.2.2. Accessibility

Accessibility supports provided in 2018–2019 were the same as those available in previous years. The *DLM Accessibility Manual* (DLM Consortium, 2019b), distinguishes accessibility supports that are provided in Kite Student Portal via the Personal Needs and Preferences Profile, require additional tools or materials, or are provided by the test administrator outside the system.

Table 4.11 shows selection rates for the three categories of accessibility supports. The most commonly selected supports in Delaware were human read aloud, test administrator enters responses for student, and calculator. For a complete description of the available accessibility supports, see Chapter 4 in the *2014–15 Technical Manual—Year-End Model* (DLM Consortium, 2016).

Table 4.11. Accessibility Supports Selected for Students (*N* = 1,252)

Support	*n*	%
Supports provided in Kite Student Portal		
Spoken audio	272	21.7
Magnification	122	9.7
Color contrast	82	6.5
Overlay color	33	2.6
Invert color choice	*	*
Supports requiring additional tools/materials		
Calculator	573	45.8
Individualized manipulatives	505	40.3
Single-switch system	33	2.6
Alternate form - visual impairment	20	1.6
Two-switch system	*	*
Uncontracted braille	*	*
Supports provided outside the system		
Human read aloud	988	78.9
Test administrator enters responses for student	585	46.7
Partner assisted scanning	132	10.5
Sign interpretation of text	*	*
Language translation of text	*	*

* These data were suppressed because *n* < 15.

Table 4.12 describes Delaware teacher responses to survey items about the accessibility supports used during administration. Teachers were asked whether the student was able to effectively use available accessibility supports and whether the accessibility supports were similar to the ones used for instruction. The majority of teachers agreed that students were able to effectively use accessibility supports (98%), while responses to whether the accessibility supports were similar to ones students used for instruction were mixed (40%). While states and districts have differing policies for whether to include accessibility supports on the student's IEP, most (100%) indicated supports were included.

Table 4.12. Teacher Report of Student Accessibility Experience

Statement	Disagree		Agree	
	n	%	*n*	%
Student was able to effectively use accessibility features.	5	2.5	193	97.5
Accessibility features were similar to ones student uses for instruction.	3	60.0	2	40.0

Of the teachers who reported that their student was unable to effectively use the accessibility supports (2%), the most commonly reported reason was that the student could not provide a response even with the support provided (80%).

Table 4.13. Reason Student was Unable to Effectively Use Available Accessibility Supports

Reason	n	%
Even with support, the student could not provide a response	4	80.0
The student refused the support during testing	1	20.0
The student needed a support that wasn't available or allowed	1	20.0

Teachers have several allowable options for flexibility while assessing students. Of these options for flexibility, teachers most frequently reported using breaks (71%), reinforcement (57%), or individualized student response mode (32%). Additionally, 32% of teachers reported adapting or substituting materials.

Table 4.14. Options for Flexibility Teachers Reported Utilizing for a Student

Option	n	%
Breaks	140	71.43
Use of reinforcement	111	56.63
Blank paper	63	32.14
Individualized student response mode	60	30.61
Navigation across screens	30	15.31
None of these	28	14.29
Alternate representation of answer options	24	12.24
Special equipment for positioning	16	8.16
Generic definitions	13	6.63
Display testlet on interactive whiteboard	6	3.06
Graphic organizer	5	2.55

While overall these data support the conclusion that the accessibility supports of the DLM alternate assessment were effectively used by students, additional data will be collected during spring 2020 to determine whether additional improvements can be made to ensure all students can access DLM assessments.

4.3. Conclusion

During the 2018–2019 academic year, the DLM system was available during two testing windows: an optional instructionally embedded window and the spring window. Implementation evidence was collected in the form of teacher survey responses regarding user experience, accessibility, and Personal Needs and Preferences Profile selections. Results from the teacher survey indicated that teachers felt confident administering testlets in the system, that Kite Student Portal was easy to use, and that Educator Portal had improved since the prior year.

