LAUNCH NEBRASKA

Strengthening the Core: Remote Learning for Science

December 1, 2020
3:30-5:00 CST

School Reentry: Foundational Values

Equity: We must ensure our students, especially those who have been historically underserved, maintain access to high quality teaching.

Quality: While flexibility and innovation must be pursued, we must not back down from our standards for quality.

Flexibility: We must pursue flexibilities in regulations and innovations to ensure students have access to high quality teaching.

Safety: Learning cannot occur if the school community does not feel safe in their environment

Decisive: Given the size and scope of the challenge, we must move deliberately and make tough choices. We will make mistakes, and we will adapt quickly as variables on the ground change.

Our Current Realities:

Schools are experiencing constant change.

Student learning environments are shifting between in-person and remote settings at different points throughout this fall.

It can be time consuming to prepare instruction for remote learning, and time is limited.

High-quality instructional materials support coherence and offer consistency as students move between remote and in-person learning scenarios.

Strengthening Core Instruction

- Professional learning sessions focused on strengthening core instruction for ***literacy***, ***mathematics***, and ***science*** to provide ***content-specific*** knowledge and skills related to remote instruction and essential instructional content.
- Complementary to previous Launch Nebraska Webinar Series.
- Each session be recorded and archived on the Launch Nebraska website (www.launchne.com).

Meet Your Facilitator: Alicia

- Stem Instructional Coach
- Science Teacher
- Washington, DC
- Ms. Frizzle impersonator

Before we get started...

- Use the Q & A feature if you have questions about technology or logistics
- Use "Chat All Panelists" when prompted to respond
- Go to "View Options" to exit full screen to access the links in your web browser.
- Recorded session and this PPT deck will be available at www.launchne.com.

Objectives

Participants will…

1. Understand how remote learning impacts student cognition and engagement.

2. Learn strategies to support remote learning in Science and experience these modeled in an actual lesson.

3. Reflect on the impact of the strategies as they were used in the lesson.

Our Mindset About Remote Learning

“We can choose to envision opportunities as challenges, or to envision challenges as opportunities.”

Why are we focusing on this content now?

- **Equity.** All of our students deserve access to engaging, at-grade-level instruction aligned to high quality instructional materials.
- **Increased remote learning.** Due to increases in COVID cases, we are seeing more school building closure and more teachers and school systems rolling over to remote learning.
- **A focus on the essential instructional shifts.** NDE has provided content resources to help educators focus their planning and instruction on the learning that matters most.

Agenda

Time	Task
5 minutes	Getting Started
20 minutes	Cognitive Science + Remote Learning Considerations
10 minutes	Foundations of Science Instruction
10 minutes	Preview Lesson & Strategies
20 minutes	Experiential 1 and Debrief
20 minutes	Experiential 2 and Debrief
5 minutes	Wrapping Up

Let's Hear From You

In the chat, please respond to these questions:

- Which aspects of remote learning have been going well?
- Which aspect(s) of remote learning do you find most challenging or complex?

Let's Prepare

Doug Lemov

Managing Director of Uncommon Schools; author of "Teach Like a Champion"

As you watch the video, jot down:

- What key points and recommendations does he make?
- What resonates with you most? Why?

Let’s Watch

Video Debrief

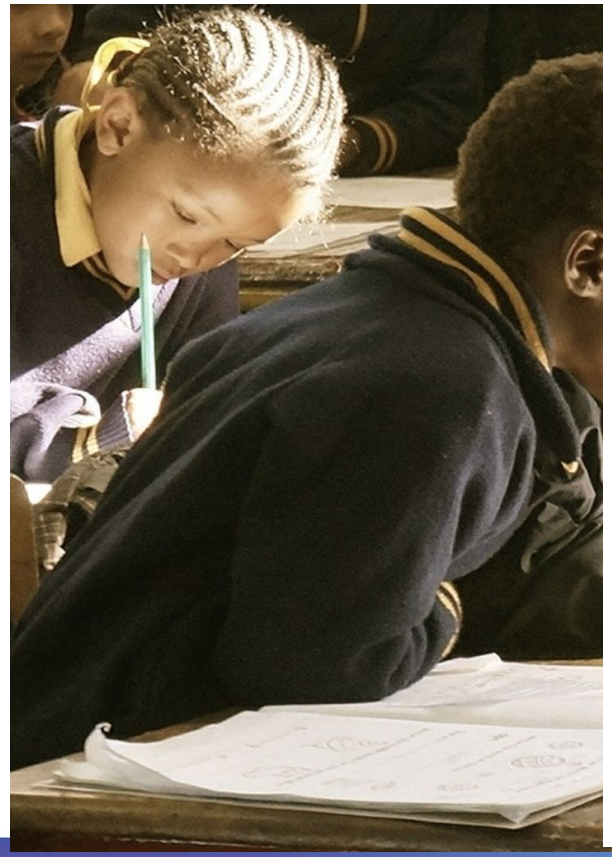
“Chat All Panelists”:

- What key points and recommendations does he make?
- What resonates with you most? Why?

Key Points and Recommendations

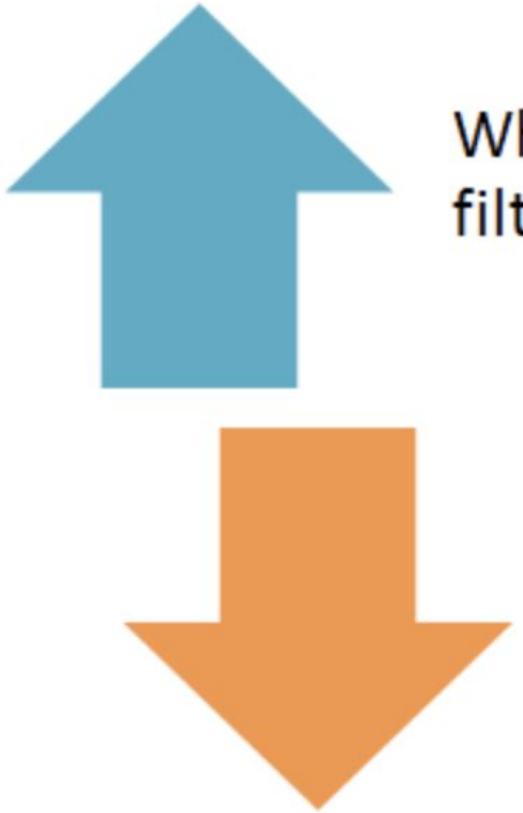
- Short bursts of information paired with opportunities for students to DO something with the content we are giving them
- Plan and structure lessons so that students are are doing the thinking work and using their working memories!
- Hold students accountable for showing their sensemaking in the lesson
- Provide opportunities for students to engage in formative thinking
- Collect formative data → check for understanding often!

Think About the Shift from a Student Perspective



Affective Filters

"The *affective filter* is a term made popular by Stephen Krashen, a famous American researcher on second language acquisition, during the 1980s. It is an attempt to describe how a **student's attitudes or emotional variables** can impact the success of learning a new language." --Rocio Figuero



What can we do to minimize this?

1. Recreate low stakes speaking opportunities
2. Avoid overcorrecting
3. “Celebrate failure” to promote a growth mindset
4. Build in “joy factor” and create time and space for students to have fun with their classmates

Let's talk Science.

As we keep the student experience and aspects of how students learn remotely in mind...

Let's learn more about best practices for teaching Science remotely!

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The Foundations of Our Work

Provide all students grade-level learning, regardless of their starting points.

Implement high-quality instructional materials to ensure all students have a coherent academic experience.

