



Distance Learning Science Lesson Planning Guide

How Do We Bring 3-Dimensional Learning into our Remote or Hybrid Classrooms?

A storyline Uses the Five Classroom Routines in Combination to Support Coherence for Students

| QUESTION | ROUTINE | ELEMENTS | IN-PERSON/HYBRID (live, virtual setting) (NSQOT linked) | SYNCHRONOUS | ASYNCHRONOUS/NO TECH (outside of live class time; on their own) |
|----------------------------|---------------------|------------------------------|--|---|---|
| How do we kick off a unit? | Anchoring Phenomena | Explore Anchoring Phenomenon | Teacher performs a demonstration or if there is enough materials for each student, the students perform the investigation. | Teacher performs a demonstration. | Students can watch a video clip or a recording of the teacher doing a demonstration lab for students. Students with limited technology may view video on a smartphone or receive a packet with images and transcripts of the video. |
| | | Attempt to make sense | Students write Notice and Wonders in their notebooks. Teacher then calls on students to share Notice and Wonders to create a class chart or students may submit Notice and Wonders via a Jamboard or similar platform. Students create an initial model. | -Students share Notice and Wonders. Students create an initial model by drawing and taking a picture to post or use a drawing program. -As a class create a consensus model from student's initial ideas and models. NSQOT B1 | -Students create a Notice and Wonder chart and prepare Wonders to share with whole group or send back to the teacher. -Students create an initial model to be used to create the class consensus model. |
| | | Identify Related Phenomena | During a class discussion the students share out related phenomena and the teacher charts ideas on a chart to be referred to throughout the unit. | Students brainstorm a list of related phenomena NSQOT:D1 | Students prepare a list of related phenomena could be done with member of their families or alone. |

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| | | Develop Questions and Next Steps | Using students' Wonders, the class groups the Wonders into categories to be used to create questions to be used for next steps, such as what investigations to conduct. | -Using students wonderings create a Driving Questions Board. -Group questions into categories and brainstorm possible investigations NSQOTD1 | -Students prepare a list of questions to bring to class to add to the Driving Question Board. -Student selects a question or questions and what are possible investigations to share with whole class |
| How do we work with students to motivate the next step in an investigation? | Navigation | Looking Back | Teacher and students facilitate a discussion on what they have learned/figured out at this point. Students fill out their progress trackers to reflect their learning up to this point. | Class reflects on what they know and what they need to know next. Students complete a section of the progress tracker. NSQOT G5 | Teacher prepares a statement of what was figured out in the last class/session. Students reflect on what they figured out and fill out Progress Tracker. |
| | | Lesson/gathering information | Teacher and students engage in discourse, readings with annotations, inquiry either by demo or students' safety engaging in investigations with 6ft distance or their own materials. | Teacher and students engage in discourse and guided inquiry. NSQOT D6 | Students read and annotating on their own. |
| | | Looking Back | Students share ideas while the teacher creates Consensus Model chart. This chart includes what is known and what is still unknown. | Class comes to consensus on what we agreed on? Where are we not sure? NSQOT:C4 | Students prepare a statement, models, etc. on what they have figure out. |

