

# Microworlds Conceptual Story

Science & Technology for Children - Grade 5

**K-12 Unifying Concept:** Living things have characteristics that can be used to categorize them; are organized into systems that are interconnected; and interactions within and among living systems cause changes in matter and energy.

**Fifth Grade Level Concept:** Scientists use tools to distinguish characteristics and compare cell structures of microscopic plants and animals.

**Sub-concept:** Scientists record and report observations, explanations, and conclusions using oral, written, and mathematical expression.

**Sub-concept:** Scientists plan and conduct simple investigations, using appropriate tools, measures, and safety rules.

**Lesson 1  
Observing a Penny**  
Students begin to hone their observation skills. They learn to use hand lenses to discover something new about a penny.

**Lesson 2  
Communicating Your Observations**  
Students practice making detailed observations of wire screen, burlap, and yarn. They learn the difference between an observation, an inference, and opinion.

**Lesson 3  
Learning About Lenses**  
Students test various shapes and discover the properties common to all objects that act as magnifier--convex shape and transparent.

**Lesson 4  
Looking Through Lenses**  
Students continue to explore the process of focusing a lens (either by moving the object or the lens until focus is clear) and discover how much of an object is in the field of view.

**Sub-concept:** People have invented tools for everyday life and for scientific investigations.

**Lesson 5  
Learning to Use the Microscope**  
Students learn how the microscope is a system the parts. They use a piece of microfiche to practice adjusting the light and focusing the microscope for the first time.

**Lesson 6  
Practicing With the Microscope**  
Students continue to practice using the microscope, making detailed observations of printed pictures. They discover that the printing process is made up of a series of dots.

**Lesson 7  
The Field of View**  
Students come to a more complete understanding of field of view and make measurements in millimeters.

**Lesson 8  
Preparing Slides**  
Students learn to prepare wet mount and well slides for their microscopes. They decide which mounting technique works best for fish scales.

**Lesson 9  
What Is It?**  
Students apply their skills viewing three-dimensional objects under a microscope--sand, Epsom salt, table salt, and grits.

**Lesson 10  
Exploring Common Objects**  
Students make their own discoveries as they observe specimens they are interested in and practice preparing slides of different types.

**Sub-concept:** Living things are composed of parts made of cells.

**Lesson 11  
Looking Inside an Onion**  
Students examine and describe the internal structure of an onion and observe and describe its cells.

**Lesson 12  
Looking at Living Things: Volvox**  
Students learn to handle living creatures and prepare slides for viewing them. They start by looking at *Volvox*, a type of single-celled green algae living in large colonies.

**Lesson 13  
Looking at Living Things: Blepharisma**  
Students examine *Blepharisma*, a rosy-colored, single celled microbe belonging to a group of protists called *ciliates*.

**Lesson 14  
Looking at Living Things: Vinegar Eels**  
Students use their microscope skills to observe vinegar eels. They learn a technique to slow down these very fast moving round worms...

**Lesson 15  
Looking at Living Things: Hay and Grass Infusions I**  
Students discover microbes that have developed from dormant cysts in the hay and grass infusions.

**Lesson 16  
Looking at Living Things: Hay and Grass Infusions II**  
Students observe microbes in their hay infusions in greater detail and make more complete and detailed records.