- PhD Science from Great Minds
- OpenSciEd
- Stanford SCALE
- iHub for HS

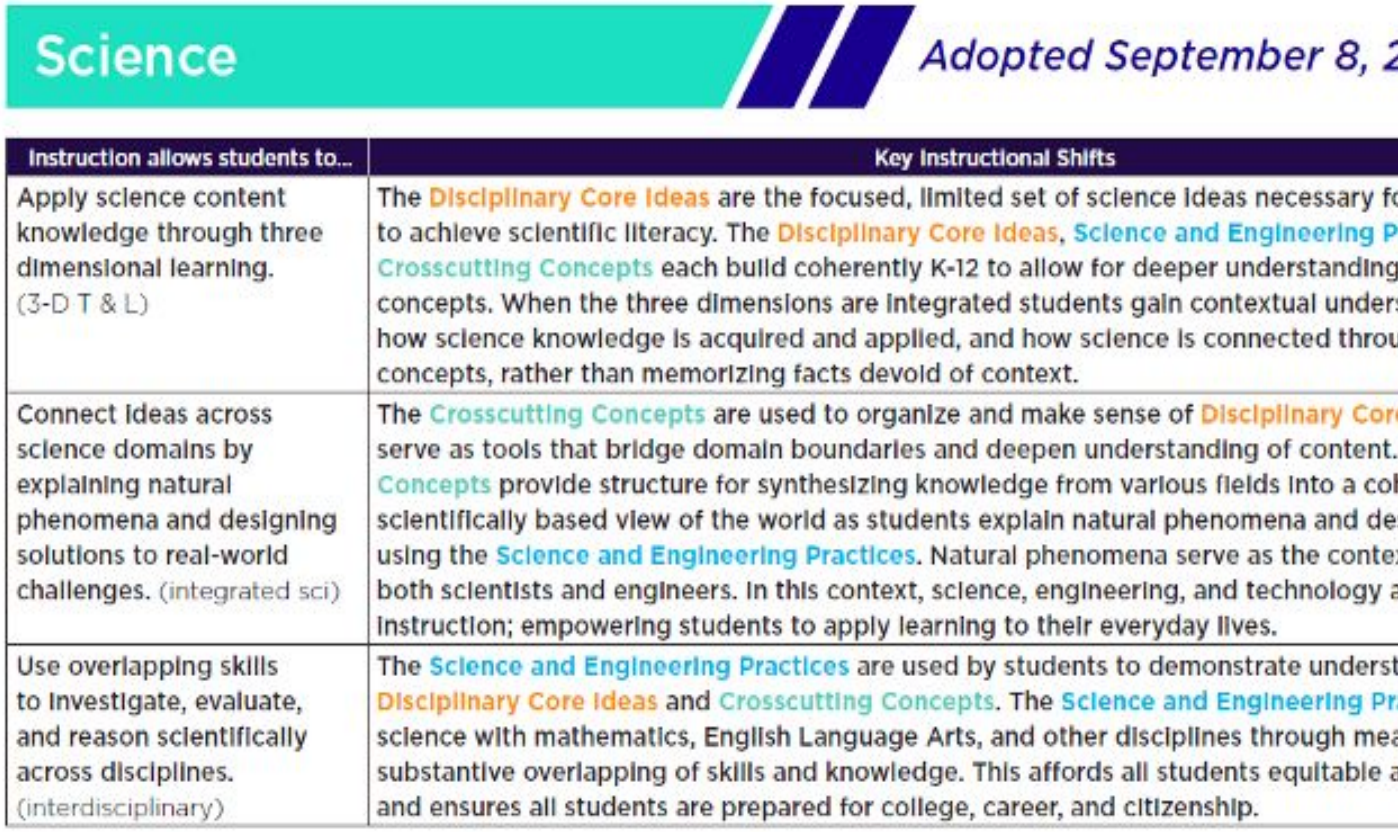
The Foundations of Our Work

All Science Content is Essential Content.

- Science disciplines are **integrated in grades K – 12**
- Science standards are not taught in a **linear sequence**
- There are intentionally fewer standards to promote deeper conceptual learning and connections from grades K-12
- Science is to be taught **at all grade levels**

The Challenges of Teaching Science Remotely

When you consider Nebraska's Science shifts, what in particular about Science might be (or has been) difficult to teach remotely?



Science

Adopted September 8, 2

Instruction allows students to...	Key Instructional Shifts
Apply science content knowledge through three dimensional learning. (3-D T & L)	The Disciplinary Core Ideas are the focused, limited set of science ideas necessary fo to achieve scientific literacy. The Disciplinary Core Ideas, Science and Engineering P Crosscutting Concepts each build coherently K-12 to allow for deeper understanding concepts. When the three dimensions are integrated students gain contextual unders how science knowledge is acquired and applied, and how science is connected throu concepts, rather than memorizing facts devoid of context.
Connect ideas across science domains by explaining natural phenomena and designing solutions to real-world challenges. (integrated sci)	The Crosscutting Concepts are used to organize and make sense of Disciplinary Cor serve as tools that bridge domain boundaries and deepen understanding of content. Concepts provide structure for synthesizing knowledge from various fields into a col scientifically based view of the world as students explain natural phenomena and de using the Science and Engineering Practices. Natural phenomena serve as the contex both scientists and engineers. In this context, science, engineering, and technology a instruction; empowering students to apply learning to their everyday lives.
Use overlapping skills to investigate, evaluate, and reason scientifically across disciplines. (interdisciplinary)	The Science and Engineering Practices are used by students to demonstrate underst Disciplinary Core Ideas and Crosscutting Concepts. The Science and Engineering Pr science with mathematics, English Language Arts, and other disciplines through mea substantive overlapping of skills and knowledge. This affords all students equitable a and ensures all students are prepared for college, career, and citizenship.

Science

Adopted September 8, 2017

Instruction allows students to...	Key Instructional Shifts
Apply science content knowledge through three dimensional learning. (3-D T & L)	The Disciplinary Core Ideas are the focused, limited set of science ideas necessary for ALL students to achieve scientific literacy. The Disciplinary Core Ideas, Science and Engineering Practices, and Crosscutting Concepts each build coherently K-12 to allow for deeper understanding of science concepts. When the three dimensions are integrated students gain contextual understanding of how science knowledge is acquired and applied, and how science is connected through a series of concepts, rather than memorizing facts devoid of context.
Connect ideas across science domains by explaining natural phenomena and designing solutions to real-world challenges. (integrated sci)	The Crosscutting Concepts are used to organize and make sense of Disciplinary Core Ideas. They serve as tools that bridge domain boundaries and deepen understanding of content. The Crosscutting Concepts provide structure for synthesizing knowledge from various fields into a coherent and scientifically based view of the world as students explain natural phenomena and design solutions using the Science and Engineering Practices. Natural phenomena serve as the context for the work of both scientists and engineers. In this context, science, engineering, and technology are integrated in instruction; empowering students to apply learning to their everyday lives.
Use overlapping skills to investigate, evaluate, and reason scientifically across disciplines. (interdisciplinary)	The Science and Engineering Practices are used by students to demonstrate understanding of the Disciplinary Core Ideas and Crosscutting Concepts. The Science and Engineering Practices connect science with mathematics, English Language Arts, and other disciplines through meaningful and substantive overlapping of skills and knowledge. This affords all students equitable access to learning and ensures all students are prepared for college, career, and citizenship.

When you consider Nebraska's Science shifts, <u>what in particular</u> about Science might be (or has been) difficult to teach remotely?

Introducing Jamboard

- Jamboard is a way of collaborating and sharing ideas remotely
- If you have difficulties using Jamboard or would prefer, you are welcome to write your comments into the chat instead!

Birth Month	Jamboard Link
Jan/Feb/Mar	**https://tinyurl.com/NDEJamboardJFM**
Apr/May/Jun	**https://tinyurl.com/NDEJamboardAMJ**
Jul/Aug/Sep	**https://tinyurl.com/NDEJamboardJAS**
Oct/Nov/Dec	**https://tinyurl.com/NDEJamboardOND**

Using Jamboard

- Click  to add a your thought to a sticky note on the board
- Click  to move your sticky note around the board using the arrow icon
- Click to  zoom in, if words are too small
- Click  to change boards

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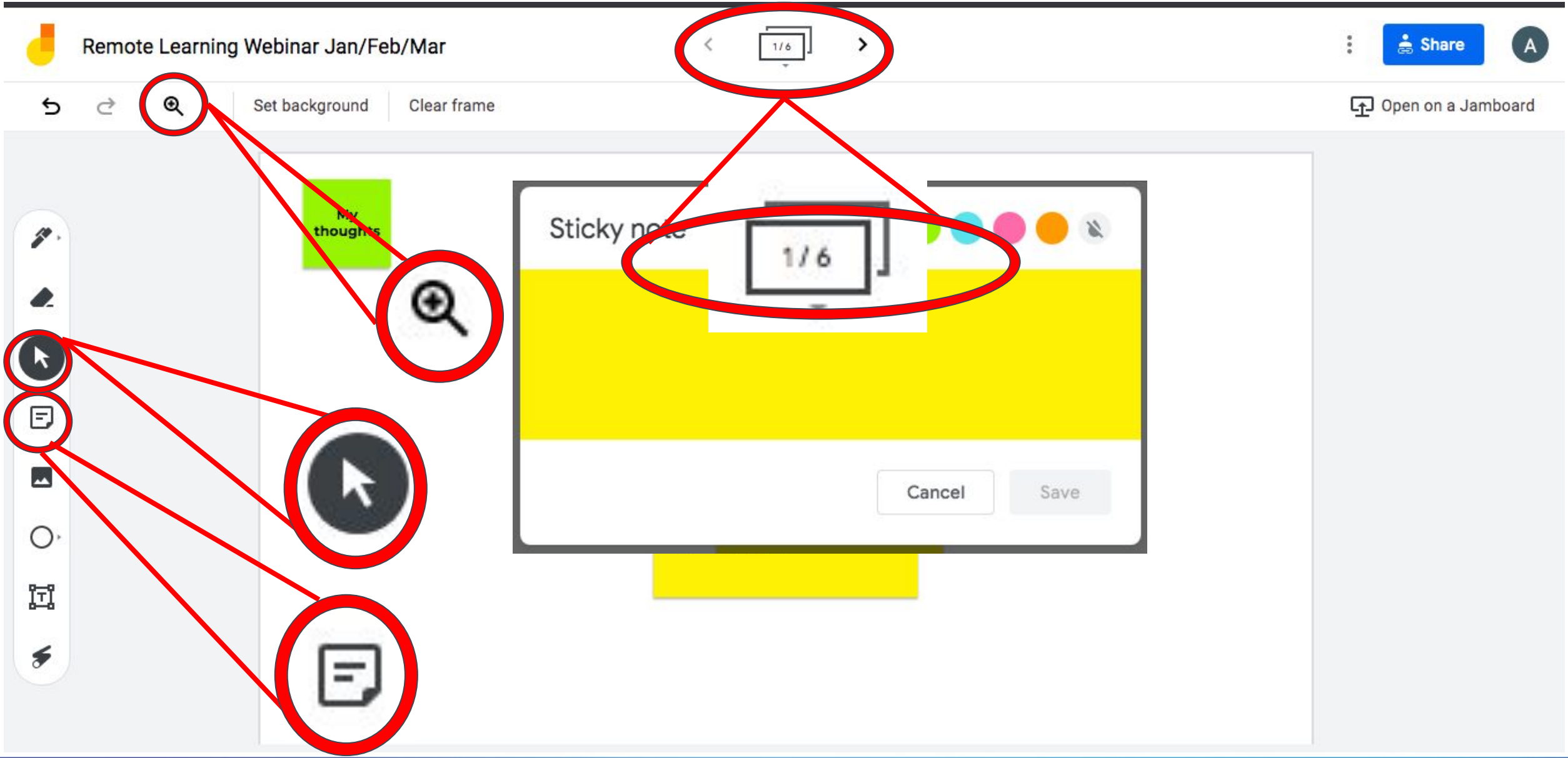
Remote Learning Webinar Jan/Feb/Mar
1 / 6
Share
A
Set background
Clear frame
Open on a Jamboard
My thoughts
Sticky note
1 / 6
Cancel
Save