5. Modeling

The Dynamic Learning Maps® (DLM®) Alternate Assessment System draws upon a well-established research base in cognition and learning theory but relatively uncommon operational psychometric methods to provide feedback about student performance. The approach uses innovative operational psychometric methods to provide feedback about student mastery of skills. For a summary of the psychometric model that underlies the DLM assessment system and modeling evidence from the 2018–2019 year, see Chapter 5 of the *2018–2019 Technical Manual Update—Year-End Model* (DLM Consortium, 2019a).

For a complete description of the psychometric model used to calibrate and score the DLM assessments, including the psychometric background, the structure of the assessment system suitability for diagnostic modeling, and a detailed summary of the procedures used to calibrate and score DLM assessments, see Chapter 5 of the *2015–2016 Technical Manual Update—Year-End Model* (DLM Consortium, 2017a).

6. Standard Setting

The standard setting process for the Dynamic Learning Maps® (DLM®) Alternate Assessment System in English language arts (ELA) and mathematics derived cut points for assigning students to four performance levels based on results from the 2014–2015 DLM alternate assessments. For a description of the process, including the development of policy performance level descriptors, the 4-day standard setting meeting, follow-up evaluation of impact data and cut points, and specification of grade- and content-specific performance level descriptors, see Chapter 6 of the *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2016).

7. Assessment Results

Chapter 7 of the Dynamic Learning Maps® (DLM®) Alternate Assessment System *2018–2019 Technical Manual Update—Year-End Model* (DLM Consortium, 2019a) describes consortium assessment results for the 2018–2019 academic year, including student participation and performance summaries, and an overview of data files and score reports delivered to state partners. This chapter presents Delaware-specific 2018–2019 student participation data; the percentage of students achieving at each performance level; and subgroup performance by gender, race, ethnicity, and English learner (EL) status. This chapter also reports the distribution of students by the highest linkage level mastered during spring 2019. Finally, this chapter describes updates made to score reports and data files during spring 2019. For a complete description of score reports and interpretive guides, see Chapter 7 of the *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2016).

7.1. Student Participation

During spring 2019, assessments were administered to 1,071 students in Delaware. The assessments were administered by 299 educators in 112 schools and 25 school districts.

Table 7.1 summarizes the number of Delaware students assessed in each grade. In grades 3 through 8, over 100 students participated in each grade. In high school, the largest number of students participated in grade 11, and the smallest number participated in grade 9.

Table 7.1. Delaware Student Participation by Grade (*N* = 1,071)

Grade	Students (*n*)
3	147
4	148
5	149
6	142
7	159
8	164
9	*
10	*
11	158

* These data were suppressed because *n* < 15.

Table 7.2 summarizes the demographic characteristics of Delaware students who participated in the spring 2019 administration. The majority of participants were male (70%) and a plurality were african american (41%). Less than 1% of students were monitored or eligible for EL services.

Table 7.2. Demographic Characteristics of Participants (N = 1,071)

Subgroup	n	%
Gender		
Male	747	69.7
Female	324	30.3
Race		
African American	440	41.1
White	412	38.5
Two or more races	186	17.4
Asian	†	†
American Indian	*	*
Hispanic ethnicity		
No	922	86.1
Yes	149	13.9
English learner (EL) participation		
Not EL eligible or monitored	†	†
EL eligible or monitored	*	*

* These data were suppressed because n < 15.
† These data were complementarily suppressed.

In addition to the spring administration, instructionally embedded assessments are also made available for teachers to administer to students during the year. Results from these assessments do not contribute to final summative scoring but can be used to guide instructional decision-making. A total of 32 Delaware students took at least one instructionally embedded testlet during the 2018–2019 academic year.

Table 7.3 summarizes the number of instructionally embedded test sessions taken in ELA and mathematics. In Delaware, students took 31 ELA testlets and 31 mathematics testlets.

Table 7.3. Number of Instructionally Embedded Test Sessions, by Grade

Grade	English language arts	Mathematics
3	3	4
4	8	3
5	6	9
6	4	3
7	5	5
8	4	6
11	1	1
Total	*31*	*31*

7.2. Student Performance

Student performance on DLM assessments is interpreted using cut points, determined during standard setting, which separate student scores into four performance levels. For a full description of the standard-setting process, see Chapter 6 of the *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2016). A student receives a performance level based on the total number of linkage levels mastered across the assessed Essential Elements (EEs).

