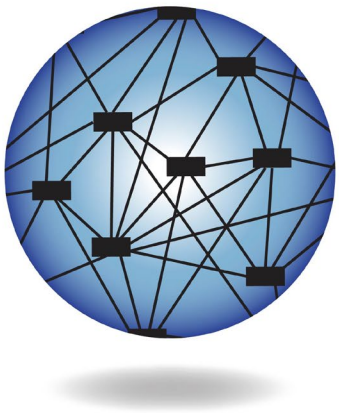

DYNAMIC®
LEARNING MAPS

2019 Science Standard Setting: Grades 3 & 7

Technical Report #19-02

9/6/2019

Nash, B., Kavitsky, E., & Clark, A. (2019). *2019 Science Standard Setting: Grades 3 and 7* (Technical Report No. 19-02). Lawrence, KS: University of Kansas, Accessible Teaching, Learning, and Assessment Systems (ATLAS).

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Executive Summary

The Dynamic Learning Maps® (DLM®) Consortium previously set cut points for science alternate assessments through a consortium-wide standard-setting event in 2016. This process specified cuts for then-tested grades 4, 5, 6, 8, and high school. With the addition of a new state to the consortium, which assesses students in science in all grades, DLM staff began the process of establishing cut points for grades 3 and 7 in 2019. DLM staff recruited panelists who had backgrounds in science and special education to determine cut points in grade 3. Panelists participated in training before and during the standard-setting event. The training focused on details concerning the design of the DLM alternate assessments, scoring of assessment results, and the standard-setting process. Panelists recommended cut points during a virtual meeting using Zoom software. Because of existing cut points in adjacent grades, cut points for grade 7 were not determined using a panel process. Instead, cut points were constrained to specific values because of existing values in the adjacent grades.

The standard-setting process for grade 3 drew from cuts derived in 2016. Rather than using rounds of range-finding or pinpointing as were used in the previous standard-setting process, proposed values were determined according to existing cuts in grades 4 and 5. Panelists reviewed example mastery profiles representing existing cut points in the grade band (4 and 5), the proposed cuts for grade 3, and for one and two linkage levels down from the proposed cuts. The panel used a voting process and group discussion to come to consensus panel-recommended cut points. Impact data were shown to the panelists for the agreed-upon cut points. Panelists were given a chance to make any consensus-based adjustments to the cut points. Following the meeting, panelists completed a questionnaire to review the standard-setting process. The Technical Advisory Committee reviewed the standard-setting process for grade 3 and the cut points for grades 3 and 7.

I: Introduction

The DLM Consortium developed cut points for science assessments during a standard-setting event in 2016. Please see *2016 Standard Setting: Science* (Nash, Clark, Karvonen, & Brussow, 2016) for details. At that time, cut points were established for then-tested grades 4, 5, 6, 8, high school, and biology. Standard setting was necessary for so many grades because individual DLM states assess this subject at different grades. During 2018–2019, a new state joined the consortium. In the new state, students complete science assessments in grades 3 through 8 and high school, necessitating cut points for grades 3 and 7. These additional performance standards, developed in 2019, will apply to all states in the consortium. The consortium aimed to establish cut points in grades 3 and 7 without affecting the existing cut points. Cut points for grade 7 were not panel driven but rather were determined based on cut points in adjacent grades without changing existing grade 6 and grade 8 cut points.

This report provides an overview of the process for how panelists for grade 3 standard setting were selected and trained, how they recommended cut points for grade 3, and an outline of the grades 3–5 results and impact data. The manner in which DLM staff determined cut points for grade 7 and the outline of the grades 6–8 results and impact data are also presented. The bulk of this report describes the method for setting cut points for grade 3.

The intended audience for this standard-setting technical report is the DLM Technical Advisory Committee (TAC), DLM state partners, state boards of education, and federal peer review committee members.

Overview of DLM Science Assessment Design

The DLM science assessment measures alternate content standards called Essential Elements (EEs) and is administered in 17 states. The DLM EEs for science are specific statements of knowledge and skills linked to the grade-level academic expectations. EEs for science have three linkage levels, or access points, to grade-level standards for students with the most significant cognitive disabilities. The three linkage levels are Initial, Precursor, and Target. The Target linkage level aligns directly with the EE (i.e., grade-level expectation), while the other two linkage levels provide content at a reduced depth, breadth, and level of complexity.

Because of the unique nature of the DLM assessment, results are provided as mastery decisions for each linkage level measured, summarized in a mastery profile (see Appendix A). Profiles summarize linkage-level mastery for each of the nine EEs measured by the blueprint. Shading indicates mastery of the linkage level. Because all grade spans in science have nine EEs, each with three linkage levels, there are 27 total linkage levels that

can be mastered. See *2016 Standard Setting: Science* (Nash et al., 2016, p. 9) for further details.