Debrief: The Challenges of Teaching Science Remotely

When you consider Nebraska's Science shifts, <u>what in particular</u> about Science might be (or has been) difficult to teach remotely?

What can we do to address these challenges?

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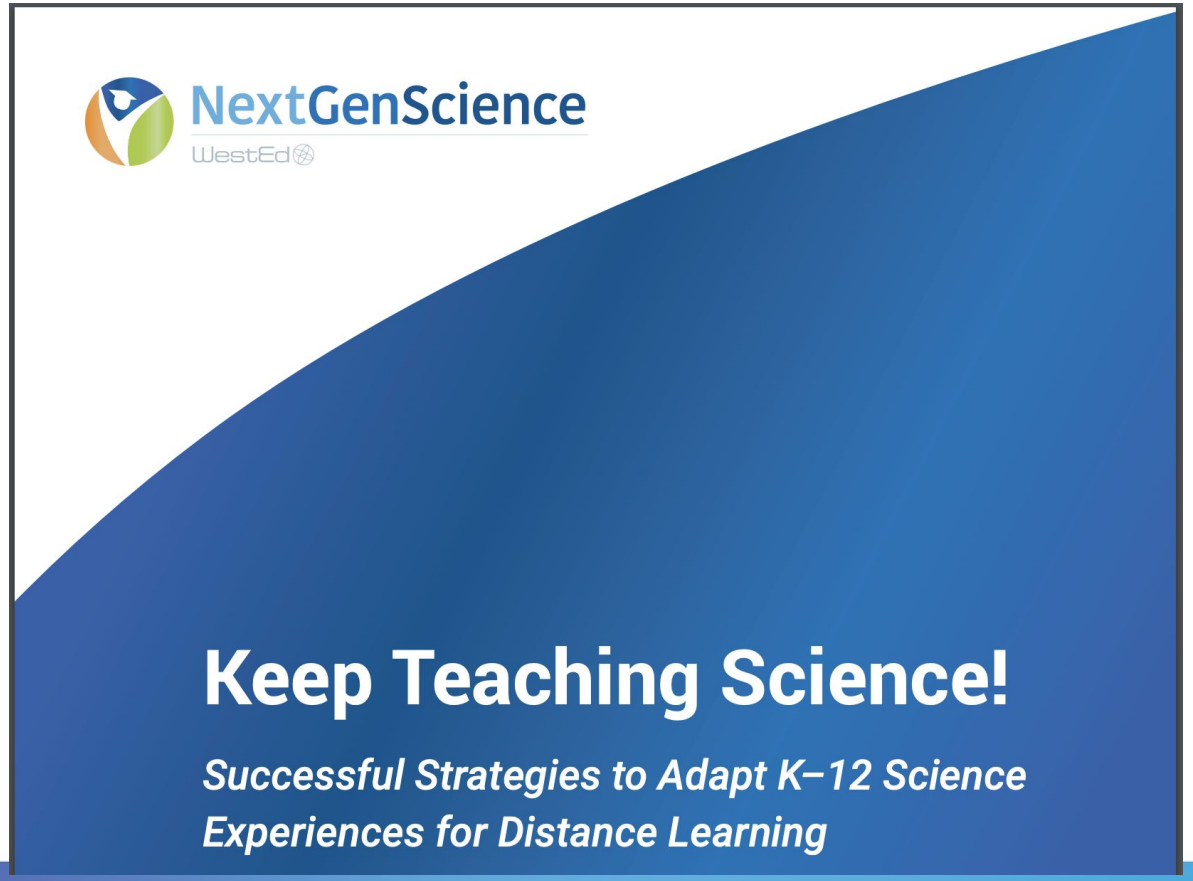
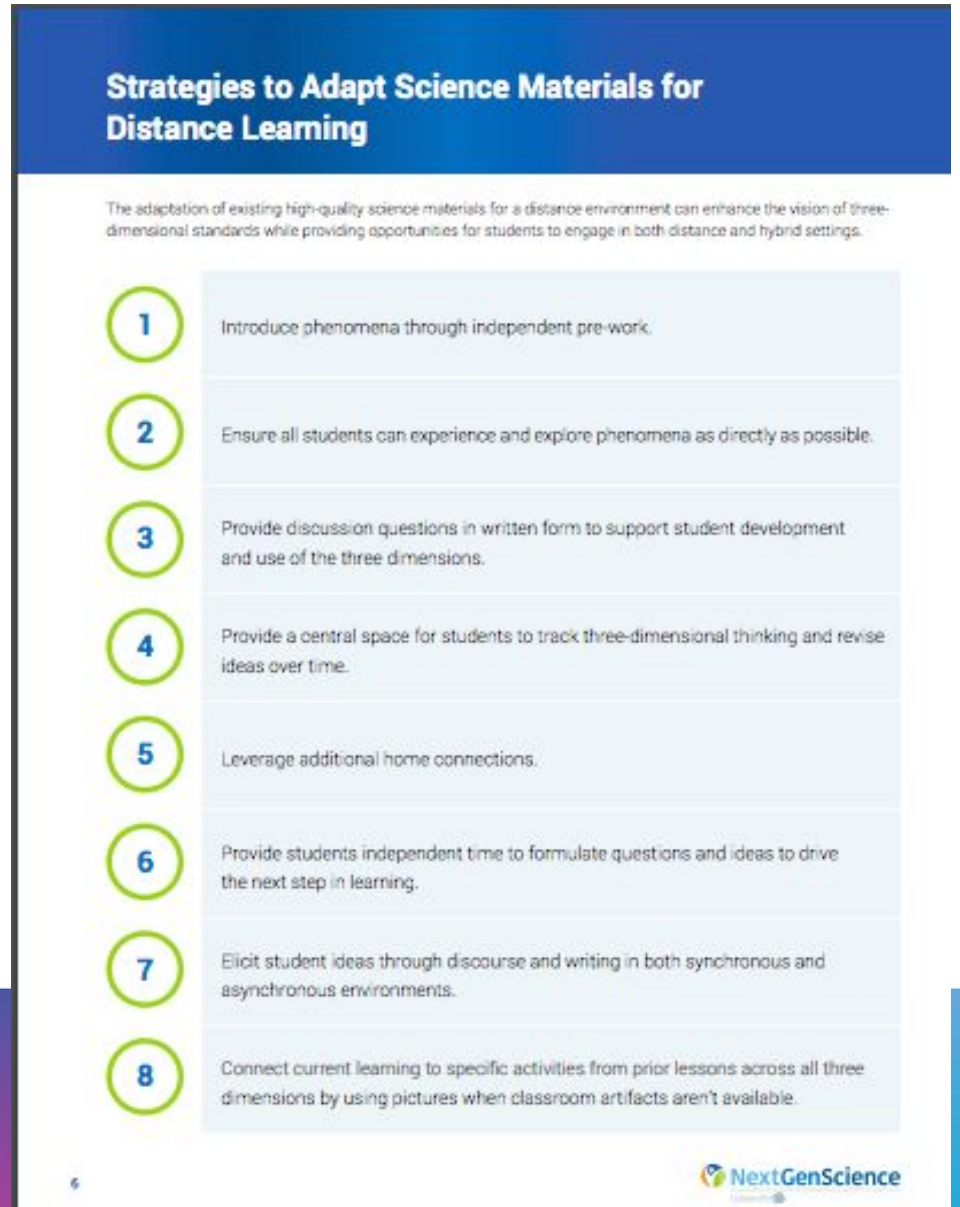
Strategies for Science in Remote Learning



Strategies for Science in Remote Learning



Strategies to Adapt Science Materials for Distance Learning

The adaptation of existing high-quality science materials for a distance environment can enhance the vision of three-dimensional standards while providing opportunities for students to engage in both distance and hybrid settings.

