Welcome to the MnSTA Webinar
Resources for Supporting MCA Results Release with MDE Assessment Team

- As a webinar attendee, you'll see the video and slides from the presenter.
- Please use the "Q&A" tool on your Zoom screen to pose questions when Q&A is open.
- You can vote with "thumbs up" for questions you are interested in.
- Unfortunately, this session cannot be recorded.

MnSTA
Minnesota Science Teachers Association
Fostering excellent science education in Minnesota for all!

MnSTA

Minnesota Science Teachers Association

Fostering excellent science education in Minnesota for all!

Benefits of being a MnSTA Member

- A **network of colleagues** with strategies tailored to Minnesota classrooms.
- **Professional development opportunities** focused on state science standards.
- A voice in **statewide science education advocacy**.
- Ongoing **updates, resources, and a supportive community**.
- **Discounted membership rates** at the NSTA conference and future MnSTA conferences

Join MnSTA here!

Register for NSTA MSP 2025

nsta

NATIONAL CONFERENCE ON SCIENCE EDUCATION

MINNEAPOLIS 25

NOVEMBER 12-15

Upgrade Your Conference Experience with the Following Programs

For Administrators and Education Leaders

Leaders Institute

Leadership for the Implementation of High-Quality Instructional Materials

Professional Learning Institutes (PLIs)

1. **Igniting Curiosity and Wonder: OpenSciEd Elementary (K-5)**
2. **Introducing OpenSciEd Middle School + Computer Science:**
   Innovative Integration for Engaging & Efficient Learning
3. **Incorporating Meaningful Computational Thinking in the Middle School Science Classroom**
4. **Implement OpenSciEd High School Units in Your Classroom**
   Fostering Curiosity and Confidence in High School Science Learners
5. **Designing 3D Assessments in Partnership with Generative AI:**
   A Hands-On Workshop for Elementary and Middle School Educators
6. **Integrating the T in STEM with English Language Arts (ELA)**

MnSTA Pathway

MnSTA The Minnesota Science Teachers Association

nsta NATIONAL CONFERENCE ON SCIENCE EDUCATION
MINNEAPOLIS 25
NOVEMBER 12-15

Name	Session Title
Mark Peterson	3D Assessment: Playing the Long Game with the SEPs and CCCs.
Thomas Meagher	Finding Phenomena Outside Your Door: Engaging middle school students with outdoor learning.
Missie Olson	Visualizing Science: Modeling for Sensemaking
David Grack	Phenology: Observe, Investigate, and Record
Dan Voss	Chem & Physics in Minnesota - Selecting and Adapting Curricula
Jill Jensen/ Kim Benton	Using Stories to Integrate the Science and Engineering Practices
Dana Smith	ESTEP Share Out/Phenomena Share
Dr. Angela Osuji	Justice-Centered Science Teaching
John Olson	MnSTA Affinity Breakfast: Networking, and Awardee Panel
Marlene Schoeneck	Questions to Investigations: How to Develop and Manage Student Questions for Investigation in the Science Classroom
Sarah Carter	Beyond Programming: Embedding Computer Science in 3D Science Learning
Dr. Angela Kolonich, Jim Wood, Judy Iverson	Evaluating and Designing High-Quality 3D Assessments for Your Classroom
Dr. Angela Kolonich	Contributions of Minnesota Anishinaabe and Dakota Tribes and Communities in Standards-aligned Science Instruction.

MnSTA Making Sense of Science Oct 6, 2025
Resources Supporting MCA and Alt-MCA Results Release

Angie Kolonich | Jim Wood | Judi Iverson

Ten Minnesota Commitments to Equity

1. Prioritize equity.
2. Start from within.
3. **Measure what matters.**
4. Go local.
5. Follow the money.
6. Start early.
7. **Monitor implementation of standards.**
8. **Value people.**
9. Improve conditions for learning.
10. Give students options.