Performance Levels and Policy Performance Level Descriptors

The four policy performance levels, as well as the policy performance level descriptors (PLDs) used in the 2019 standard setting, were originally developed for English language arts (ELA) and mathematics in 2014, based on input from governance board members. Science policy PLDs were later adopted based on the ELA and mathematics PLDs. See *2016 Standard Setting: Science* (Nash et al., 2016) for more details. Policy PLDs for the four performance levels are as follows:

- 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

II: Grade 3 Standard Setting

This section outlines the procedures and results for grade 3 standard setting in science. The grade 3 standard setting draws from results of the original standard setting implemented in 2016 for grades 4, 5, 6, and 8 and modifies the methodology. The original method consisted of rounds of range-finding and pinpointing rating exercises to identify cut points (see *2016 Standard Setting: Science* [Nash et al., 2016] for more details). However, in the 2019 standard setting, panelists began from cut points that were determined from the existing cut points in the grade band (i.e., the grade band containing grades 4 and 5) and used impact data to determine appropriate cut points for grade 3.

Panelist Recruitment

Panelists for the third-grade standard setting were recruited by DLM staff from a consortium-wide database of volunteer educators. Panelists were eligible if they had experience teaching students with significant cognitive disabilities and/or science in elementary grade levels. Selection of panelists prioritized a range of experience and demographic diversity where possible. DLM staff contacted 28 educators from 12 states. Ten educators from four states administering DLM science assessments responded with interest to serve on the panel. Nine of these educators took part in a virtual standard-setting meeting. One panelist did not respond to follow-up communications. Panelists'

demographic information is presented in Table 1, and panelists' teaching experience is presented in Table 2. Panelists reported a wide range of experience teaching science and working with students with significant cognitive disabilities.

Table 1
Demographic Characteristics of Panelists

Demographic category	Count
Gender	
Female	9
Male	0
Race	
African American	1
American Indian/Alaska Native	0
Asian	0
Hispanic/Latino	0
Native Hawaiian/Pacific Islander	0
White	8
State	
Arkansas	4
Iowa	2
Missouri	2
Rhode Island	1

Table 2
Panelists' Expertise and Years of Experience

Expertise	*M*	*Mdn*	Min.	Max.
Students with the most significant cognitive disabilities	10.9	8	3	22
Science	13.7	12	6	27

Panelist Training

Training took place both before and during the standard-setting event, requiring about three to four hours of standard-setting preparation for panelists. Panelists were able to complete the advanced training online in the 15 days leading up to the standard-setting workshop. Panelists received information on the following topics while participating in the advanced training:

1. characteristics of students who take the DLM assessments
2. content of the assessment system, including EEs, domains and topics, linkage levels, and alignment for science
3. accessibility by design, including the framework for the DLM Alternate Assessment System's cognitive taxonomy and strategies for maximizing accessibility of the content; the use of the Personal Needs and Preferences Profile (PNP) to provide accessibility supports during the assessment; and the use of the First Contact survey to determine linkage-level assignment
4. assessment design, including item types, testlet design, and sample items from various linkage levels in science
5. an overview of the assessment model, including test blueprints and the timing and selection of testlets administered
6. a high-level introduction to two topics that would be covered in more detail during on-site training: the DLM approach to scoring and reporting, and the steps in the standard-setting process

After participating in the online advanced training, panelists completed surveys addressing: (1) how well-prepared they felt for the virtual meeting, (2) whether their understanding of the DLM Alternate Assessment System was sufficient to allow them to make judgments about student performance and assessment results, and (3) whether they had any additional questions prior to the meeting. All panelists reported that they were either somewhat prepared (33.3%) or very prepared (66.7%) for the virtual meeting. All panelists reported sufficient understanding of the DLM system to participate in the standard-setting event, and no panelists had any further questions about the material.

Panelists received additional training during the standard-setting meeting to (a) review important advanced training concepts[1], (b) provide an overview of scoring and reporting for DLM assessments, and (c) describe the standard-setting approach and panelist responsibilities during the meeting.

Procedures

The methodology to determine cut points for grade 3 science drew from existing cuts set during the first standard-setting event and modified procedures, presented in *2016*

[1] Because panelists rated themselves as prepared and did not share additional requests for clarification, training focused on general review of information rather than addressing any specific panelist questions from the advanced training.

Standard Setting: Science (Nash et al., 2016). While both methods made use of mastery profiles to set cut points, DLM staff proposed cut points for the grade 3 science standard setting using existing cut points in grades 4 and 5 and impact data rather than panelists engaging in rounds of range-finding and pinpointing rating exercises to set cut points. A panel of experts in content and students with significant cognitive disabilities reviewed example student mastery profiles based on the proposed cut points and surrounding values and provided cut point recommendations.

This section details procedures for the virtual meeting, materials needed, and steps for setting cuts.

Virtual Meeting

A virtual meeting was conducted to determine cut points for grade 3 science based on existing grade-level cuts for grades 4 and 5. Zoom video conferencing was used to host the meeting. Panelists used Zoom voice, video, and chat features to communicate, as well as the hand-raise feature to indicate readiness to continue to the subsequent step in the standard-setting process. A member of the DLM TAC observed the meeting to provide a synopsis of process and findings to the other TAC committee members.

Materials

Panelists received a packet of hard-copy materials prior to the meeting. The materials were intended for use during the virtual meeting to support their understanding. These materials included:

- blueprints of science EEs
- policy PLDs
- grade- and subject-specific PLDs for science
- standard-setting glossary

Panelists also received a confidentiality and nondisclosure form to sign. Because of their secure nature, example science testlets were available to view online during the standard-setting meeting, upon request.