1. Introduce phenomena through independent pre-work.
2. Ensure all students can experience and explore phenomena as directly as possible.
3. Provide discussion questions in written form to support student development and use of the three dimensions.
4. Provide a central space for students to track three-dimensional thinking and revise ideas over time.
5. Leverage additional home connections.
6. Provide students independent time to formulate questions and ideas to drive the next step in learning.
7. Elicit student ideas through discourse and writing in both synchronous and asynchronous environments.
8. Connect current learning to specific activities from prior lessons across all three dimensions by using pictures when classroom artifacts aren't available.

NextGenScience

Review page 6
https://tinyurl.com/NDEKeepTeachingScience

Strategies for Science in Distance Learning

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Strategies for Science in Distance Learning

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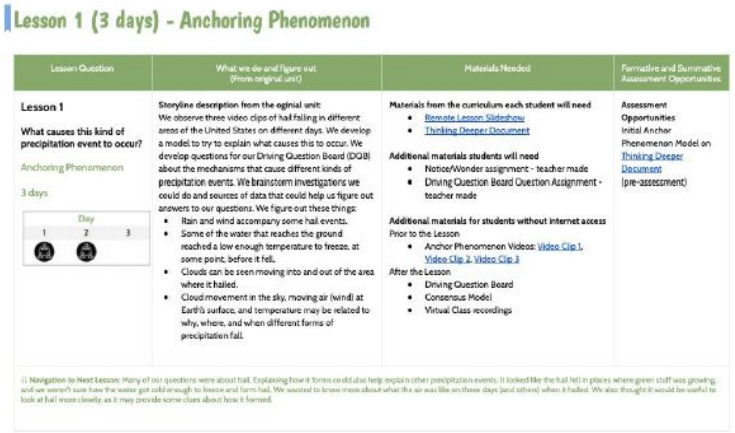
Strategies *in Action*

We are going to apply these strategies together through the lens of an actual lesson from a high quality instructional resource (OpenSciEd).



Lesson 1 (3 days) - Anchoring Phenomenon

Lesson Question	What we do and figure out (From original unit)	Materials Needed	Formative and Summative Assessment Opportunities
Lesson 1 **What causes this kind of precipitation event to occur?** Anchoring Phenomenon 3 days Day 1 2 3	**Storyline description from the oginial unit:** We observe three video clips of hail falling in different areas of the United States on different days. We develop a model to try to explain what causes this to occur. We develop questions for our Driving Question Board (DQB) about the mechanisms that cause different kinds of precipitation events. We brainstorm investigations we could do and sources of data that could help us figure out answers to our questions. We figure out these things: • Rain and wind accompany some hail events. • Some of the water that reaches the ground reached a low enough temperature to freeze, at some point, before it fell. • Clouds can be seen moving into and out of the area where it hailed. • Cloud movement in the sky, moving air (wind) at Earth's surface, and temperature may be related to why, where, and when different forms of precipitation fall.	**Materials from the curriculum each student will need** • Remote Lesson Slideshow • Thinking Deeper Document **Additional materials students will need** • Notice/Wonder assignment - teacher made • Driving Question Board Question Assignment - teacher made **Additional materials for students without internet access** Prior to the Lesson • Anchor Phenomenon Videos: Video Clip 1, Video Clip 2, Video Clip 3 After the Lesson • Driving Question Board • Consensus Model • Virtual Class recordings	**Assessment Opportunities** Initial Anchor Phenomenon Model on Thinking Deeper Document (pre-assessment)

Navigation to Next Lesson: Many of our questions were about hail. Explaining how it forms could also help explain other precipitation events. It looked like the hail fell in places where green stuff was growing, and we weren't sure how the water got cold enough to freeze and form hail. We wanted to know more about what the air was like on these days (and others) when it hailed. We also thought it would be useful to look at hail more closely, as it may provide some clues about how it formed.

Read through the Lesson 1 Guidance (pages 5-8)

tinyurl.com/NDELesson1Guidance

Read through the Thinking Deeper Handout

https://tinyurl.com/NDEStudentHandout

Overview of our Lesson

- This 6th grade **OpenSciEd** lesson is part of the of unit on water, climate, and water cycling where students engage in 4 lessons to answer, "Why does a lot of hail, rain, or snow fall at some times and not others?"
- In Lesson 1, students go through the anchoring phenomena routine focused on answering "What causes this kind of precipitation event to occur?"
- Activities include engaging in phenomena (videos), creating initial models, developing the driving questions, and brainstorming investigations to answer the driving questions.

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“Student Hat” and “Teacher Hat”

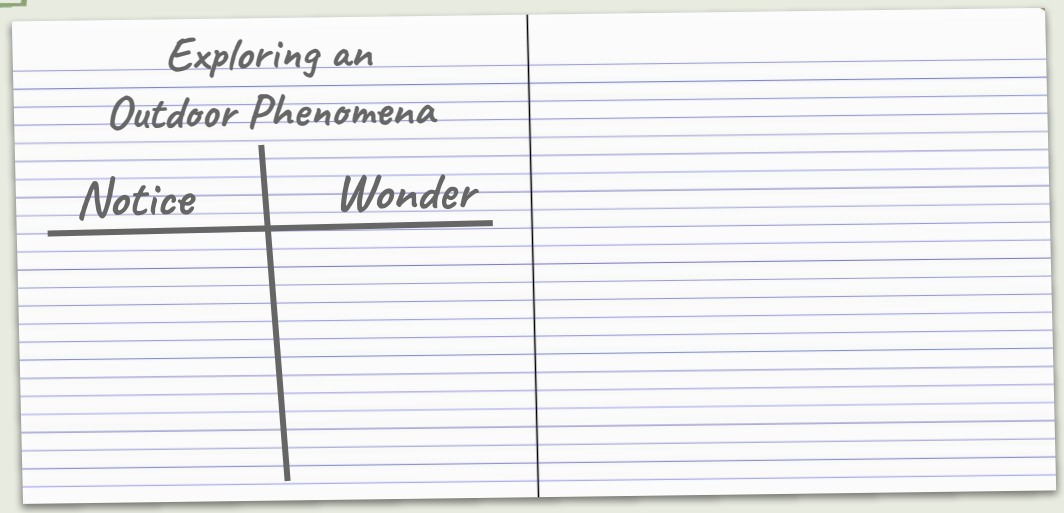
- A slide with a green background indicates “Student Hat” (I will be teaching you as if you are my students). Channel your inner middle schooler!

- A slide with a white background (like this slide) is for us to reflect as educators on the content, pedagogy, etc.)

Explore a Perplexing Phenomenon

The following videos that show a kind of perplexing phenomenon occurring outdoors. Some of you may have experienced this before. Go to your Think Deeper Document and record your notices and wonders for the videos.

Record your noticings and wonderings on your think deeper document.



Thinking Deeper Handout:
https://tinyurl.com/NDEStudentHandout

- Video clip 1
- Video clip 2
- Video clip 3

- Go to the Jamboard Assignment, add one "notice" and one "wonder" from your table and submit.
- Reference "Reflecting on anchor videos" questions in the Thinking Deeper Document and be prepared to discuss during our next virtual class.

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1. You will go to a small group breakout room to discuss four questions.
2. You will have 15 minutes to discuss these questions.
3. Choose a recorder, a timekeeper, and a reporter.
    a. Recorder: Types answers.
    b. Timekeeper: Keeps track of the 15 minutes.
    c. Reporter: Will share answers with the whole class when we get back together.