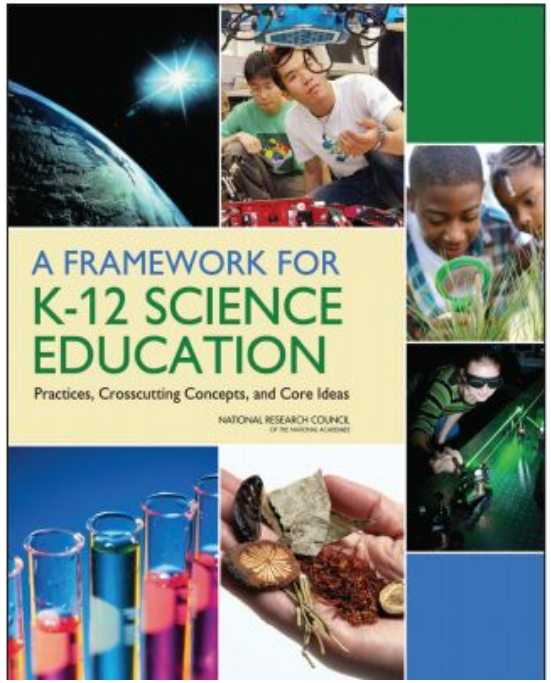
Agenda

- MDE Updates
- Resources supporting MCA and Alt MCA Scores Release
- Questions

Framework for K-12 Science Education

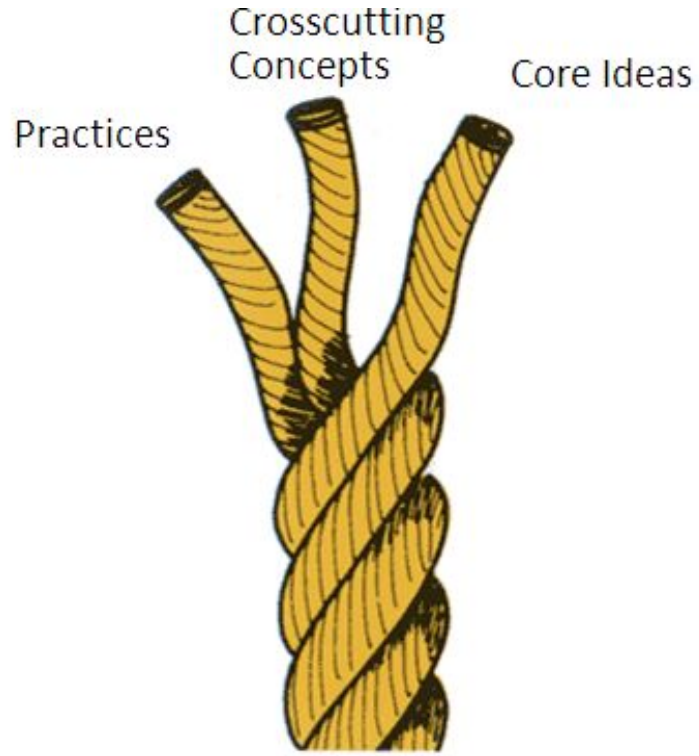
"Science is not just a body of knowledge that reflects current understanding of the world; it is also a set of practices used to establish, extend, and refine that knowledge"

Shifts in Standards



Free download at www.nap.edu

- Figuring out, not just learn about
  - Students explain phenomena
- Three dimensions for learning
  1. Scientific and Engineering Practices
  2. Crosscutting Concepts
  3. Core Ideas
- Learning Progressions in all 3 dimensions
- Coherence with ELA and mathematics
- Attention to equity



Seismic Shift in Benchmarks

2009 Benchmark	2019 Benchmark
3.4.3.2.2 **Give examples of differences among individuals that can sometimes give an individual an advantage in survival and reproduction.**	3L.3.2.1.1 **Construct an explanation using evidence from various sources for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.** (P: 6, CC: 2. CI: LS4)

Shifts in Classroom Instruction

Less	More
Rote memorization of facts and terms	Facts and terms learned as needed while developing explanations and designing solutions using evidence
Learning ideas disconnected from questions about phenomena	System thinking and modeling to explain phenomena
Teacher providing information to the whole class	Students conducting investigations, solving problems and engaging in discussions
Teachers posing questions with one right answer	Students discussing open-ended questions
Students reading textbooks to answer questions	Students gathering information from multiple sources
Cookbook labs or hands-on activities	Multiple investigations driven by student questions
Worksheets	Students writing journals, reports, and media presentations to explain and argue from evidence
Oversimplification for students perceived as less able	Provision of support for sophisticated science for all

Remembering where it all started

- The Standards committee worked for 9 months to draft the standards and benchmarks (2018-2019)
- Standards became legally required through the MN rulemaking process. (2021)
- Districts begin standards transition process (2019-2024) MCA development begins
- Students take MCA IV (2024-2025)

PELSB Working Group Invitation

- The Professional Educator Licensing and Standards Board is accepting applications to serve on the **Science Teacher Educator and Licensure Working Group**. If interested, please submit your application for the PELSB Science Teacher Educator & Licensure Working Group before **October 7, 2025**.