Step 1: Identify Data-Driven Proposed Cut Points

Impact data from the 2016–2019 (through May 8, 2019) DLM science assessment were used by DLM staff to propose appropriate starting cut points. The proposed cut points were designed to produce similar percentages of students achieving at each performance level at grade 3 as in grades 4 and 5 (the other grades in the elementary grade band) and ensured cut-point values were not duplicated and did not exceed the existing values in

grade 4 or 5. For 2016–2018 data, students in relevant science grades were retained in the analysis if their performance level was 1, 2, 3, or 4 (i.e., students who did not test and thus had a performance level of 9 were removed). For 2019 data, students with a score of 9 (not tested) on any grade-relevant science EE were excluded from analysis to avoid including students who had not finished testing. The data-driven proposed cut points for grade 3 and associated impact data are displayed in Table 3 and Table 4, respectively.

Table 3
Data-Driven, Initially Proposed Cut Points for Grade 3 and Existing Grade Band

Assessment band	Grade	Emerging/ Approaching	Approaching/ Target	Target/ Advanced	Max. number of linkage levels
3–5	3	8	14	20	27
3–5	4	9	15	21	27
3–5	5	10	17	25	27

Table 4
Percentage of Students Achieving at Each Performance Level Based on Initially Proposed Third-Grade and Existing Fourth- and Fifth-Grade Cut Points

	Grade		
Performance level	3 (n = 792)	4 (n = 2,228)	5 (n = 11,873)
Emerging	63.8	72.6	64.9
Approaching	23.0	17.8	20.1
Target	8.3	7.5	13.3
Advanced	4.9	2.2	1.7
Target and Advanced	13.3	9.6	15.0

Step 2: Panel Profile Review and Discussion

Panelists reviewed and discussed policy PLDs for the four performance levels (Emerging, Approaching the Target, At Target, and Advanced) based on their training completed before and during the meeting. Panelists were told that they would use their professional judgment of the skills in the profile to set the three performance level cuts (distinguishing the four performance levels).

Panelists next examined an example profile for the elementary grade band that did not show any mastery shading. Panelists became familiar with the skills described in each cell of the profile through studying linkage-level statements and using provided resources (e.g., extended linkage-level descriptors and blueprint) as well as receiving clarification through group discussion when needed. Panelists also reviewed and discussed the grade-specific PLDs for grade 4 and grade 5.

Panelists followed consistent procedures for setting each cut point, beginning with the cut distinguishing Approaching the Target/At Target, followed by the cut distinguishing At Target/Advanced, and finally the cut distinguishing Emerging/Approaching the Target.

Panelists adhered to the following procedures for setting each cut point:

1. Panelists independently reviewed example profiles of student mastery that represent the existing cut points for fourth and fifth grades.
    a. Training emphasized that the existing cut points were derived from a similar panel process, and as such, panelists should consider profiles representing existing cuts as true or fact and not subject to change.
2. Panelists independently reviewed profiles for the proposed cut point and profiles at one and two linkage levels down from the proposed cut.
    a. The purpose of this review was to facilitate panelists' content-based evaluations of the proposed cut points relative to the known expectations for students at the same performance level in neighboring grades.
3. Panelists were asked to independently indicate if they agreed or disagreed with proposed cut point.
    a. Panelists privately messaged a DLM staff member their decision of agreement or disagreement. The staff member recorded all decisions in a workbook. Once all votes were received, the staff member shared the totals with the group.
4. The panelists participated in group discussion regarding their content-based rationales in support of the proposed cut point or a different cut point. Consensus was required for the panel-recommended cut point.

Step 3: Panel-Recommended Cut Points and Impact Data

The following procedures were observed:

1. Staff allowed the panelists to view the impact data based on the panel-recommended cut points resulting from the group discussion. The impact data showed the percentage of students who would achieve at each performance level.
2. The panel conferred over the set of results and had the option to make final adjustments to the cut points based on consensus recommendations.
3. After the three cut points were set, a final panelist check-in was conducted where

panelists independently agreed or disagreed with the panel-recommended set of cut points.

Step 4: Standard-Setting Evaluation

Once the panel process was complete, all panelists completed a survey evaluation of the panel process, the panel-recommended cut points, and the overall meeting. The survey contained statements that panelists recorded their level of agreement with regarding confidence in the training, the process, and the results of the standard-setting activities.

Step 5: Review of Results and Final Decisions

The following procedures were observed:

1. Staff compiled panel-recommended cut points, panelists' independent cut-point evaluations, and associated impact data.
2. The DLM TAC reviewed the TAC member observations, evaluated the cut-point recommendations, and provided feedback to staff on the process.
3. State partners reviewed the results of the panel process, including recommended cut points and TAC feedback.
4. After a period of internal state education agency review, state partners voted on acceptance of cut points for the consortium. This step did not imply state adoption of the cuts. DLM member states are free to use their own cut points or those adopted by the consortium.
5. States completed their own procedures for formally adopting the cuts.
6. The TAC voted to approve the memorandum summarizing the methods used in standard setting and provided commentary on the standard-setting process (see Appendix D).

