3.DA.3 Data and Analysis

> *The student will create models that can represent a physical object or process. (a) Create a model to represent a physical object or process. (b) Identify how computing devices are used to create models. (c) Discuss the advantages and disadvantages of using computing devices to create models.*

Understanding the Standard

Scientists, mathematicians, and programmers often create and use models to represent and understand a topic under investigation. Models can be used to replicate the behaviors and attributes of a larger concept (e.g animal life cycles, plant life cycles, etc). Students will use a computer to create an artifact modeling the behaviors and attributes of a grade-level concept. Models can include diagrams, physical replicas, mathematical representations, and/or computer simulations. They can help in developing questions, and explanations, making predictions, or communicating ideas.

Term	Definition
Model	Creating a representation of an idea, object, or process.
Diagram	A simplified drawing showing how something works.
Advantage	Something that helps you do better or be more successful
Disadvantage	Something that makes it harder for you to do better or succeed

Prerequisite Knowledge

Students should have a foundational knowledge of gathering and organizing data, as well as some basic digital drawing and block-based programming experience.

Integration Opportunities

English 3.RL.1 a-c Have students create a model (digital or physical) to illustrate their understanding of a literary text or genre. Student models may represent themes, conflict and resolutions, or the development of characters.

Physical Education 3.2c Have students create models to represent and identify features of the cardiorespiratory system. Then have students use the model to describe its function.

Science 3.5a Create an interactive model of an ecosystem identifying living and nonliving components.

Summary of a Lesson

As a whole group, students will observe examples of both physical and digital scientific models (solar system, water cycle, soil components, etc.) and discuss why scientists would use or need models. Working with a partner, students will select a concept from another 3rd grade subject to create a model using a computer program. Partner teams will brainstorm and decide what information and materials are necessary to include when creating a model of their chosen topic. Students can use Google Slides, Google Draw, Scratch, or another application selected by the teacher to construct their model and present their work to the whole group, describing how it reflects the attributes or behaviors of their topic.