NEW: Computer Science Resource

- **Computer Science for Every Classroom: A Course for Minnesota K–12 Educators**
  Developed through the Computer Science Education Advancement Program (Minn. Stat. 120B.241 [2024]), this free virtual course is designed for K–12 teachers at all experience levels. The 10-hour course includes eight modules aligned to the CSTA Standards for CS Teachers, featuring lessons, activities, discussions, and classroom-ready resources. A PLC Facilitator Guide is available for group implementation, and you can Enroll via Canvas.

New Standards, New Assessment – A Seismic Shift

Educators are involved in the Science MCA Process

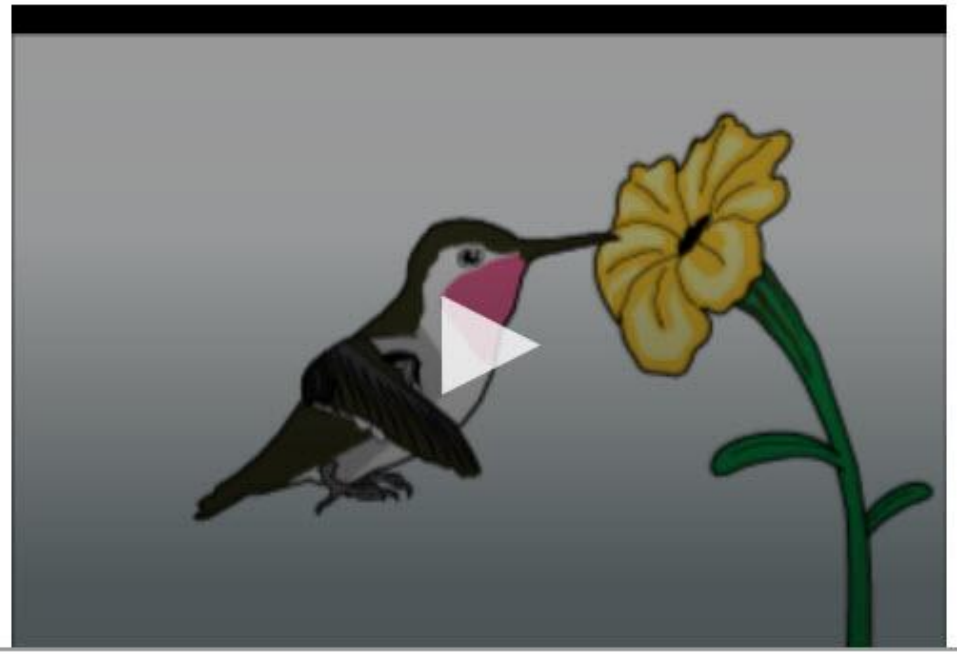
- Writing phenomena sets
- Reviewing new development
- Data review after field testing
- Determining criteria for scoring constructed response items
- Test Specifications
- Performance Level Descriptors
- Standard Setting
- Alignment Study
- Glossary development

Seismic Shift in Standards/Benchmarks

2009 Benchmark (MCA-III)	2019 Benchmark (MCA-IV)
3.4.3.2.2 **Give examples of differences among individuals that can sometimes give an individual an advantage in survival and reproduction.**	3L.3.2.1.1 **Construct an explanation using evidence from various sources for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.** (P: 6, CC: 2. CI: LS4) *Examples of cause and effect relationships may include how individual plants of the same species with different length thorns may be more or less likely to be eaten by predators; or animals that have better camouflage coloration than others of their species may be more likely to survive and therefore more likely to leave offspring.*

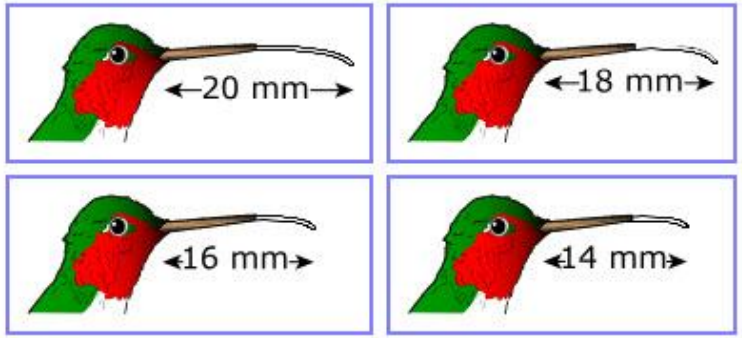
Seismic Shift!