Results

The panel-recommended cut points derived from the standard-setting panel process for grade 3 are provided in Table 5, along with original proposed cut points and existing cut points for grades 4 and 5. In all cases, the panel-recommended cut points were lower than those originally proposed using impact data. Associated impact data for the panel-recommended third-grade cuts and existing fourth and fifth grades are provided in Table 6. The impact data in Table 6 include data from spring 2019 only, collected from March 11 through May 30, 2019, to reflect impact based on the current operational administration. The data were filtered to include only students who did not have any untested grade-relevant science EEs. Consortium-level impact data for grades 3–8 are in Appendix B.

Table 5
Panel-Recommended and Proposed Third-Grade and Existing Fourth- and Fifth-Grade Cut Points

	Performance level		
Grade	Emerging/ Approaching	Approaching/ Target	Target/ Advanced
3	7 (8)	13 (14)	18 (20)
4	9	15	21
5	10	17	25

Note. Maximum number of linkage levels is 27.

Table 6
Percentage of Students Achieving at Each Science Performance Level Based on Panel-Recommended Third-Grade Cut Points

	Grade		
Performance level	3 (n = 607)	4 (n = 1,199)	5 (n = 7,057)
Emerging	54.2	63.2	64.7
Approaching	27.4	21.9	21.0
Target	8.9	10.7	13.3
Advanced	9.6	4.2	1.1
Target and Advanced	18.5	14.9	14.4

Evaluations

Following the meeting, panelists completed a post-meeting questionnaire. The DLM TAC then reviewed the standard setting process and results.

Panelist Evaluations of Cut Points

Panelists initially varied on their approval of the proposed cut-point values, but after discussion, all panelists came to a consensus. All three cut points were ultimately lowered based on panelists concerns that some EEs are not yet taught to students in third grade, which was identified as a barrier to accepting the proposed third-grade cut-point values. Panelists were also mindful of the distance between cut points within and across grade levels; one panelist shared the percentage of skills mastered within and across grades. Panelists also considered the content complexity of some of the Target level skills

assessed in the elementary grade band and students' overall opportunity to learn. In the end, all panelists agreed to lower each cut point from the proposed cuts by either one or two linkage levels.

Panelist Evaluation of Meeting

A summary of post-meeting questionnaire responses can be found in Appendix C. Panelists reported agreeing or strongly agreeing with the statements in the questionnaire regarding the meeting organization, training, process, and their confidence in the results. Panelists also reported having a positive experience overall, especially in regard to gaining additional perspective about DLM assessments, the ability to comment in voice or text during the meeting, ensuring all opinions were shared, the organization and pacing of the meeting, and the input from DLM staff in ensuring their understanding of the standard-setting process.

Technical Advisory Committee Review

During a conference call that took place on May 31, 2019, the DLM TAC reviewed the grade 3 standard-setting process and results. The TAC member who observed the meeting voiced two concerns about the process: (a) the potential reduction of full conversations and engagement due to the nature of a virtual meeting and (b) the reduction in member state representation and potential impact on process caused by two of the panelists being selected from the same school. TAC discussion confirmed that the constraints of a virtual meeting were necessary in this application and consistent with previous recommendations for how to conduct the standard-setting process, and the process by which the panel derived the cut points was reasonable.

III: Grade 7 Standard Setting

This section outlines the procedures and results for standard setting for grade 7 in science. Because the grade 7 cut points were constrained by the existing cuts for grades 6 and 8, the method for recommending grade 7 cut points was different from the method used for grade 3.

Procedures

Based on recommendations from the DLM TAC, a panel process was not used to determine recommended cut points. The rationale for their recommendation was based on the existence of operational cut points in adjacent grades 6 and 8 that were either consecutive numbers or only one number apart. Therefore, the proposed cut points are either the midpoint between the two adjacent grades or equal to the cut at the grade level below, when necessary.

Results

The cut points for grade 7 and associated impact data are displayed in Table 7 and Table 8 below, respectively. For the Emerging/Approaching the Target and Approaching the Target/At Target cut points, the cuts for the grade level below were chosen to allow students more opportunity to achieve a higher performance level. The impact data were based on data from 2019 only, collected from March 11 through May 30, 2019. The data were filtered to include only students who did not have any untested grade-relevant science EEs.

Table 7
Seventh-Grade and Adjacent Grade-Band Cut Points

	Performance level		
Grade	Emerging/ Approaching	Approaching/ Target	Target/ Advanced
6	9	15	21
7	9	15	22
8	10	16	23

Note. Maximum number of linkage levels is 27.

Table 8
Percentage of Students Achieving at Each Science Performance Level Based on Seventh-Grade Cut Points

	Grade		
Performance level	6 (n = 694)	7 (n = 650)	8 (n = 7,503)
Emerging	52.2	48.0	55.2
Approaching	22.8	24.6	25.0
Target	19.3	22.2	17.9
Advanced	5.8	5.2	2.0
Target and Advanced	25.1	27.4	19.9

Summary

This technical report describes the steps in expanding the established cut points in science to grades 3 and 7 to fit those previously set for grades 4, 5, 6, and 8, as well as high school. Trained panelists reviewed proposed cut points and associated exemplar mastery