Anchoring Phenomena reflections

1. Did you notice any changes in the sky before the hail fell in the third video?

2. How were you able to see what was happening in the sky when the camera was pointed toward the front yard?

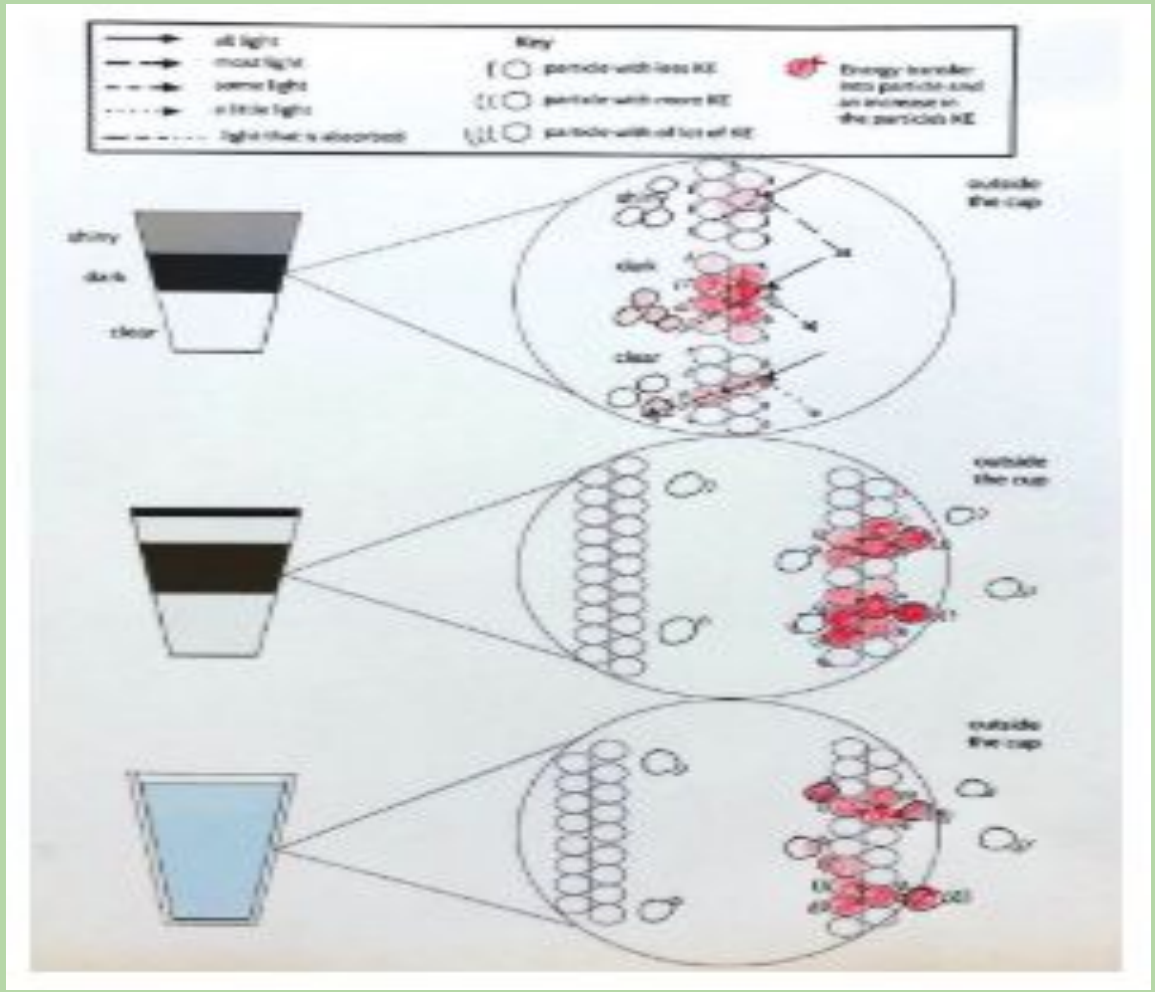
3. What patterns could you see in the movement of the clouds?

4. Was anything happening in the sky after the hail fell?

Breakout Rooms Norms

- Discuss the questions on the slide with your group.
- Give everyone a chance to speak
- If you agree, let your peers know. If you disagree with what they say, you can say "I disagree-I think ____ because____."
- Record your final answers in red text on the slide.

Slide D: (Virtual Class)
Review of student models for the Thermal Energy Unit.



- Reference your models from the thermal energy unit. If you don't have one, you can use the example shown on the left.
- How did we represent the particles that make up different states of matter in a gas, a liquid, and a solid?
- How did we represent the different ways that energy can be transferred into and out of a system like a cup with liquid in it?

➔ How might this apply to the videos?

"Chat All Panelists"

What strategies did I use?

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5. Leverage additional home connections.
6. Provide students independent time to formulate questions and ideas to drive the next step in learning.
7. Elicit student ideas through discourse and writing in both synchronous and asynchronous environments.
8. Connect current learning to specific activities from prior lessons across all three dimensions by using pictures when classroom artifacts aren't available.

NextGenScience

Introduce phenomena through independent pre-work

Quality remote learning materials help students to explore, wonder, and ask questions about phenomena during independent work time at the beginning of a lesson or unit. This may provide more time for students to make observations, discuss with family, and generate questions to investigate.

Thinking Deeper Weather Lesson 1

Record your notice wonders from the videos. Choose one notice and one wonder to submit to your teacher. (Slides A & B)

Video clip 1	Video clip 2	Video clip 3

Notice	Wonder

Reflecting on anchor videos: (Slide A-C)

Did you notice any changes in the sky before the hail fell in the third video?

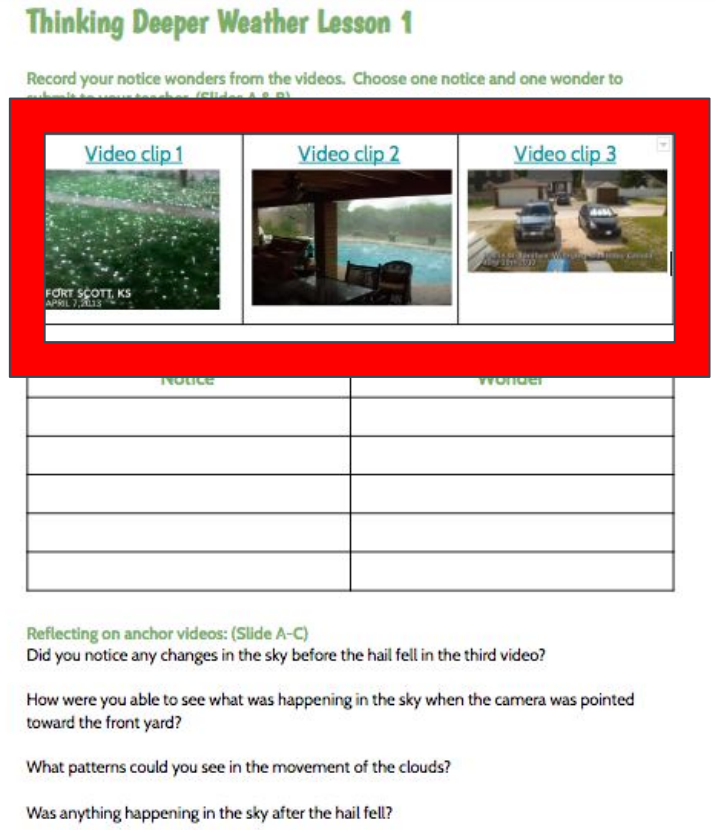
How were you able to see what was happening in the sky when the camera was pointed toward the front yard?

What patterns could you see in the movement of the clouds?

Was anything happening in the sky after the hail fell?

Ensure that all students can experience and explore phenomena as directly as possible

When videos are not available to students, remote learning materials add pictures so students can experience phenomena as directly as possible. Other materials replace in-person activities with computer simulations, assuming internet access. By adding pictures to the student materials, these materials create additional opportunities for students to experience phenomena as directly as possible.



Thinking Deeper Weather Lesson 1

Record your notice wonders from the videos. Choose one notice and one wonder to

Video clip 1 | Video clip 2 | Video clip 3

FORT SCOTT, KS
APRIL 7, 2013

Notice	Wonder

Reflecting on anchor videos: (Slide A-C)

Did you notice any changes in the sky before the hail fell in the third video?

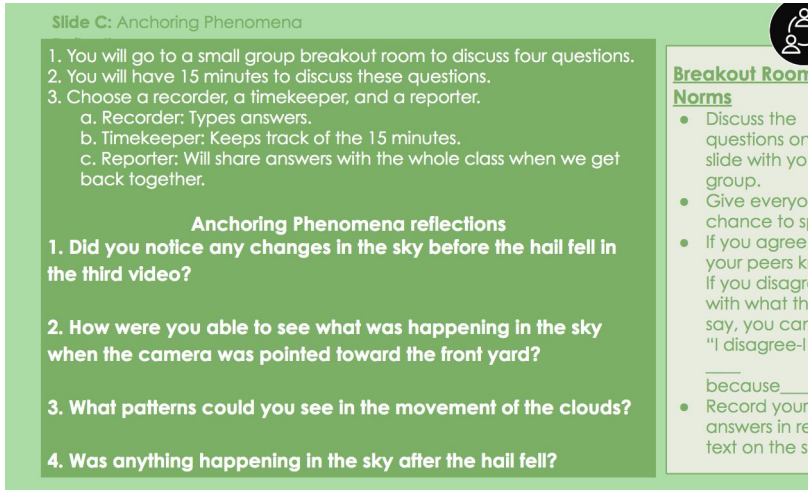
How were you able to see what was happening in the sky when the camera was pointed toward the front yard?

What patterns could you see in the movement of the clouds?

Was anything happening in the sky after the hail fell?