Hummingbirds are one of the few types of birds that can hover, or stay in one place. Hummingbirds flap their wings in a figure-eight pattern to push themselves upward. They can flap their wings between 12 and 80 times every second. Hummingbirds can even fly backward.



Hummingbirds feed on nectar found inside flowers. During a drought one summer, nectar could only be found at the very deepest part of the flower. Identify the individual hummingbird that is best adapted to survive the drought.

Select the hummingbird you want to choose.



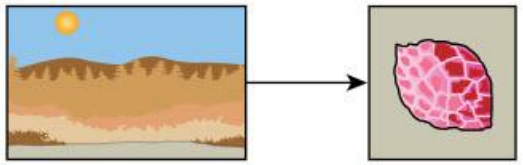
Question from Science MCA-III

Seismic shift!!

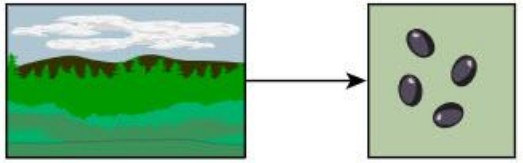
Tab A | Tab B

The scientists observed that finches with deep beaks could eat both small seeds and large seeds. However, finches with shallow beaks could eat only small seeds. Figure 2 shows the types of seeds available in different weather conditions on the island.

Figure 2. Weather and Food Availability



In dry conditions, only large, hard seeds were available.



In wet conditions, small, soft seeds were also available.

Graph 2 shows how much rain fell on this island from 1976 to 1978.

Graph 2. Island Rainfall, 1976–1978

Based on the information in Graph 1 (Tab A) and Figure 2 (Tab B), which beak depth would most likely provide an advantage during dry years?

- A. Deeper beaks, because more small, soft seeds will be available
- B. Deeper beaks, because more large, hard seeds will be available
- C. Shallower beaks, because more small, soft seeds will be available
- D. Shallower beaks, because more large, hard seeds will be available

Question from Science MCA-IV

Unpacking the benchmark

3L.3.2.1.1: **Construct an explanation** using evidence from various sources for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing (P:6, CC:2, CI: LS4)

P:6 Constructing Explanations

CC:2 Cause and Effect

LS4: Biological Evolution: Unity and Diversity

Unpacking the question

Based on the information in Graph 1 (Tab A) and Figure 2 (Tab B), which beak depth would most likely provide an advantage during dry years?

A. Deeper beaks, because more small, soft seeds will be available

B. Deeper beaks, because more large, hard seeds will be available

C. Shallower beaks, because more small, soft seeds will be available

D. Shallower beaks, because more large, hard seeds will be available

3L.3.2.1.1: **Construct an explanation** using evidence from various sources for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing (P:6, CC:2, CI: LS4)

P:6 Constructing Explanations

CC:2 Cause and Effect

LS4: Biological Evolution: Unity and Diversity

How has the MCA shifted?

- **Phenomenon-based item sets.** The context for each phenomenon is focused around observable events occurring in the universe that can be explained or predicted with scientific reasoning. Achieve, Next Generation Science Storylines and STEM Teaching Tools
- **Multi-dimensional items.** Each item assesses the Practice and Core Idea of the benchmark. Most items also assess the Crosscutting Concept of the benchmark.
- **Tabs.** The phenomenon can be complex and contain data sets, visualizations and expanded contexts. This amount of information is sometimes broken into multiple tabs, which are all simultaneously available for each item. Some items require comparison of information across tabs.
- **Constructed Response.** In order to better assess student learning of several of the practices, 1-2 short-answer student responses are included in the MCA-IV.

Meeting the Standards on the Science MCA

- 2019 Standards implemented in all grades for many years
- Teachers are experts in 3D teaching, especially practices
- Students have experience with phenomena-driven 3D assessments in the classroom
- Students are present for instruction
- Students are familiar with the testing platform

Seismic Shift!

The MCA-IV is ***VERY*** different from the MCA-III!