For the spring 2019 administration, student performance was reported using the same four performance levels approved by the DLM Consortium for prior years:

- The student demonstrates *Emerging* understanding of and ability to apply content knowledge and skills represented by the EEs.
- The student's understanding of and ability to apply targeted content knowledge and skills represented by the EEs is *Approaching the Target*.
- The student's understanding of and ability to apply content knowledge and skills represented by the EEs is *At Target*.
- The student demonstrates *Advanced* understanding of and ability to apply targeted content knowledge and skills represented by the EEs.

7.2.1. Overall Performance

Table 7.4 reports the percentage of Delaware students achieving at each performance level from the spring 2019 administration for English language arts (ELA) and mathematics. For ELA, the percentage of Delaware students who achieved at the At Target or Advanced levels ranged from approximately 13% to 40%. In mathematics, the percentage of Delaware students meeting or exceeding Target expectations ranged from approximately 4% to 24%.

Table 7.4. Percentage of Students by Grade and Performance Level

Grade	Emerging (%)	Approaching (%)	Target (%)	Advanced (%)	Target+ Advanced (%)
English language arts					
3 (*n* = 147)	66.7	20.4	12.9	0.0	12.9
4 (*n* = 148)	54.1	24.3	20.9	0.7	21.6
5 (*n* = 148)	49.3	23.0	24.3	3.4	27.7
6 (*n* = 142)	47.2	33.1	14.1	5.6	19.7
7 (*n* = 159)	30.8	30.2	25.8	13.2	39.0
8 (*n* = 162)	32.1	28.4	27.8	11.7	39.5
9*	*	*	*	*	*
10*	*	*	*	*	*
11 (*n* = 158)	29.1	37.3	27.2	6.3	33.5
Mathematics					
3 (*n* = 147)	64.6	18.4	15.6	1.4	17.0
4 (*n* = 146)	59.6	16.4	21.2	2.7	24.0
5 (*n* = 149)	60.4	22.8	6.7	10.1	16.8
6 (*n* = 142)	59.9	21.8	9.9	8.5	18.3
7 (*n* = 159)	62.9	27.0	6.9	3.1	10.1
8 (*n* = 163)	52.8	34.4	12.3	0.6	12.9
9*	*	*	*	*	*
10*	*	*	*	*	*
11 (*n* = 157)	52.2	43.9	3.8	0.0	3.8

* These data were suppressed because *n* < 15.

7.2.2. Subgroup Performance

Data collection for DLM assessments includes demographic data on gender, race, ethnicity, and EL status. Table 7.5 and Table 7.6 summarize the Delaware disaggregated frequency distributions for ELA and mathematics, respectively, collapsed across all assessed grade levels.

Table 7.5. Delaware Students at Each ELA Performance Level, by Demographic Subgroup (*N* = 1,068)

Subgroup	Emerging		Approaching		Target		Advanced	
	n	%	*n*	%	*n*	%	*n*	%
Gender								
Male	318	42.7	206	27.7	171	23.0	50	6.7
Female	147	45.5	96	29.7	†	†	*	*
Race								
African American	197	44.9	121	27.6	94	21.4	27	6.2
White	164	39.8	121	29.4	104	25.2	23	5.6
Two or more races	82	44.3	54	29.2	†	†	*	*
Asian	21	70.0	*	*	*	*	*	*
American Indian	*	*	*	*	*	*	*	*
Hispanic ethnicity								
No	397	43.2	255	27.7	213	23.2	55	6.0
Yes	68	45.9	47	31.8	†	†	*	*
English learner (EL) participation								
Not EL eligible or monitored	464	43.6	301	28.3	235	22.1	64	6.0
EL eligible or monitored	*	*	*		*	*	*	*	*

* These data were suppressed because *n* < 15.
† These data were complementarily suppressed.

