**Accelerating Learning—A Biology with Earth & Space Science Example**

**Can we use the data from pre-assessments, post assessments, and embedded 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**: **Biology with Earth & Space Science, Bundle 3 - Part B - (What is the composition of everything?) - 3B - (How do we end up with so many different types of cells?)**

There is one “power” standards bundled together in Bundle 3 - Part B; Unit 3B: HS-LS1-4

which includes the following:

* **Crosscutting Concepts:**
  + Systems and System Models
    - Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information flows— within and between systems at different scales.
* **Science & Engineering Practices:**
  + Developing and Using Models
    - Use a model based on evidence to illustrate the relationships between systems or between components of a system.
* **Disciplinary Core Ideas:**
  + LS1.B: Growth and Development of Organisms
    - In multicellular organisms individual cells grow and then divide via a process called mitosis, thereby allowing the organism to grow. The organism begins as a single cell (fertilized egg) that divides successively to produce many cells, with each parent cell passing identical genetic material (two variants of each chromosome pair) to both daughter cells. Cellular division and differentiation produce and maintain a complex organism, composed of systems of tissues and organs that work together to meet the needs of the whole organism.

**Before** beginning the unit, compare the High School expectations to the 8th grade 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** | | |
|  | 8th Grade | High School |
| Systems and System Models | * understand that systems may interact with other systems; they may have sub-systems and be a part of larger complex systems. * use models to represent systems and their interactions—such as inputs, processes and outputs—and energy, matter, and information flows within systems. * models are limited in that they only represent certain aspects of the system under study. | * investigate or analyze a system by defining its boundaries and initial conditions, as well as its inputs and outputs. * use models (e.g., physical, mathematical, computer models) to simulate the flow of energy, matter, and interactions within and between systems at different scales. * use models and simulations to predict the behavior of a system, and recognize that these predictions have limited precision and reliability due to the assumptions and approximations inherent in the models. * design systems to do specific tasks. |
| Developing and Using Models | * Evaluate limitations of a model for a proposed object or tool. * Develop or modify a model— based on evidence – to match what happens if a variable or component of a system is changed. * Use and/or develop a model of simple systems with uncertain and less predictable factors. * Develop and/or revise a model to show the relationships among variables, including those that are not observable but predict observable phenomena. * Develop and/or use a model to predict and/or describe phenomena. * Develop a model to describe unobservable mechanisms. * Develop and/or use a model to generate data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs, and those at unobservable scales. | * Evaluate merits and limitations of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that best fits the evidence or design criteria. * Design a test of a model to ascertain its reliability. * Develop, revise, and/or use a model based on evidence to illustrate and/or predict the relationships between systems or between components of a system. * Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations. * Develop a complex model that allows for manipulation and testing of a proposed process or system. * Develop and/or use a model (including mathematical and computational) to generate data to support explanations, predict phenomena, analyze systems, and/or solve problems. |
| LS1.B: Growth and Development of Organisms | Animals engage in behaviors that increase the odds of reproduction. An organism’s growth is affected by both genetic and environmental factors. | Growth and division of cells in organisms occurs by mitosis and differentiation for specific cell types. |

**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. Active planning and preparedness are of the utmost importance. For those students who struggle, additional guided instruction may be required.

Use your pre-assessments and 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.**