



Kindergarten

Kindergarten may be students' first experience with classroom learning of science, but they have been exploring the world around them since birth. Students' natural curiosity and questions are the initial basis for science instruction and must be used, developed, and refined. Each of the instructional segments in this grade-level description is framed around phenomena that students can directly experience, observe, and question: What do plants and animals need to survive? Why do certain plants and animals live in our community? Will it be hot tomorrow? What happens when two toy trucks crash?

Table 3.2 shows one possible sequence for arranging science instruction in kindergarten. Teachers and districts can plan any sequence that meets their local needs, but there are some constraints to consider. The first two instructional segments are closely related and discuss the relationship between organisms and their environment. The instructional segment on weather, IS3, requires periodic weather observations prior to the instructional segment. Instructional segment 3 must therefore be placed late enough in the school year that students have recorded a variety of weather conditions. Collecting weather data also allows teachers to emphasize the importance of water for living things as they discuss IS1 and IS2. Instructional segment 4 asks students to relate the motion of objects to pushes and pulls. While very tangible, talking about these forces requires the most sophisticated language and this segment is saved for later in the year when students are ready to face this challenge.

Table 3-2. Overview of Instructional Segments for Kindergarten

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|  | <p>1 Plant and Animal Needs</p> <p>Students observe plants and animals directly and through books and media to discover patterns in what they need to survive. They distinguish between plants and animals based on these needs. They describe how organisms meet their needs using resources from their surroundings.</p> |
|  | <p>2 Plants and Animals Change Their Environment</p> <p>Students gather evidence about how organisms can directly change their environment. They focus especially on human impacts by gathering information about ways to reduce those impacts. They communicate their solutions.</p> |
|  | <p>3 Weather Patterns</p> <p>Students observe the weather to spot patterns in the rhythm of the seasons and of the day. They investigate the effects of the Sun on the Earth and design a shelter for shade.</p> |
|  | <p>4 Pushes and Pulls</p> <p>Students explore how pushes and pulls speed objects up, slow them down, or change their direction. They design solutions to schoolyard challenges such as moving heavy boxes and protecting a block structure from an oncoming ball.</p> |

Sources: Labuda 2014; Nightingale 2009; Hodan n.d.; Virginia State Parks 2011

IS1

Kindergarten Instructional Segment 1: Plant and Animal Needs

When children come to kindergarten, they recognize that living things differ from nonliving ones, that plants differ from animals, and that certain plants and animals belong in certain places on Earth. When pressed to describe or explain these differences, however, their responses are often inconsistent and not aligned with scientific ideas. Kindergarten science instruction helps children make sense of these categories by employing their keen eye for detail and passionate desire to observe. While observing the bodies and behaviors of plants and animals, children notice patterns in what living things need to survive and grow. During the instructional segment, they develop the language tools to articulate what they see and collaboratively refine what they know.