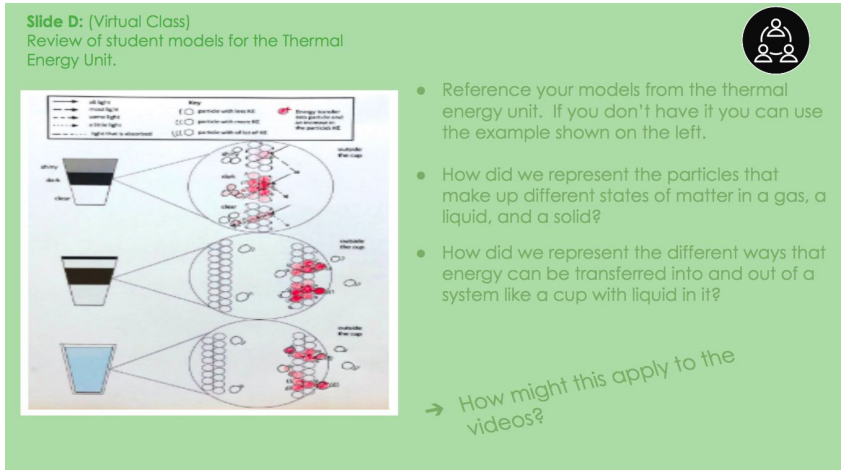
Elicit student ideas through discourse and writing in both synchronous and asynchronous environments

A classroom environment allows students to more easily express, clarify, justify, interpret, and represent their ideas and to respond to peer and teacher feedback orally and in written form as appropriate. Remote learning materials provide students with opportunities for discourse and guidance for both teachers and families to elicit student ideas, focusing on expressing and clarifying student reasoning. While sharing written ideas, students have opportunities to write text or draw to show their thinking.



Connect current learning to specific activities from prior lessons across all three dimensions by using pictures when classroom artifacts aren't available.

When science learning happens over time, students use classroom artifacts and discussions to connect prior knowledge and learning. When artifacts from past experiences are not available (i.e., physically located in the classroom), remote materials suggest using photos, videos, sample data, targeted questions, or models of previous student work to support students to build on their prior knowledge.



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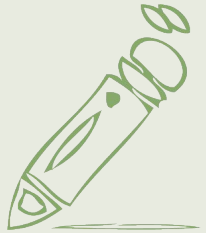
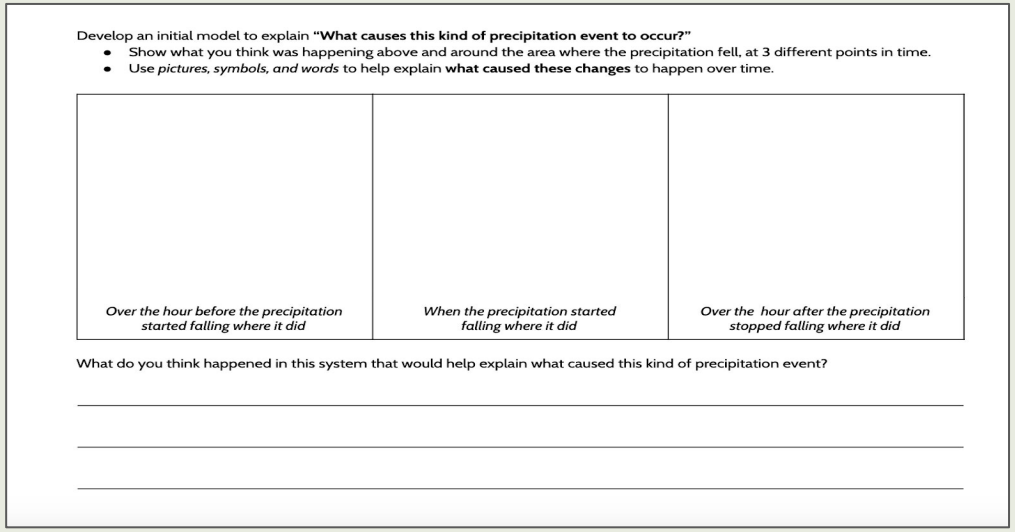
Create Initial Models



Develop an initial model to explain:
"What causes this kind of precipitation event to occur?"

- Take 5 minutes to sketch your initial model in the table on the Thinking Deeper Document.
- Show what you think was happening above and around the area where the precipitation fell at 3 different points in time.
- Use *pictures, symbols, and words* to help explain what caused these changes to happen over time.
- Share ideas with the class.



Develop an initial model to explain **"What causes this kind of precipitation event to occur?"**

- Show what you think was happening above and around the area where the precipitation fell, at 3 different points in time.
- Use *pictures, symbols, and words* to help explain **what caused these changes** to happen over time.

Over the hour before the precipitation started falling where it did	*When the precipitation started falling where it did*	*Over the hour after the precipitation stopped falling where it did*

What do you think happened in this system that would help explain what caused this kind of precipitation event?

Develop Initial Models

Look back at your model for explaining **"What causes this kind of precipitation event to occur?"**

- Create a large-scale model showing what you think is happening in the phenomenon videos on the Think Deeper Document. Use a different color to mark the places where you think energy was getting transferred into, through, or out of the system. You may choose to draw in 3D paint or any program you have available and insert it into your document. (If you don't have a computer program to draw you can draw on paper and take a picture or simply share during our next virtual class.)

Share your drawings with your family, then identify and record related experiences.

Record related phenomena on your Thinking Deeper Document.

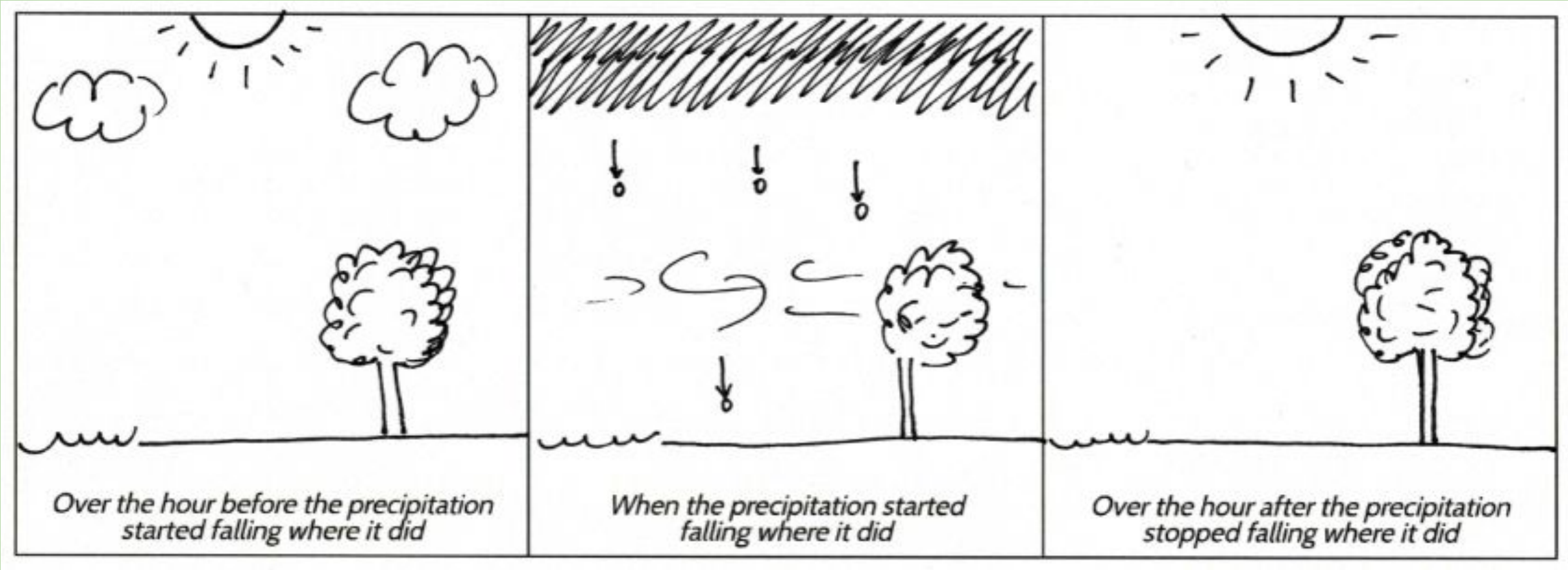
- Times when a lot of precipitation fell **in one place in a relatively short time** (minutes)
- Times when a lot of precipitation fell **continuously in one place over a much longer time**

***Be prepared to share your related experiences during our next virtual class.**

Develop an Initial Consensus Model

- **Students share models with the class.**
- **The teacher opens up a digital drawing program or uses chart paper to develop a class record of what we agree on and where we have competing ideas or areas of uncertainty across our models.**
- **What do we all seem to agree on?**
- **What do we disagree on?**
- **What are some new ideas we may want to consider?**

Group Consensus Model



Group Consensus Model

Identify Related Phenomena

In the "Related phenomena" section of your Thinking Deeper Document record the following:

- Describe some times when you've seen a lot of precipitation fall in one place in a relatively short time (minutes).

Birth Month	Jamboard Link
Jan/Feb/Mar	**https://tinyurl.com/NDEJamboardJFM**
Apr/May/Jun	**https://tinyurl.com/NDEJamboardAMJ**
Jul/Aug/Sep	**https://tinyurl.com/NDEJamboardJAS**
Oct/Nov/Dec	**https://tinyurl.com/NDEJamboardOND**

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Develop Initial Questions

Independent Work Time

Look back at:

- ➔ your notices and wonders from the videos
- ➔ your initial model
- ➔ our initial consensus model
- ➔ related phenomenon

- Write 1 question on your Thinking Deeper Document.
- Remember your question cannot be answered with a yes or no answer.
- Be prepared to share with the class.
- Make changes to your questions if needed.

