Science Content-Specific Considerations for Unfinished Learning & Best Practices

Vision

The central priority of acceleration work is to ensure that all students in Rhode Island meet the grade level or grade band Performance Expectations of the Next Generation Science Standards. We recommend you use the following guidance in conjunction with your district's set of high-quality instructional materials to ensure that instruction is rigorous and grade level appropriate. Additionally, use lessons learned to enhance best practices during distance learning.

Specific Considerations

- Teachers prioritize and plan grade-level content and review prerequisite Disciplinary Core Ideas for the current year's scope and sequence (Learning Progressions Matrix of DCIs).
- Use vertical collaboration from prior year teachers and progression documents to plan acceleration support.
- Consider implications on pacing and activities planned in the current grade level scope and sequence.
- Use formative and summative assessments and progress monitor for proficiency according to Disciplinary Core Idea learning progressions using 3-Dimensional assessment tasks.

Best Practices

Addressing Unfinished Learning

1. Teach current grade level (K-5) or grade span (6-8, 9-12) NGSS Standards according to your district scope and sequence. Read the NGSS Standards & Matrix of Disciplinary Core Ideas**.**
2. Avoid remediation that focuses solely on teaching what was missed in a prior year. Instead, prepare to scaffold students to relevant grade level topics and NGSS Performance Expectations as needed.
3. Students will have multiple opportunities to engage in Science and Engineering Practices and Crosscutting Concepts in subsequent years and these will not be considered unfinished learning. However, all teachers should be familiar with the progressions of these dimensions.
    a. Learning Progressions Matrix of SEPs
    b. Learning Progressions Matrix of CCCs
    c. Matrix of Learning Progressions for Engineering

Distance Learning in K-12 Science

Building Student and Family Relationships

Communication expectations	Develop a structure and frequency for family/student communication on app, assignments, and performance expectations for science.
Communication method	At the middle level, consider sending a team level correspondence with all content assignments in the same email/doc or one grade level email with a link to a webpage with all subjects listed. Many families have more than one child and emails add quickly and become less effective. If you use Google Classroom, invite parents, so they see new assignments and comments in real time.

Establishing Norms in Science

Teach the distance learning technology upfront	Make sure students and families are familiar with accessing, navigating, and documenting their participation. Model and practice whole group until it's seamless. Show them how to toggle between windows and tabs for simulations and their electronic science notebook.
Begin each activity with norms	After launching face to face and virtual norms (see these sample science norms), be sure to revisit often and build into daily lessons and assignments whether synchronous or asynchronous.
Model with tools and visuals.	Students need to understand what the expectations are for full participation and assignment proficiency. For example, you could link Talk Moves in your slides and in the chat as a reminder of norms.
Provide opportunities for students to become proficient.	Focus on a few apps and set expectations with students for peer and independent participation. Collaborate on criteria for group discussion and what products should look like by allowing student voice.
Streamline managing student documents for assessing and providing feedback.	Consider using one document per student as their digital science notebook. New entries occur at the top. This saves time for the teacher to open student work, assess, and provide feedback.

Engagement in Science

Engagement exists when productive teaching practices, a safe environment, and positive relationships come together.	Asynchronous activities should rely on peer collaboration and feedback to increase engagement. Strategies to achieve this in virtual learning include regular communication, replying timely and frequently, using the technology that works best for student or family, personalizing feedback, and setting up mandatory 1:1 check-ins.
Understand what's working with students and families.	Conduct periodic surveys with families and students to learn which areas need improvement with distance learning.

Let students showcase their knowledge.	Put the students at the center of establishing criteria for successful criteria of participation and product. Provide opportunities for students to present live or record over a slide deck or with Screencast.
Conduct synchronous sessions that include student voice and student presentations.	Activities like jigsaws, student facilitated gallery walks with digital group docs, or group project presentation – try out these ideas for student to student interaction.
Create intentional small groups to accelerate learning.	Use break out rooms and polling features to keep students engaged. Some teachers find it helpful to require a minimum number of verbal or written responses during synchronous sessions to demonstrate proficiency in some of the science and engineering practices. Try these group discourse strategies!
Engaging in the practices of science helps students understand how scientific knowledge develops; such direct involvement gives them an appreciation of the wide range of approaches that are used to investigate, model, and explain the world.	Avoid long videos with questions at the end, instead use Ed Puzzle to focus on segments with custom questions built in that require completion to advance the video. Make sure questions are related to one or more of the 3 dimensions of NGSS. Are students using videos, articles, and simulations to: 1. Ask questions (for science) or defining problems (for engineering) 2. Develop or use models 3. Plan and carry out investigations 4. Analyze and interpret data 5. Use mathematics and computational thinking 6. Construct explanations (for science) or designing solutions (for engineering) 7. Engage in argument from evidence 8. Obtain, evaluate, and communicate information (NGSS Appendix F) 9. Identify broader themes, Crosscutting Concepts (NGSS Appendix G)

Resources and References

- Resources
  - Council for State Science Supervisors: Science Back to School Considerations.
  - OpenSciEd: "Discourse is the glue that holds storylines learning together." This Remote Learning Resource offers suggestions for how to support remote discourse when teaching science remotely.
- References

  - Marshall Street Supporting Student-Collaboration.pdf. (n.d.). Retrieved July 20, 2020, from https://drive.google.com/file/d/1S-eO_T_HiN-quy2FqA31RCsp2j9GzW3h/view
  - TNTP, Learning Acceleration Guide. (2020). Retrieved July 20, 2020, from https://tntp.org/assets/covid-19-toolkit-resources/TNTP_Learning_Acceleration_Guide.pdf