# Science Accelerating Learning and Best Practices Guidance

## 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.

## 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 (i.e. What performance expectations were not covered or interrupted?).
- 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 for Accelerating 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 current grade level topics and NGSS Performance Expectations as needed with appropriate anchoring phenomena. For more on this see video walkthrough of how to prioritize content by Instruction Partners.
3. Consider and attend to barriers to access, such as unfamiliar technical scientific vocabulary or lack of experience with a specific scientific practice (Instruction Partners, 2021).
4. Identify strategies to support students in making sense of evidence gathered during integrated tasks and connect that learning back to the lesson's learning goal (Instruction Partners, 2021).
5. Use student discussions, questions, explanations, and/or models throughout the lesson to determine whether students need additional support around foundational prerequisite ideas (Instruction Partners, 2021).
6. 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, teachers must be familiar with the progressions of these dimensions:

Learning Progressions Matrix of SEPs

Learning Progressions Matrix of CCCs

# Technology Integration - Best Practices for Learning in K-12 Science

| Building student and family relationships | |
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| **Communication** | Develop a structure and frequency for family/student communication on app, assignments, and performance expectations for science. This resource encourages productive science discourse in home and supports families with discussing science at home Talk Moves. |
| | 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 technology upfront** | Make sure students and families are familiar with accessing, navigating, and documenting their participation. Model and practice whole group until it is seamless. Show them how to toggle between windows and tabs for simulations and their electronic science notebook. |
| **Begin each activity with norms** | After launching norms, be sure to revisit often and build into daily lessons and assignments whether synchronous or asynchronous assignments. Sample Science Norms can be found here. |
| **Model with tools and visuals** | Students need to understand what the expectations are for full participation and assignment proficiency. For example, you could link some of the related Talk Moves in your electronic documents 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* | |
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| **Engagement exists when productive teaching practices, a safe environment, and positive relationships come together.** | Activities should rely on peer collaboration and feedback to increase engagement. Strategies to achieve this in include regular communication, replying timely and frequently, using the technology that works best for student, personalizing feedback, and setting up small group and 1:1 check-ins. |
| **Let students showcase their knowledge** | Put the students at the center of establishing elements for successful criteria of participation and product. Provide opportunities for students to present live or record over a slide deck or with Screencast. |
| **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:<br>1. Ask questions (for science) or defining problems (for engineering)<br>2. Develop or use models<br>3. Plan and carry out investigations<br>4. Analyze and interpret data<br>5. Use mathematics and computational thinking<br>6. Construct explanations (for science) or designing solutions (for engineering)<br>7. Engage in argument from evidence<br>8. Obtain, evaluate, and communicate information (NGSS Appendix F)<br>9. identifying broader themes, Crosscutting Concepts (NGSS Appendix G) |

# Resources and References


- Addressing Unfinished Learning; Practical, proven, content-specific resources for instructional leadership teams, Instruction Partners Toolkit.
- Instruction Partners, 2021. Overview of Content Specific Guidelines. Retrieved August 11, 2021, from https://instructionpartners.org/wp-content/uploads/2021/07/Content-Specific-Guidelines.pdf.
- NGSS Lead States (2013). The Next Generation Science Standards: For States, By States (Appendix E - Progressions Within the Next Generation Science Standards). Retrieved May 26th, 2021, from https://www.nextgenscience.org/sites/default/files/resource/files/AppendixE-ProgressionswithinNGSS-061617.pdf
- NGSS Lead States (2013). The Next Generation Science Standards: For States, By States (Appendix G – Crosscutting Concepts). Retrieved April 10th, 2021, from

https://www.nextgenscience.org/sites/default/files/resource/files/Appendix G - Crosscutting Concepts FINAL edited 4.10.13.pdf (nextgenscience.org)

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- TNTP, Learning Acceleration Guide. (2020). Retrieved July 20, 2020, from https://tntp.org/assets/covid-19-toolkit-resources/TNTP_Learning_Acceleration_Guide.pdf