Slide J: (Post-work)

Build Our Driving Question Board

Let's build our Driving Question Board (DQB).

Birth Month	Jamboard Link
Jan/Feb/Mar	**https://tinyurl.com/NDEJamboardJFM**
Apr/May/Jun	**https://tinyurl.com/NDEJamboardAMJ**
Jul/Aug/Sep	**https://tinyurl.com/NDEJamboardJAS**
Oct/Nov/Dec	**https://tinyurl.com/NDEJamboardOND**

Ideas for Future Investigations and Data We Need

Think deeper!

What kinds of investigations could we do and/or what

Ideas for Investigations:

Write ideas on your Think Deeper Document

al

Birth Month	Jamboard Link
Jan/Feb/Mar	**https://tinyurl.com/NDEJamboardJFM**
Apr/May/Jun	**https://tinyurl.com/NDEJamboardAMJ**
Jul/Aug/Sep	**https://tinyurl.com/NDEJamboardJAS**
Oct/Nov/Dec	**https://tinyurl.com/NDEJamboardOND**

"Chat All Panelists"

What strategies did I use?

Strategies to Adapt Science Materials for Distance Learning

The adaptation of existing high-quality science materials for a distance environment can enhance the vision of three-dimensional standards while providing opportunities for students to engage in both distance and hybrid settings.

1. Introduce phenomena through independent pre-work.
2. Ensure all students can experience and explore phenomena as directly as possible.
3. Provide discussion questions in written form to support student development and use of the three dimensions.
4. Provide a central space for students to track three-dimensional thinking and revise ideas over time.
5. Leverage additional home connections.
6. Provide students independent time to formulate questions and ideas to drive the next step in learning.
7. Elicit student ideas through discourse and writing in both synchronous and asynchronous environments.
8. Connect current learning to specific activities from prior lessons across all three dimensions by using pictures when classroom artifacts aren't available.

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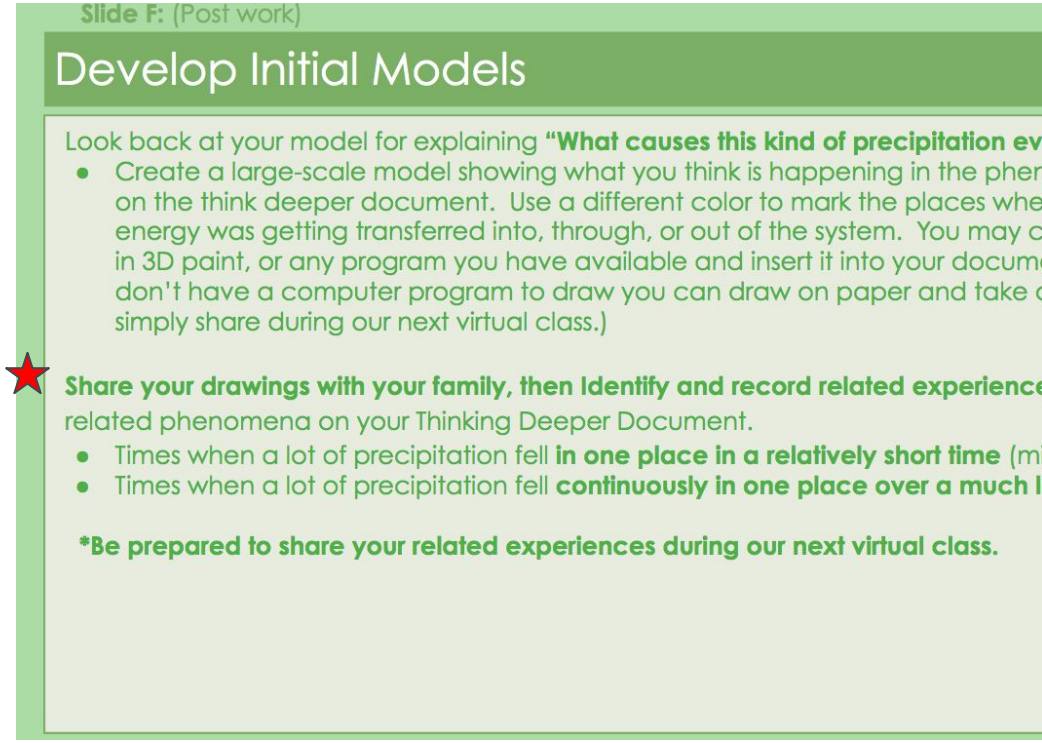
Leverage additional home connections.

Distance lessons provide additional opportunities for students to more deeply connect aspects of the phenomenon with their home and community. This connection could make the phenomenon more relevant and increase motivation to engage.


Slide F: (Post work)

Develop Initial Models

Look back at your model for explaining **"What causes this kind of precipitation ev**

- Create a large-scale model showing what you think is happening in the phen on the think deeper document. Use a different color to mark the places whe energy was getting transferred into, through, or out of the system. You may c in 3D paint, or any program you have available and insert it into your docum don't have a computer program to draw you can draw on paper and take simply share during our next virtual class.)

Share your drawings with your family, then identify and record related experience related phenomena on your Thinking Deeper Document.

- Times when a lot of precipitation fell **in one place in a relatively short time** (m
- Times when a lot of precipitation fell **continuously in one place over a much l**

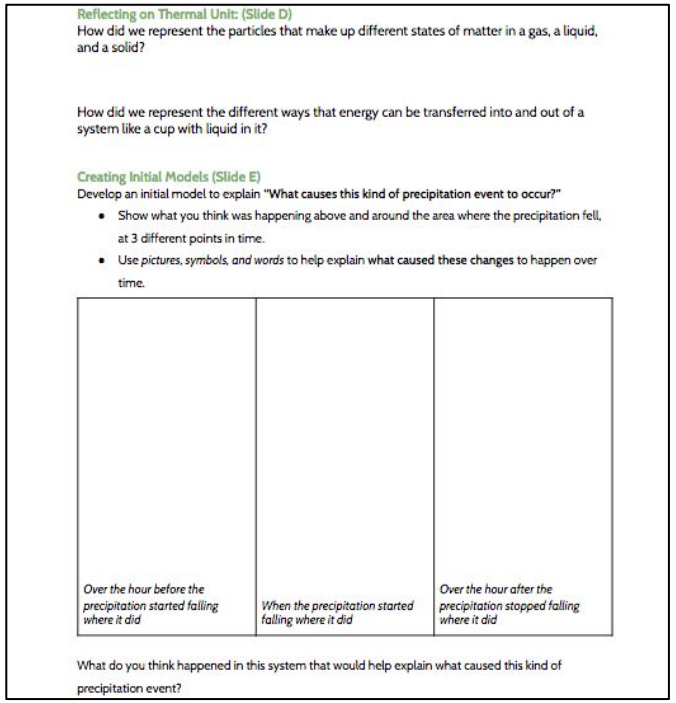
***Be prepared to share your related experiences during our next virtual class.**

Provide students with independent time to formulate questions and ideas to drive the next step in learning.

Although students aren't in a face-to-face classroom environment to easily share questions, remote materials give the opportunity for students to develop their own questions and wonderings about the phenomenon or problem and position the teacher to use these wonderings to frame, motivate, and drive the next step in learning from the students' perspectives.

Provide discussion questions in written form to support student development and use of the three dimensions.

Although there are decreased face-to-face, synchronous discussions to propel student thinking, remote learning materials take advantage of opportunities to push thinking in similar ways through well-crafted, written prompts. Materials provide student slides and handouts with clear, scaffolded questions designed to acquire, improve, or use grade-appropriate elements SEPs, DCIs, and CCCs to help explain phenomena or solve problems. This can provide time for students to think deeply about their knowledge and skills and can create an artifact of their current understanding across dimensions.



Reflecting on Thermal Unit: (Slide D)

How did we represent the particles that make up different states of matter in a gas, a liquid, and a solid?

How did we represent the different ways that energy can be transferred into and out of a system like a cup with liquid in it?