Do not compare the scores!

Practices!

Content Areas Reported on Science MCA-IV

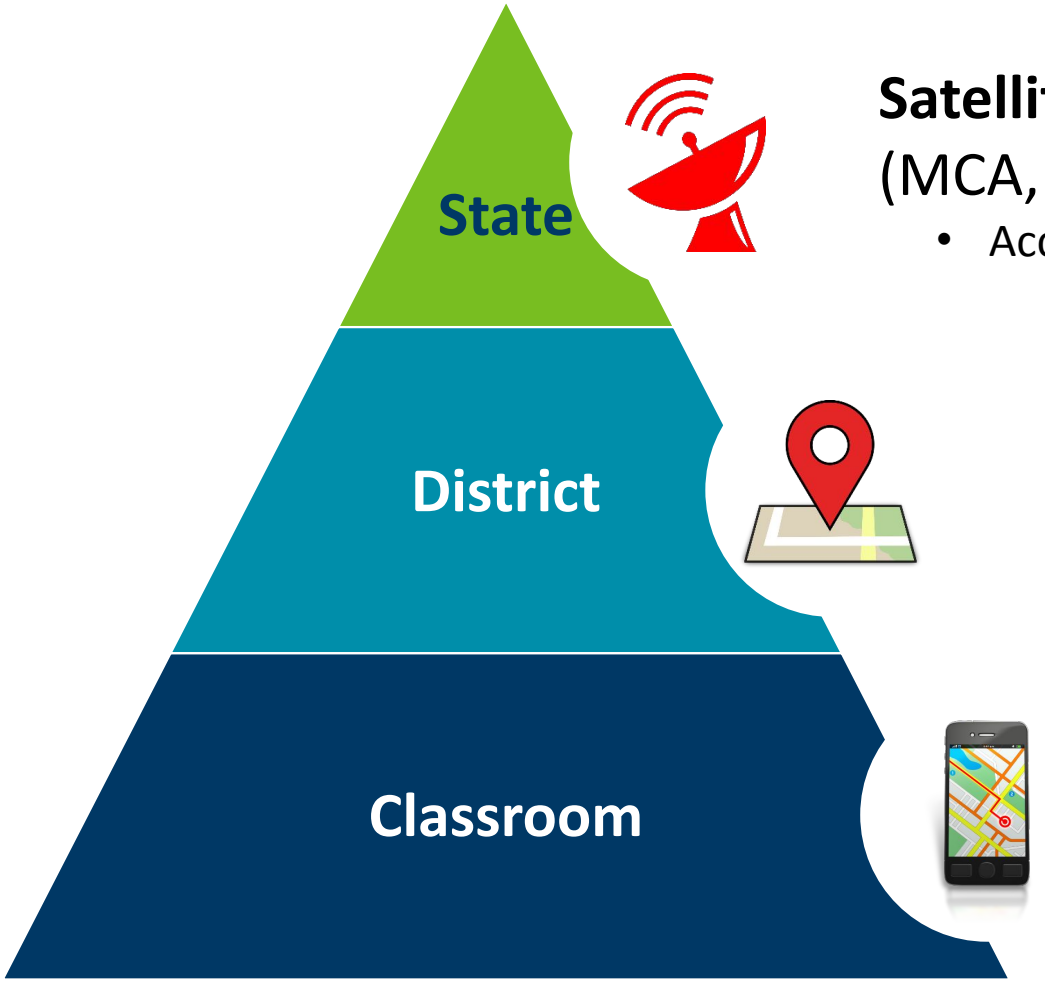
Grades 5 and 8

- Practices in Earth & Space Science
- Practices in Life Science
- Practices in Physical Science

High School

- Practices in LS1: Molecules to Organisms
- Practices in LS2: Ecosystems
- Practices in LS3: Heredity
- Practices in LS4: Biological Evolution

The Need for Assessment **Systems**



Satellite view of student learning of standards; evaluative (MCA, MTAS, ACCESS, Alt. ACCESS)

- Accountability and evaluative purpose

Map view: Evaluate curricula/programs; Allocate resources (Interim/Benchmark Assessments)

- Inform student services/interventions; monitor group performance

Street view: Monitor and adjust instruction

- Give feedback to students; grading
- Partner with families about progress

MCA-IV Test Blueprint

Grade Level	Total Number of Test Questions	Total Number of Points	Total Number of 1-Point Questions	Total Number of 3-Point Questions
Grade 5	41–43	45	39–42	1–2
Grade 8	41–43	45	39–42	1–2
High School	52–54	56	50–53	1–2