Table 7.6. Delaware Students at Each Mathematics Performance Level, by Demographic Subgroup (*N* = 1,067)

Subgroup	Emerging *n*	Emerging %	Approaching *n*	Approaching %	Target *n*	Target %	Advanced *n*	Advanced %
Gender								
Male	431	57.8	197	26.4	86	11.5	32	4.3
Female	196	61.1	88	27.4	†	†	*	*
Race								
African American	265	60.2	121	27.5	†	†	*	*
White	227	55.5	112	27.4	47	11.5	23	5.6
Two or more races	107	57.8	49	26.5	†	†	*	*
Asian	27	87.1	*	*	*	*	*	*
American Indian	*	*	*	*	*	*	*	*
Hispanic ethnicity								
No	537	58.5	250	27.2	99	10.8	32	3.5
Yes	90	60.4	35	23.5	†	†	*	*
English learner (EL) participation								
Not EL eligible or monitored	625	58.8	284	26.7	116	10.9	38	3.6
EL eligible or monitored	*	*	*	*	*	*	*	*

* These data were suppressed because *n* < 15.
† These data were complementarily suppressed.

7.2.3. Linkage Level Mastery

As described earlier in the chapter, overall performance in each subject is calculated based on the number of linkage levels mastered across all EEs. Results indicate the highest linkage level the student mastered for each EE. The linkage levels are (in order): Initial Precursor, Distal Precursor, Proximal Precursor, Target, and Successor. A student can be a master of zero, one, two, three, four, or all five linkage levels, within the order constraints. For example, if a student masters the Proximal Precursor level, they also master all linkage levels lower in the order (i.e., Initial Precursor and Distal Precursor). This section summarizes the distribution of students by highest linkage level mastered across all EEs. For each student, the highest linkage level mastered across all tested EEs was calculated. Then, for each grade and subject, the number of students with each linkage level as their highest mastered linkage level across all EEs was summed and then divided by the total number of students who tested in the grade and subject. This resulted in the proportion of students for whom each level was the highest level mastered.

Table 7.7 and Table 7.8 report the percentage of Delaware students who mastered each linkage level as the highest linkage level across all EEs for ELA and mathematics, respectively. For example, across all third-grade ELA EEs, the Initial Precursor level was the highest level that students mastered 7% of the time. For ELA, the average percentage of Delaware students who mastered as high as the Target or Successor linkage level across all EEs ranged from approximately 41% in grade 3 to 62% in grade 8. For mathematics, the average percentage of Delaware students who mastered the Target or Successor

linkage level across all EEs ranged from approximately 13% in grade 11 to 32% in grade 7.

Table 7.7. Students' Highest Linkage Level Mastered Across ELA EEs, by Grade

Grade	Linkage Level					
	No evidence (%)	IP (%)	DP (%)	PP (%)	T (%)	S (%)
3 (n = 147)	0.7	6.8	25.2	25.9	23.1	18.4
4 (n = 148)	6.8	6.8	24.3	11.5	14.9	35.8
5 (n = 148)	6.8	3.4	23.0	14.2	11.5	41.2
6 (n = 142)	3.5	4.9	23.2	20.4	11.3	36.6
7 (n = 159)	5.7	2.5	16.4	16.4	8.8	50.3
8 (n = 162)	3.1	5.6	18.5	11.1	17.9	43.8
9[*]	*	*	*	*	*	*
10[*]	*	*	*	*	*	*
11 (n = 158)	1.9	3.8	23.4	11.4	17.7	41.8

Note: IP = Initial Precursor; DP = Distal Precursor; PP = Proximal Precursor; T = Target; S = Successor.   [*] These data were suppressed because $n < 15$.