Creating Initial Models (Slide E)

Develop an initial model to explain **"What causes this kind of precipitation event to occur?"**

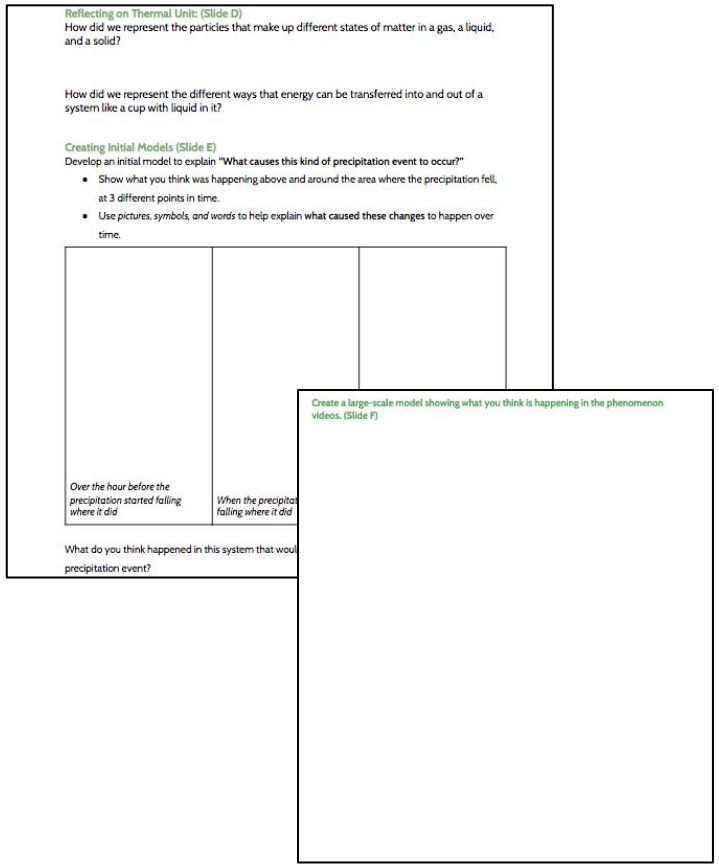
- Show what you think was happening above and around the area where the precipitation fell, at 3 different points in time.
- Use *pictures, symbols, and words* to help explain **what caused these changes** to happen over time.

Over the hour before the precipitation started falling where it did	*When the precipitation started falling where it did*	*Over the hour after the precipitation stopped falling where it did*

What do you think happened in this system that would help explain what caused this kind of precipitation event?

Provide a central space for students to track three-dimensional thinking and revise ideas over time.

In a science classroom, science notebooks and bulletin boards are important structures that invite students to share their thinking and track how ideas change over time. Some remote learning materials use an incremental modeling tracker, graphic organizer, or similar document that allows students to record new ideas about phenomena using multiple dimensions and reflect on how their understandings shift over time.



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Over the hour before the precipitation started falling where it did

When the precipitat falling where it did

What do you think happened in this system that woul precipitation event?

Create a large-scale model showing what you think is happening in the phenomenon videos. (Slide F)

Agenda

Time	Task
5 minutes	Getting Started
20 minutes	Cognitive Science + Remote Learning Considerations
10 minutes	Foundations of Science Instruction
10 minutes	Preview Lesson & Strategies
20 minutes	Experiential 1 and Debrief
20 minutes	Experiential 2 and Debrief
5 minutes	Wrapping Up

Reflecting

“Chat All Panelists”

Chose a strategy and think of a way to incorporate it into your instruction.

Strategies to Adapt Science Materials for Distance Learning

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8. Connect current learning to specific activities from prior lessons across all three dimensions by using pictures when classroom artifacts aren't available.

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Additional Resources for Educators:

OpenSciEd

Staying Grounded when Teaching Remote

**Includes lessons that have been adapted for remote!

Instruction Partners

Science Guidelines for Distance Learning Models

NexGenScience

Keep Teaching Science!

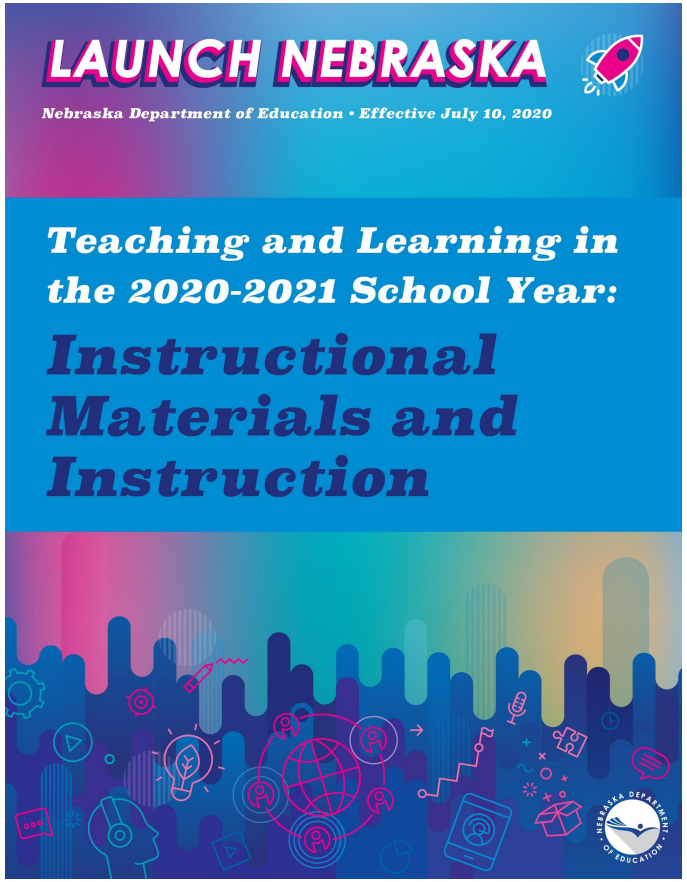
Resources for Nebraska Educators:

Be sure to check out additional resources and guidance:

- Instructional Materials & Instruction
- Assessment
- Wellbeing and Connection
- Student, Family, and Community Engagement
- Professional Learning

https://www.launchne.com/continuity-of-learning/instruction/

Resources for Nebraska Educators:

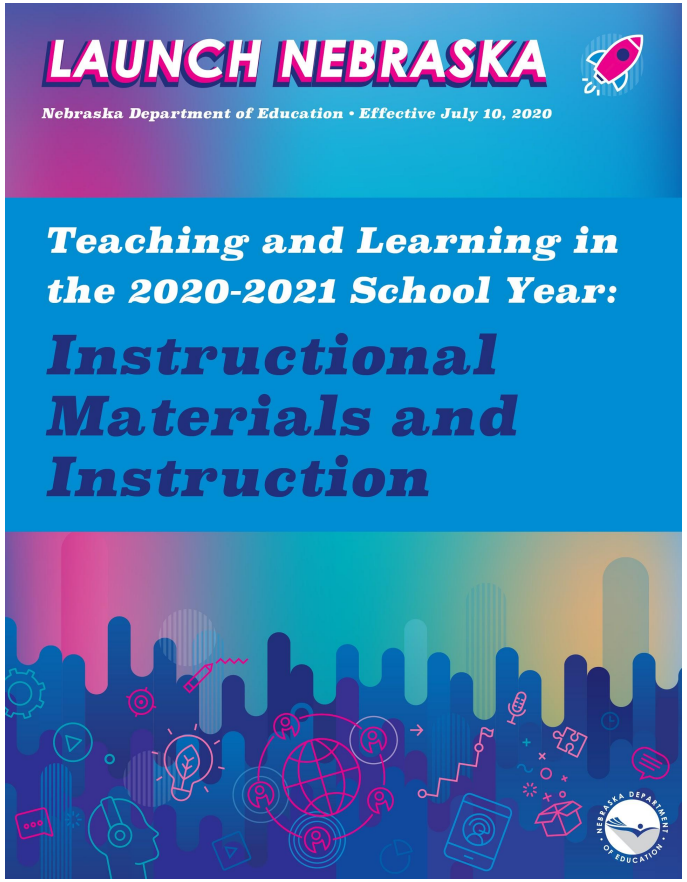


Appendix D: Remote Learning Instructional Considerations (page 56): This includes content considerations for a remote learning environment as well as conditions for engagement in a remote setting

Appendix E: Content-Specific Learning Routines for In-Person and Remote Learning (page 62): Specific routines that can be used to maintain consistency and facilitate deeper learning. Includes both in-person and remote considerations.

Appendix F: Steps to Align Instructional Materials to Remote and Hybrid Scenarios (page 66)

Instructional Materials and Instruction Guide



See page 38 for Science-specific guidance!

Science

Topic	Considerations	Resources
Instructional materials and Instruction	**Ensure educators have access to materials designed around three-dimensional, phenomena- and problem-driven learning experiences.** Students will need ongoing opportunities to explore core ideas through practices and cross-cutting concepts as they figure out relevant phenomena and solutions to problems in order to achieve the three-dimensional learning goals defined by most states' science standards. High-quality materials for science are critical—especially for students from non-dominant groups, where they have been shown to have a notable impact on student learning. **Prioritize student sense making using the three dimensions, not delivery of discrete content.** Focus first on the quality of the learning experience, even if it means fewer topics will be covered. Carefully consider the progressions for all three dimensions—not just core ideas—as well as the organization of high-quality materials before adjusting scope and sequences or materials. Curricular experiences should emphasize	EQuIP PRP-Reviewed High-Quality Science Examples NextGen Science Standards (NGSS) Design Badged Units NGSS Bundles Standards Progressions: Disciplinary Core Ideas, Crosscutting Concepts Science and Engineering Practices EdReports Middle School Science Reviews (MS

THANK YOU!

Questions? Reach out to Audrey Webb (audrey.webb@nebraska.gov),

Science Education Specialist at NDE

Remember, remote learning provides us with opportunities in spite of the challenges. **We appreciate the work you to do support excellent Science instruction for Nebraska students!**