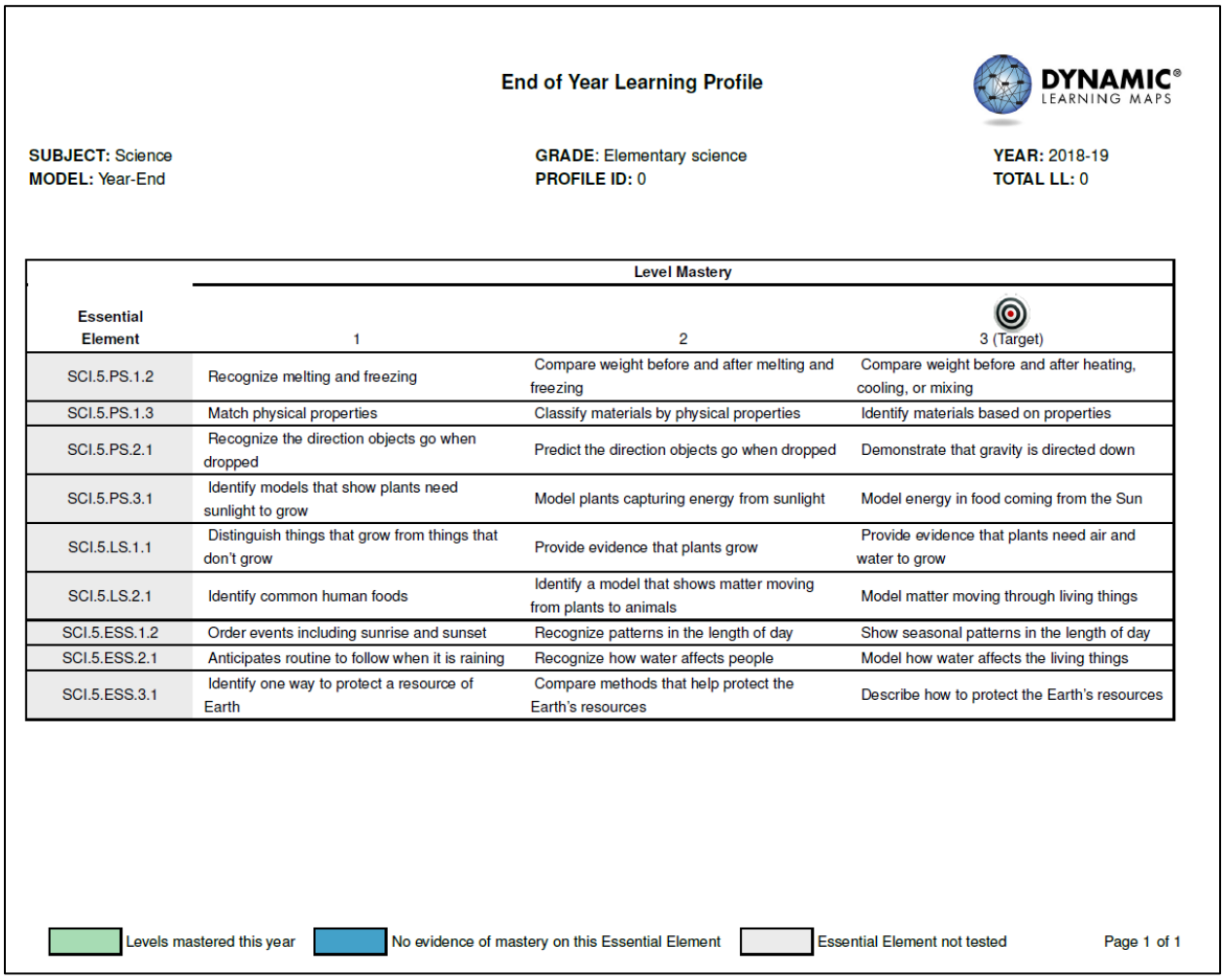
profiles to recommend final cut points for grade 3. Grade 7 cut points were determined without a panel because of constrained existing values in the adjacent grades. This standard-setting process was reviewed and deemed acceptable by the DLM TAC. The results were also reviewed by state education agencies prior to consortium adoption.

Following the standard setting event, PLDs specific to grades 3 and 7 will be developed using the existing PLDs in the adjacent grades along with the discussion points made by the panelists during the standard setting event with regard to the critical skills and understandings needed for each performance level specifically in grades 3 and 7. The DLM test development content team will draft grades 3 and 7 PLDs using the same procedures used to develop the other grade-level PLDs in science. These drafts will go through rounds of review and input from the partner states before they are finalized.

Reference

Nash, B., Clark, A., Karvonen, M., & Brussow, J. (2016). *2016 standard setting: Science* (Technical Report No. 16-03). Lawrence, KS: University of Kansas, Center for Educational Testing and Evaluation. Retrieved from https://dynamiclearningmaps.org/sites/default/files/documents/publication/Standard_Setting_Tech_Report_Sci.pdf

Appendix A: Example Elementary Science Mastery Profile



End of Year Learning Profile

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SUBJECT: Science
MODEL: Year-End

