**Accelerating Learning—A 1st Grade Science Example**

**Can we use the data from pre-assessments, critical junctures, post assessments, and On-The-Fly formative assessments from previous units to guide out pre-unit planning? Focus on the progressions of the Science and Engineering Practices and Crosscutting Concepts as specific Disciplinary Core Ideas are taught within the upcoming unit and pre-assessment data can be used to ascertain that information.**

**Example of Acceleration**: **1st Grade, Unit 2 - Light and Sound**

There are 7 “power” standards bundled together in Unit 2: 1-PS4-1, 1-PS4-2, 1-PS4-3, 1-PS4-4, K-2-ETS1-1, K-2-ETS1-2, and K-2-ETS1-3 which include the following:

* **Crosscutting Concepts:**
  + Cause and Effect
    - Simple tests can be designed to gather evidence to support or refute student ideas about causes.
  + Structure and Function
    - The shape and stability of structures of natural and designed objects are related to their functions.
* **Science & Engineering Practices:**
  + Planning and Carrying Out Investigations
    - Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question.
  + Constructing Explanations and Designing Solutions
    - Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.
    - Use tools and materials provided to design a device that solves a specific problem.
  + Analyzing and Interpreting Data
    - Analyze data from tests of an object to determine if t works as intended
  + Asking Questions and Defining Problems
    - Ask questions based on observations to find more information about the designed world.
    - Define a simple problem that can be solved through the development of a new or improved object
  + Developing and Using Models
    - Develop a simple model based on evidence to represent a proposed object
* **Disciplinary Core Ideas:**
  + PS4.A: Wave Properties
    - Sound can make matter vibrate, and vibrating matter can make sound.
  + PS4.B: Electromagnetic Radiation
    - Objects can be seen if light is available to illuminate them or if they give off their own light.
    - Some materials allow light to pass through them, others allow only some light through, and others block all the light and create a dark shadow on any surface beyond them where the light cannot reach. Mirrors can be used to redirect a light beam.
  + PS4.C: Information Technologies and Instrumentation
    - People also use a variety of devices to communicate (send and receive information) over long distances.
  + ETS1.A: Defining and Delimiting Engineering Problems
    - A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions.
    - Asking questions, making observations, and gathering information are helpful in thinking about problems
    - Before beginning to design a solution, it is important to clearly understand the problem.
  + ETS1.B: Developing Possible Solutions
    - Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people.
  + ETS1.C: Optimizing the design Solution
    - Because there is always more than one possible solution to a problem, it is useful to compare and test designs.

**Before** beginning the unit, compare the K-2 grade expectations to the Kindergarten expectations. Look for specific alignments in each of the dimension progressions. The variation between the two grade levels identifies your targeted learning. Use data from the pre-assessment to determine which students need extra support in each dimension.

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| **3 Dimensional Progressions for Each Dimension in the Bundled Standards** | | |
|  | Kindergarten | K through 2 |
| Cause and Effect | * learn that events have causes that generate observable patterns * design simple tests to gather evidence to support or refute their own ideas about causes | * learn that events have causes that generate observable patterns * design simple tests to gather evidence to support or refute their own ideas about causes |
| Structure and Function | * observe the shape and stability of structures of designed objects are related to their function(s). | * observe the shape and stability of structures of designed objects are related to their function(s). |
| Planning and Carrying Out Investigations | * with guidance, plan and conduct an investigation in collaboration with peers * with guidance, plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question * make observations (firsthand or from media) to collect data that can be used to make comparisons * make observations (firsthand or from media) of a proposed object to determine if it solves a problem or meets a goal * make predictions based on prior experiences | * plan and conduct an investigation in collaboration with peers * plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question * make observations (firsthand or from media) to collect data that can be used to make comparisons * make observations (firsthand or from media) of a proposed object to determine if it solves a problem or meets a goal * make predictions based on prior experiences |
| Constructing Explanations and Designing Solutions | * Use tools and/or materials to design and/or build a device that solves a specific problem or a solution to a specific problem. * Generate a solution to a problem. | * Make observations(firsthand or frommedia) to construct an evidence-based account for natural phenomena. * Use tools and/or materials to design and/or build a device that solves a specific problem or a solution to a specific problem. * Generate and/or compare multiple solutions to a problem. |
| Analyzing and Interpreting Data | * record information * use and share pictures or drawings of observations * use observations (firsthand or from media) to describe patterns in the designed world in order to answer scientific questions and solve problems * analyze data from tests of an object to determine if it works as intended | * record information * use and share pictures or drawings of observations * use observations (firsthand or from media) to describe patterns in the designed world in order to answer scientific questions and solve problems * analyze data from tests of an object to determine if it works as intended |
| Asking Questions and Defining Problems | * ask questions based on observations to find more information about the designed world * identify questions that can be answered by an investigation. * define a simple problem that can be solved through the development of a new or improved object | * ask questions based on observations to find more information about the designed world * identify questions that can be answered by an investigation. * define a simple problem that can be solved through the development of a new or improved object |
| Developing and Using Models | * distinguish between a model and the actual object the model represents * develop a simple model based on evidence to represent a proposed object | * distinguish between a model and the actual object the model represents * develop a simple model based on evidence to represent a proposed object |
| PS4.A: Wave Properties |  | Sound can make matter vibrate, and vibrating matter can  make sound. |
| PS4.B: Electromagnetic Radiation |  | Objects can be seen only when light is available to illuminate them. |
| PS4.C: Information Technologies and Instrumentation |  | People use devices to send and receive information. |
| ETS1.A: Defining and Delimiting Engineering Problems | Engineering design introduces students to “problems” as situations that people want to change. They can use tools and materials to solve simple problems, use different  representations to convey solutions, and compare different solutions to a problem and determine which is best. Students in all grade levels are not expected to come up with original solutions, although original solutions are always welcome. Emphasis is on thinking through the needs or goals that need to be met, and which solutions best meet those needs and goals. | Engineering design introduces students to “problems” as situations that people want to change. They can use tools and materials to solve simple problems, use different  representations to convey solutions, and compare different solutions to a problem and determine which is best. Students in all grade levels are not expected to come up with original solutions, although original solutions are always welcome. Emphasis is on thinking through the needs or goals that need to be met, and which solutions best meet those needs and goals. |
| ETS1.B: Developing Possible Solutions |
| ETS1.C: Optimizing the Design Solution |

**Accelerated Instruction:**

Begin by teaching a whole group lesson on the **grade level standard** with a defined learning intention and success criteria.

Depending on where you are in your instructional pace for the year, you work with your PLC to determine whether you move forward with the full curriculum, use the Amplify @Home condensed units or a combination thereof focusing on the deficiencies identified in the initial assessing.

Based on the formative assessments and initial data collection you may add or emphasize specific dimensions as needed for your class. Do plan on using Progress Build progressions to measure acquisition of proficiency. Active planning and preparedness are of the utmost importance. For those students who struggle, additional guided instruction may be required.

Make the greatest use you can of the resources you have been provided. Don’t be hesitant to use the pre-recorded activities for additional guidance at home or in a virtual at home setting in order to provide ongoing instruction.

Use your pre, critical juncture, post assessments to determine growth areas as well as areas which still need to be addressed in additional instructional settings. Remember that the dimensions spiral across the year as well as year to year. Be cognizant of the fact that proficiency in the early part of the year will look different from proficiency at the end of the year as students continue their growth and progress. Decide with your PLC what level of mastery is expected for the point of the year you are in and assess to that level and above.

**We also strongly believe that teachers need to include independent reading in their units. Students get better at reading by reading.**