Table 7.8. Students' Highest Linkage Level Mastered Across Mathematics EEs, by Grade

Grade	Linkage Level					
	No evidence (%)	IP (%)	DP (%)	PP (%)	T (%)	S (%)
3 (n = 147)	5.4	23.1	33.3	22.4	12.2	3.4
4 (n = 146)	2.7	16.4	30.1	26.0	19.9	4.8
5 (n = 149)	8.1	15.4	36.2	20.1	8.1	12.1
6 (n = 142)	7.7	18.3	19.7	32.4	9.2	12.7
7 (n = 159)	6.3	12.6	17.6	31.4	25.8	6.3
8 (n = 163)	4.3	7.4	22.1	35.6	20.2	10.4
9[*]	*	*	*	*	*	*
10[*]	*	*	*	*	*	*
11 (n = 157)	4.5	24.2	46.5	12.1	10.8	1.9

Note: IP = Initial Precursor; DP = Distal Precursor; PP = Proximal Precursor; T = Target; S = Successor.   [*] These data were suppressed because $n < 15$.

7.3. Data Files

Data files were made available to DLM state partners following the spring 2019 administration. Similar to prior years, the General Research File (GRF) contained student results, including each student's highest linkage level mastered for each EE and final performance level for the subject for all students who completed any testlets. In addition to the GRF, the DLM Consortium delivered several supplemental files. Consistent with prior years, the Special Circumstances File provided information about which students and EEs were affected by extenuating circumstances (e.g., chronic absences), as defined by each state. State partners also received a supplemental file to identify exited students. The

exited students file included all students who exited at any point during the academic year. In the event of observed incidents during assessment delivery, state partners are provided with an Incident File describing students impacted. For a description of incidents observed during the 2018–2019 administration, see Chapter 4 of this manual.

Consistent with prior delivery cycles, state partners were provided with a two-week review window following data file delivery to review the files and invalidate student records in the GRF. Decisions about whether to invalidate student records are informed by individual state policy. If changes were made to the GRF, state partners submitted final GRFs via Educator Portal. The final GRF was used to generate score reports.

In addition to the GRF and its supplemental files, participating states were provided with two additional de-identified data files: a teacher survey data file and a test administration observations data file. The teacher survey file provided state-specific teacher survey responses, with all identifying information about the student and educator removed. The test administration observations file provided test administration observation responses with any identifying information removed. For more information regarding teacher survey content and response rates, see Chapter 4 of the *2018–2019 Technical Manual—Year-End Model* (DLM Consortium, 2019a). For more information about test administration observation results, see Chapter 9 of the *2018–2019 Technical Manual—Year-End Model* (DLM Consortium, 2019a).

7.4. Score Reports

The DLM Consortium provides assessment results to all member states to report to parents/guardians, educators, and state and local education agencies. Individual Student Score Reports summarized student performance on the assessment by subject. Several aggregated reports were provided to state and local education agencies, including reports for the classroom, school, district, and state. No changes were made to the structure of aggregated reports during spring 2019. Changes to the Individual Student Score Reports are summarized below. For a complete description of score reports, including aggregated reports, see Chapter 7 of the *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2016).

7.4.1. Individual Student Score Reports

During the 2018–2019 year, minor changes were made to the Individual Student Score Reports. A website was added to the footnote of the report which linked to additional resources related to the DLM assessment and understanding student results. On the Performance Profile portion of the report, a text description of the bar graphs was added to aid in interpretation.

A sample Performance Profile portion of the report reflecting the 2019 changes is provided in Figure 7.1.

Individual Student Year-End Report
Performance Profile 2018-19

DYNAMIC®
LEARNING MAPS

NAME: DLM Student
DISTRICT: DLM District
SCHOOL: DLM School

DISTRICT ID: DLM District Code
STATE: DLM State
STATE ID: 123456

Performance Profile, continued

- recognizing attributes of objects (for example, shape, size, and number of sides)

Conceptual Area

Bar graphs summarize the percent of skills mastered by conceptual area. Not all students test on all skills due to availability of content at different levels per standard.
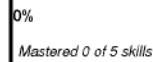
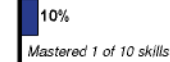Calculate accurately and efficiently using simple arithmetic operations
0%
Mastered 0 of 5 skills
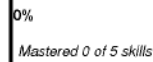
Understand and use geometric properties of two- and three-dimensional shapes
20%
Mastered 1 of 5 skills

Understand and use measurement principles and units of measure
0%
Mastered 0 of 5 skills

Represent and interpret data displays
10%
Mastered 1 of 10 skills

Use operations and models to solve problems
0%
Mastered 0 of 10 skills
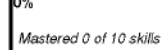
Understand patterns and functional thinking
20%
Mastered 2 of 10 skills

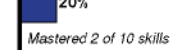For more information, including resources, please visit dynamiclearningmaps.org/states.