Reporting Categories

Grade 5

Reporting Category	Number of Test Questions	Number of Points	Number of 3-Point Questions
Practices in Earth Science (3–5E)	13–15	15	0–1
Practices in Life Science (3–5L)	13–15	15	0–1
Practices in Physical Science (3–5P)	13–15	15	0–1

Grade 8

Reporting Category	Number of Test Questions	Number of Points	Number of 3-Point Questions
Practices in Earth Science (6E)	13–15	15	0–1
Practices in Life Science (7L)	13–15	15	0–1
Practices in Physical Science (8P)	13–15	15	0–1

Reporting Categories

High School Science MCA

Reporting Category	Number of Test Questions	Number of Points	Number of 3-Point Questions
Practices in LS1	12–14	14	0–1
Practices in LS2	12–14	14	0–1
Practices in LS3	12–14	14	0–1
Practices in LS4	12–14	14	0–1

Science Performance Level Descriptors (PLDs)

- Performance Level Descriptors (PLDs) describe the knowledge and skills that students of various performance levels are expected to display on an assessment. They show the trajectory of skill advancement as it relates to increases in content difficulty, cognitive level increases with the content, and the context used to present the task.
- Four levels: Beginning, Intermediate, Meets, Advanced
- PLDs have several uses, including:
  - Providing the criteria for the establishment of performance levels (or cut scores) for the Science MCA-IV at standard setting
  - Facilitating interpretation of student test scores by educators and families
  - Identifying classroom instructional changes that best support a student's progression to higher performance levels
  - Supporting educators in implementation of new standards

Reminder: Use of MCA Results

- Appropriate and Inappropriate Uses of Minnesota Comprehensive Assessment (MCA) Results
  - District Resources – Test Score Interpretation Resources – Quick Reference Documents – first bullet point
- Guidance for Science MCA-IV and Alternative MCA Results Release
  - District Resources – Test Score Interpretation Resources – More Detailed information – first bullet point

Guidance Document for Science Results Release

DEPARTMENT OF EDUCATION

Guidance for Science MCA-IV and Alternate MCA Results Release

Background

When academic standards are revised, a new series of statewide assessments are developed to align to the new standards. Minnesota school districts and charter schools then develop a transition plan to meet the timeline for implementing the revised academic standards. Once new academic standards are fully implemented, the new series of assessments are administered to assess learning of the new standards.

This document provides information on the revised Minnesota Academic Standards and new statewide assessments in science. It provides guidance and resources for using these results for future planning and continuous improvement for standards implementation.

Minnesota Academic Standards in Science

The Minnesota Academic Standards in Science were revised in 2019 and fully implemented in Minnesota school districts and charter schools during the 2024-25 school year. The new series of assessments in science, the MCA-IV and Alternate MCA (Alt MCA), are aligned to the 2019 standards and were first administrated in spring 2025. These assessments, just like the standards, are substantially different than the previous iterations of standards and assessments (MCA-III and MTAS). Results cannot be compared between the Science MCA-III/MTAS and the Science MCA-IV/Alt MCA.

MCA Assessment Resources

- Use assessment resources for more context on the assessment:
  - Released questions available as examples of how the standards are assessed in the Minnesota Questions Tool (Releasing more this fall)
  - Performance level descriptors describing the knowledge and skills students demonstrate at different performance levels of the assessment and
  - Overview of the test structure and design is available in Test Specification documents
  - Minnesota Assessment Hub – Science MCA-IV quick guides and **SRT**
  - MDE District Resources – Test Score Interpretation Resources

Participate in Assessment Review Committees

"I have really enjoyed the time I have spent on MDE panels. The experiences have taught me a lot more about the tests themselves, and have allowed me time to discuss items with colleagues. The feedback we receive has made me a better teacher in many ways."

"Every panel I have participated in, I have left with a greater understanding of the MCAs. You get to meet, work, and learn with educators from around the state. I leave every day with a smile on my face."

https://cvent.me/MQR7Bo

Questions

- Next Office Hours session Monday October 27, 2025

Miigwech, Thank you!

Angie Kolonich, Science Education Specialist

Angela.Kolonich@state.mn.us

651-582-8509