GRADE: Elementary science
PROFILE ID: 0

YEAR: 2018-19
TOTAL LL: 0

	Level Mastery		
Essential Element	1	2	3 (Target)
SCI.5.PS.1.2	Recognize melting and freezing	Compare weight before and after melting and freezing	Compare weight before and after heating, cooling, or mixing
SCI.5.PS.1.3	Match physical properties	Classify materials by physical properties	Identify materials based on properties
SCI.5.PS.2.1	Recognize the direction objects go when dropped	Predict the direction objects go when dropped	Demonstrate that gravity is directed down
SCI.5.PS.3.1	Identify models that show plants need sunlight to grow	Model plants capturing energy from sunlight	Model energy in food coming from the Sun
SCI.5.LS.1.1	Distinguish things that grow from things that don't grow	Provide evidence that plants grow	Provide evidence that plants need air and water to grow
SCI.5.LS.2.1	Identify common human foods	Identify a model that shows matter moving from plants to animals	Model matter moving through living things
SCI.5.ESS.1.2	Order events including sunrise and sunset	Recognize patterns in the length of day	Show seasonal patterns in the length of day
SCI.5.ESS.2.1	Anticipates routine to follow when it is raining	Recognize how water affects people	Model how water affects the living things
SCI.5.ESS.3.1	Identify one way to protect a resource of Earth	Compare methods that help protect the Earth's resources	Describe how to protect the Earth's resources

Levels mastered this year | No evidence of mastery on this Essential Element | Essential Element not tested

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Figure 1. Example mastery profile for elementary science grade band.

Appendix B: Consortium-Level Impact Data

Table 9

Percentage of Students Achieving at Each Science Performance Level Based on Third-Grade Panel-Recommended, Seventh-Grade-Proposed, and Existing Cut Points

	Grade						
Performance level	3 (n = 607)	4 (n = 1,199)	5 (n = 7,057)	6 (n = 694)	7 (n = 650)	8 (n = 7,503)	High school (n = 9,468)
Emerging	54.2	63.2	64.7	52.2	48.0	55.2	54.5
Approaching	27.4	21.9	21.0	22.8	24.6	25.0	28.2
Target	8.9	10.7	13.3	19.3	22.2	17.9	14.1
Advanced	9.6	4.2	1.1	5.8	5.2	2.0	3.3
Target/Advanced	18.5	14.9	14.4	25.1	27.4	19.9	17.4

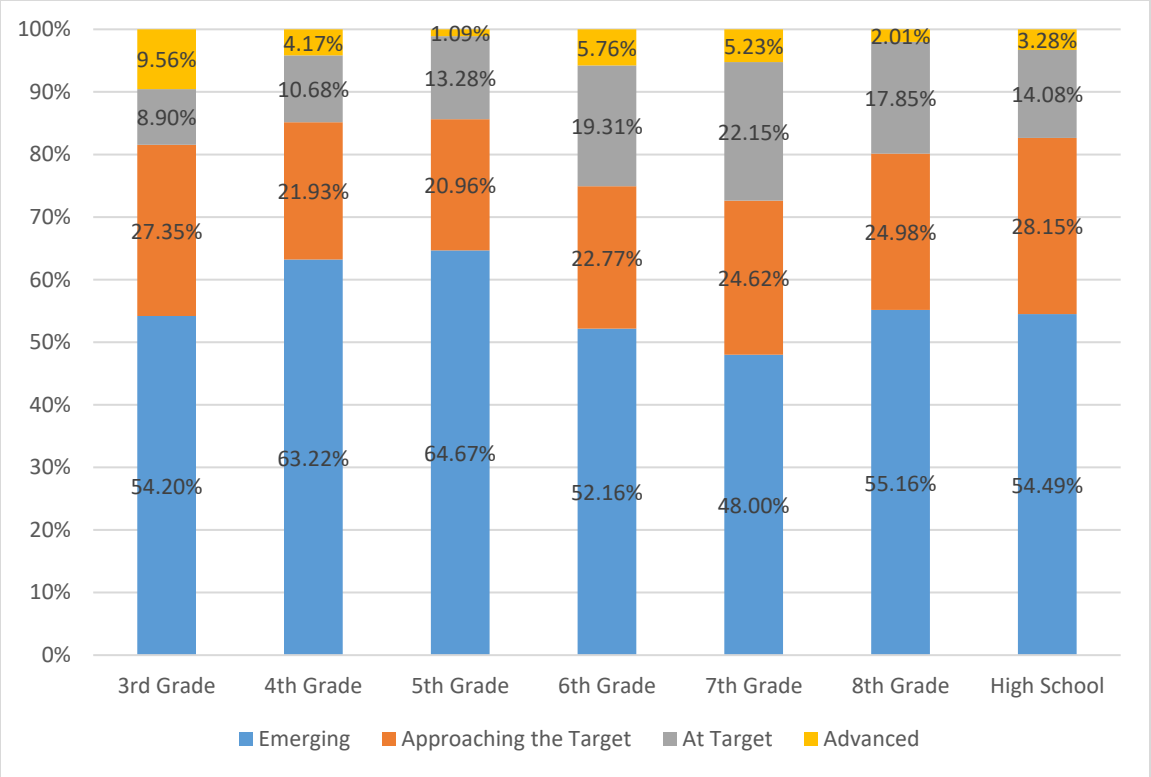

Figure 2. Consortium impact data (2019) based on panel-recommended third-grade cut points and proposed seventh-grade cut points.

Appendix C: Dynamic Learning Maps Science Standard-Setting Panelist Questionnaire

I. Panel Meeting Evaluation

Please consider the statements below, and place an "X" in a box to indicate the level of agreement or disagreement you have with each statement.