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Figure 7.1. Example page of the Performance Profile for 2018–2019.

7.5. Quality Control Procedures for Data Files and Score Reports

No changes were made to the manual or automated quality control procedures for spring 2019. For a complete description of quality control procedures, see Chapter 7 in the *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2016) and *2015–2016 Technical Manual—Year-End Model* (DLM Consortium, 2017a).

7.6. Conclusion

Following the spring 2019 administration, six data files were delivered to state partners: GRF, special circumstance code file, exited students file, incident file, teacher survey data file, and test administration observations file. An incident file was delivered describing the impact of the two reported incidents. Overall, between 4% and 40% of Delaware students achieved at the At Target or Advanced levels across all grades and subjects, which is consistent with prior years. Minor changes were made to score reports to aid in interpretation.

8. Reliability

The Dynamic Learning Maps® (DLM®) Alternate Assessment System uses nontraditional psychometric models (i.e., diagnostic classification models) to produce student score reports. As such, evidence for the reliability of results is based on methods that are commensurate with the models used to produce score reports. For a summary of the methods used to estimate reliability and reliability evidence from the 2018–2019 year, see Chapter 8 of the *2018–2019 Technical Manual Update—Year-End Model* (DLM Consortium, 2019a).

For a complete description of the simulation-based methods used to calculate reliability for DLM assessments, including the psychometric background, see Chapter 8 of the *2015–2016 Technical Manual Update—Year-End Model* (DLM Consortium, 2017a).

9. Validity Studies

Evidence in support of the overall validity argument for results produced by the Dynamic Learning Maps® (DLM®) Alternate Assessment System is summarized in the chapters of the *2018–2019 Technical Manual Update—Year-End Model* (DLM Consortium, 2019a), the *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2016), and the other annual technical manual updates (DLM Consortium, 2017a, 2017c, 2018). For a description of additional evidence collected during 2018–2019 for the five critical sources of evidence (i.e., evidence based on test content, response process, internal structure, relation to other variables, and consequences of testing), as described in the *Standards for Educational and Psychological Testing* (American Educational Research Association et al. [AERA et al.], 2014), see Chapter 9 of the *2018–2019 Technical Manual Update—Year-End Model* (DLM Consortium, 2019a).

10. Training and Professional Development

For a description of the optional professional development available for the Dynamic Learning Maps® (DLM®) Alternate Assessment System during 2018–2019, see Chapter 10 of the *2018–2019 Technical Manual Update—Year-End Model* (DLM Consortium, 2019a).

For a complete description of facilitated and self-directed training and professional development for DLM assessments, including a description of training for state and local education agency staff, see Chapter 10 of the *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2016).

11. Conclusion and Discussion

The Dynamic Learning Maps® (DLM®) Alternate Assessment System is based on the core belief that all students should have access to challenging, grade-level academic content. Therefore, the DLM assessments provide students with the most significant cognitive disabilities the opportunity to demonstrate what they know and can do. It is designed to map students' learning after a full year of instruction.

The DLM system completed its fifth operational administration year in 2018–2019. The chapters of the *2018–2019 Technical Manual Update—Year-End Model* (DLM Consortium, 2019a) provide updated evidence from the 2018–2019 year to support the propositions and assumptions that undergird the assessment system as described at the onset of its design in the DLM theory of action. Chapter 11 of the *2018–2019 Technical Manual Update—Year-End Model* (DLM Consortium, 2019a) summarizes that manual's contents and describes plans for future studies. For a complete summary of evidence collected for the DLM theory of action, also see the *2014–2015 Technical Manual—Year-End Model* (DLM Consortium, 2016).

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