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| | | Looking Forward | Using the Driving Question Board chart and Consensus Model chart the class discuss what question from the Driving Question Board to investigate next. | Class comes to consensus of where we should go next? NSQOT:D2 | Students prepare a suggestion of what they would like to figure out next either by adding a discussion board or sending information to the teacher via a package. |
| How do we help students use proactive to figure out piece of the science ideas? | Investigation | Use Practices | Teacher performs the investigation for students to observe using a document camera or other technology in the classroom or students safety conduct the investigation. | - Teacher performs the investigation live. - Students may perform investigation with considerations of safety. NSQOT:D6 | Students interact with a video of the investigation to collect data or students receive depending on safety considerations materials to complete at home or received a written description with an image of the lab set up along with data for student to analyze and submit a conclusion. |
| | | Use of Practices to come to consensus | Teacher holds a class discussion on data collection and students individual analyze results and share finds with the class. | Teacher holds a class discussion on data collected to create consensus from data analysis. NWQOT:D4 | Students prepare statements from their analysis of data |
| How do we push students to go deeper and revise the science ideas we have built together this far? | Problematizing | Lesson level phenomenon or new question | Teacher or students safety engage in lesson level phenomenon using lab materials if possible. Students create a new Notice and Wonder chart in their notebooks and then share out while teacher is creating a new Notice and Wonder class chart. | As a class engage with phenomenon via watching a video or demonstration by the teacher and students create a individual Notice and Wonder. As a class create a Notice and Wonder chart using a tool like Jamboard DSQOT:D2 | -Students engage with phenomenon and create a Notice and Wonder chart. -Student prepares a statement or model to share with the teacher or class. |

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| | | Arguing for competing ideas | Teacher facilitates a discussion for students to share competing ideas | Have a class discussion in which students state their position and include a "why?" prompt | Students prepared a statement on their position and share in a discussion thread and respond to other students. |
| | | Determine a way to answer questions or competing explanations | Class holds a discussion to brainstorm questions and investigations to learn more about the lesson level phenomenon. The brainstormed questions may be kept on a chart to be referenced later on. | - Brainstorm a list of possible investigations to resolve disagreements. - Have students post ideas and create a polling/voting system. DSQOT:C3 | The teacher post questions based on the competing explanations for students to respond too. Students respond via a discussion board or written response to be returned to the teacher. |
| How do we help students put together pieces of the disciplinary core ideas and crosscutting concepts? | Putting Pieces Together | Take Stock | Students have time to complete the Progress Tracker on their own. The teacher then facilitates a discussion to highlight what information students have figured out up to this point. The teacher may consider keeping a Progress Tracker for the class. | Teacher supports students with different pieces of information to place in a class Progress Tracker or model. The teacher's role is to highlight all the pieces of information students have. NSQOT:D5 | Students reflect on what it is they are trying to figure out. Then students need to determine which information they have gather is going to help them. This can be done in a Progress Tracker. |
| | | Gotta-Have-It Checklist | Students safely distanced working in small groups share their synthesized information to agree on what they would like to see represented in the class consensus model. Then the class has a consensus discussion where students share alternate | Students working in small groups share their synthesized information to agree on what they would like to see represented in the class consensus model. Then the class has a consensus discussion where students draw on their work to share alternate | First students work to synthesize the evidence and formulate their ideas. Students will receive a Gotta-Have-it checklist to be used to create a new model. |

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| | | | models or explanations and create the Gotta-Have-It Checklists to explain a phenomenon or design a solutions. Students will have time to modify their own models to include additional information. | models or explanations and create the Gotta-Have-It Checklists to explain a phenomenon or design a solution. | |
| | | Consensus model or explanation or a class solution to an engineering problem | Students provide guidance to the teacher using the Gotta-Have-it Checklist to create a Consensus <model of what has been explained so far in the unit. | Using the Gotta-Have-It Checklist create a class consensus model. DSQOT:B5 | Students will provide input via email or discussion boards of how to represent knowledge for a Consensus Model using the Gotta-Have-it Checklist. Students may also send the teacher what they envision should be on the class model. The teacher then sends the class Consensus Model to the student. |
| | | Revisit Driving Question Board | As a class the teacher brings attention back to the Driving Question Board and facilitates a discussion of what has been figured out and where to go next, and possible new questions new might have. | Depending where students are in the unit, revisiting the taking stock of what has been figured out may require a class discussion on what piece of information we may need next. Students may need to revisit the Driving Question Board to review which questions have been answered and add additional | Students can reflect on questions on the Driving Question Board. Once students have reflected they can submit ideas about possible new questions or what questions we have answered using various online tools to the teacher. |



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| | | | | questions if needed. NSQOT:D3 | |
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