	Strongly Disagree	Disagree	Agree	Strongly Agree
The overall goals of the standard-setting panel meeting were clear.				
The panel meeting was well-organized.				
The training provided the information I needed to complete my review.				
The profiles were representative examples of my expectation of a third-grade student's knowledge, skills, and abilities.				
Reviewing profiles was an effective way to evaluate proposed cut points for the performance levels.				
I considered the performance level descriptors when I reviewed each profile.				
I considered the other panelists' opinions when discussing profiles as a group.				
I considered my experience in the field when I reviewed each profile.				

In the space below, please feel free to:

Add comments regarding any of the responses to the questions above.

Tell us what you liked and/or did not like about the meeting.

II. Overall Evaluation

Please consider the statements below and place an "X" in a box to indicate the level of agreement or disagreement you have with each statement.

	Strongly Disagree	Disagree	Agree	Strongly Agree
I am confident that the meeting produced valid cut-point recommendations.				
Overall, I believe my opinions were considered and valued by the group.				
Overall, the group's discussions were open and honest.				
Participating in the process increased my understanding of the DLM system				
Overall, I valued the panel meeting as a professional development experience.				

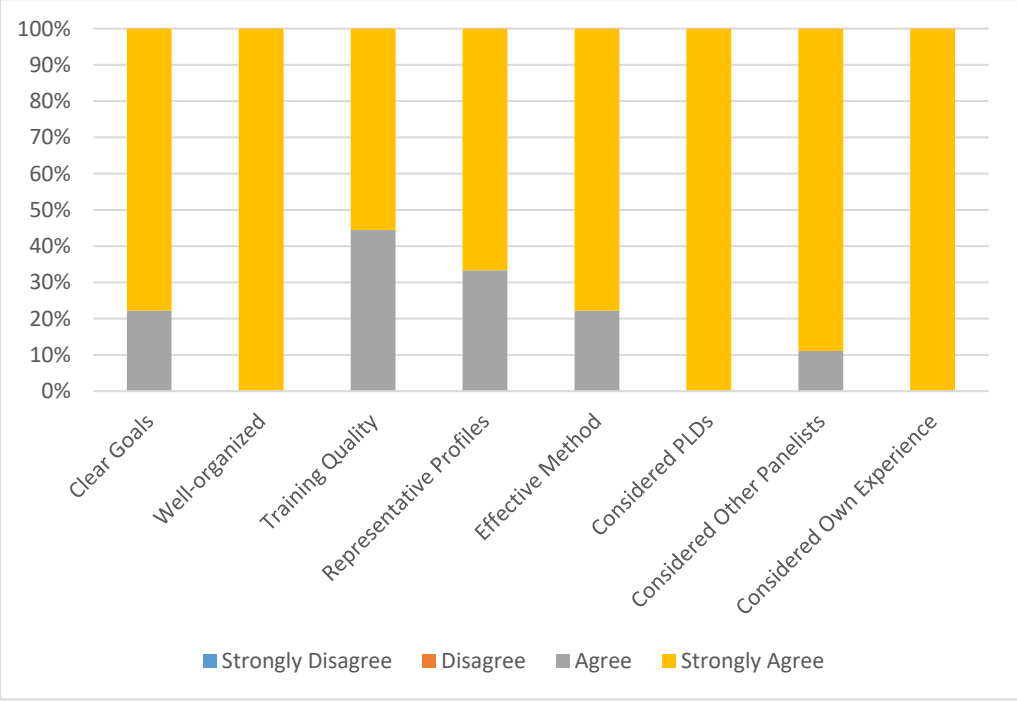

Figure 3. Panelist feedback regarding the panel meeting.

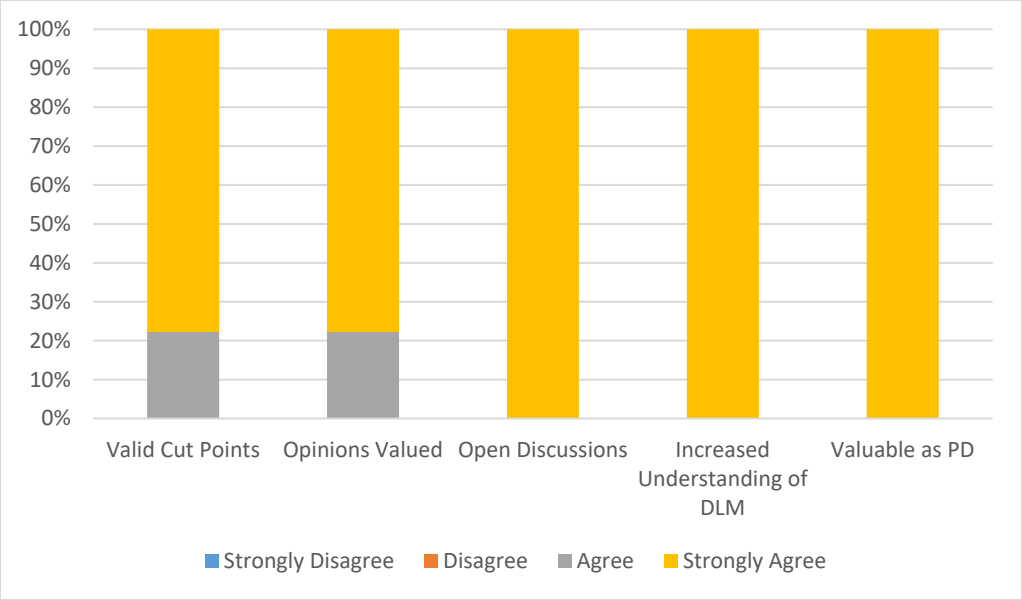

Figure 4. Panelist feedback regarding the overall evaluation of the process.

Appendix D:
Dynamic Learning Maps Technical Advisory Committee Memo

Memorandum

To: DLM Staff and Participating States

From: Karla Egan, Ph.D., member
CC: DLM Technical Advisory Committee
Date: May 31, 2019
Subject: TAC Overview and Commentary on the DLM Grade 3 Standard-Setting Process

The purpose of this memorandum is to evaluate the appropriateness of the procedures used and the quality of implementation of the standard-setting process for the grade 3 DLM science assessment. Dr. Karla Egan is a member of the DLM Technical Advisory Committee (TAC) and she attended and observed the online standard-setting process.

This memorandum (1) overviews the implementation of the standard setting; and (2) evaluates the implementation of standard-setting processes. The KU ATLAS team will produce a step-by-step technical report of the standard-setting process.

Overview of the Standard-Setting Process for Third-Grade Science

A profile-based standard-setting procedure was implemented for the DLM grade 3 science assessment during a three-hour online meeting on May 30, 2019. The DLM consortium administers the same grade band science assessment in grades 3, 4, and 5, and cut scores had been established using a student mastery profile-based method (Nash et al., 2016) for grades 4 and 5. The cut scores for grades 4 and 5 were used by ATLAS staff to derive cut points for grade 3. The derived cut scores served as a starting point for the panelists.

The intended method is a content-based process that utilizes student profiles at different total linkage levels mastered. Guided by policy performance level descriptors (PLDs), student profiles from grades 4 and 5, and grade-specific PLDs for grades 4 and 5, panelists studied the grade 3 profiles to decide if the derived cut points were appropriate or if new cut points should be suggested. Panelists had received packets prior to the workshop containing example student profiles for grades 3, 4, and 5. At a high-level, the following occurs in each round of activity:

- Training: ATLAS staff trained panelists on how to use the features of the Zoom meeting; the configuration of the DLM science assessments; the standard-setting process; the scoring of the DLM assessments; and the policy descriptors. ATLAS staff ended training with an example profile.

- Round 1: Panelists recommended the Approaching Target/At Target cut score. To do this, panelists read policy descriptors, the blank profile, and linkage-level descriptors. Panelists then reviewed the grade 4 and grade 5 PLDs and the grade 4 and 5 profiles. After reading the materials, the panelists were asked to examine the grade 3 profiles for the scores associated with this cut. Panelists were asked to respond to the question, "Do you have a content-based rationale for changing the proposed cut point to a lower number?"
    - Panelists mostly provided their responses to the question to the guiding question by texting their thoughts in the chat window.
    - Panelists were then asked to send whether they agreed/disagreed in a private chat to ATLAS staff member.
        - Seven panelists agreed with the new cut; two disagreed.
    - Following discussion, panelists lowered the cut score to 13.
- Round 2: Panelists followed the same set of procedures to recommend the At Target/Advanced cut scores.
    - Panelists lowered the recommended cut score to 18.
- Round 3: Panelists followed the same set of procedures to recommend the Emerging/Approaching the Target cut score.
    - Six panelists agreed with the new cut, three disagreed.
    - Panelists lowered the recommended cut score to seven.
- Impact data: As a final step, the ATLAS staff showed the impact data for grades 3, 4, and 5 given the recommended cut points. Panelists did not want to change their cut scores given the impact data.
- Panelists were asked to complete a standard-setting evaluation questionnaire. These results will be complied and included in the full technical documentation.

Commentary

The panelists appeared to be knowledgeable of the content and diligent in their cut-score recommendations. The panelists provided content-related rationales for placement of cut points and did not appear to have a preconceived idea about the placement of cut points. The training processes were well executed, and the facilitators answered questions quickly and thoroughly.

This evaluator observed that the panelists participated throughout the three-hour session; however, the online implementation did limit the amount that panelists engaged in conversation. It is often difficult to get panelists to engage in an online meeting, and the facilitators used all available tools to encourage panelists to participate through text and talk.

For future standard settings, ATLAS staff are encouraged to have a formal mechanism for capturing and displaying panelist recommendations. In addition, ATLAS staff are strongly encouraged to recruit panelists from different schools within the same state.

Resolution

At the May 31, 2019, meeting of the DLM TAC, the TAC collectively evaluated, and then independently evaluated throughout the following week, the methodology and process used to

identify panel-recommended grade 3 science cut points (rather than the cut-point values themselves). Using these criteria, the TAC found the process to be consistent with the proposed methodology. Additionally, the TAC stated they could find nothing that should prevent the states from accepting the cut scores. Given the grade 3 standard-setting constraints, whereby the cut points needed to be set without changing the existing cut points for the other grade levels within the elementary grade band, the TAC felt that the approach followed was reasonable. However, the TAC recommended that in the future, when standard-setting events with fewer constraints are to be carried out, the DLM Consortium should carefully consider whether virtual panel meetings are an appropriate means for conducting such standard setting.