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Implementation Guide

Welcome to Disney’s Bill Nye DVD collection!
With the help of this Guide you can bring instructional DVDs into your science curriculum.

What’s on the DVD?

Bill Nye DVDs expand the educational features of Bill Nye the Science Guy programs. Each DVD provides students with science content through video clips aligned with National Science Education Standards (NSES) and a host of other resources.

Short video clips aligned with the NSES provide a unique opportunity for you to enhance your lessons using DVD technology. Now you can show a video clip, or even short segments of a clip, on command. But there are a host of other features, too! See the chart below for a summary.

From the Main menu, there are three chief sections:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watch Program Menu</td>
<td>From this menu, you can play the program straight through or use the clips to customize your viewing.</td>
</tr>
<tr>
<td>Teacher Support</td>
<td>From this menu, you can access this Teacher’s Guide, the Glossary, Internet Links, and the Quiz.</td>
</tr>
<tr>
<td>Bonus Materials</td>
<td>Use this menu to try a different discussion starter, download a special screen-saver, or check out never-before-seen footage.</td>
</tr>
</tbody>
</table>

From the Watch Program menu, you can:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Play Program</td>
<td>Play the entire program from start to finish.</td>
</tr>
<tr>
<td>Bilingual Mode</td>
<td>View the entire program or clips in English or Spanish.</td>
</tr>
<tr>
<td>Glossary Mode</td>
<td>Make links to Glossary terms appear during the program.</td>
</tr>
<tr>
<td>Program Overview</td>
<td>View the program introduction, in which Bill discusses the topic covered.</td>
</tr>
<tr>
<td>Try This</td>
<td>Show students demonstrating science concepts.</td>
</tr>
<tr>
<td>Way Cool Scientist</td>
<td>Meet a real scientist who talks about his or her area of study.</td>
</tr>
<tr>
<td>Bill’s Demonstration</td>
<td>Look at a science demonstration conducted by Bill Nye.</td>
</tr>
<tr>
<td>Music Video</td>
<td>Enjoy a short music video that summarizes the topic in an age-appropriate and entertaining manner.</td>
</tr>
<tr>
<td>Science Standards</td>
<td>Take advantage of short video clips from the program, which are aligned with National Science Education Standards.</td>
</tr>
</tbody>
</table>
From the **Teacher Support** menu, you can:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Science Quiz</strong></td>
<td>Give students a quiz to take independently or as a class. Seven to ten quiz items are aligned with the National Science Education Standards. The items are in multiple-choice or true-false format. Each wrong answer links to a standards-aligned video clip. At the end of the quiz, a scoring function reveals the number of correct initial answers.</td>
</tr>
<tr>
<td><strong>Glossary</strong></td>
<td>Check out definitions of key terms and view video clips that reinforce the concepts.</td>
</tr>
<tr>
<td><strong>DVD Features</strong></td>
<td>View a quick overview of the features found on the DVD.</td>
</tr>
<tr>
<td><strong>Teacher’s Guide</strong></td>
<td>Print out or view this comprehensive Teacher’s Guide in PDF format.</td>
</tr>
<tr>
<td><strong>Internet Link</strong></td>
<td>Link to the Bill Nye area of Disney’s Edustation Web site, where you can find links to Internet sites related to the content of each Bill Nye program.</td>
</tr>
</tbody>
</table>

From the **Bonus Materials** menu, you can:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bonus Material</strong></td>
<td>Find out what wasn’t in the episode! In most cases, there’s more of the Way Cool Scientist interview, Bill Nye outtakes, and an extra discussion starter.</td>
</tr>
<tr>
<td><strong>Additional Clips</strong></td>
<td>See trailers of related DVDs and videos.</td>
</tr>
<tr>
<td><strong>Screen-Saver</strong></td>
<td>Download this cool screen-saver for your computer.</td>
</tr>
</tbody>
</table>

**The Planning Process**

This Guide provides a Lesson Planning Worksheet (see page 12), which can assist you in setting up your instruction around a topic. The following sections of this Implementation Guide are offered to assist your planning process:

- **Determining Objectives and Linking to Standards**
- **The Learning Cycle**
  - Explore
  - Apply
  - Extend
  - Assess
Determining Objectives and Linking to Standards

1. The NSES Teaching Standard A states that science teachers must “select science content and adapt and design curricula to meet the interest, knowledge, understanding, abilities, and experience of students.”

The NSES recommends that teachers “integrate . . . a practical structure for the sequence of activities, and the content to be learned.” The primary instructional model recommended by the NSES is inquiry into authentic student-generated questions about natural or designed phenomena. Since most state and local standards documents were derived from the NSES, you will find that your local and state standards match closely with content standards in the Bill Nye DVD.

Each DVD contains a menu of clips that are aligned with the NSES. You can review the standards and their aligned clips in the Science Standards menu under Watch Program. Also, the Standards listed on page 10 of this Guide allow you to look at additional NSES content standards that are addressed on the video. Here’s an example of the content standards and clips aligned with the Bill Nye DVD entitled Blood and Circulation:

### Life Science Standards (NSES) Addressed in Blood and Circulation

**Life Science:**
Structure and function in living systems

- Living systems at all levels of organization demonstrate the complementary nature of structure and function.

  **Aligned clips:**
  - 1 Blood vessels
  - 2 Heart pump and bloodstream
  - 3 Heart valves and blood circulation
  - 4 White blood cells
  - 5 Capillaries

- The human organism has systems for digestion, respiration, reproduction, circulation, excretion, movement, control, and coordination, and for protection.

  **Aligned clips:**
  - 6 Heart pump
  - 7 Heart muscle
  - 8 Pumping blood to brain
2. Determine your objectives for the lesson and how these objectives address the standards.

Sample Objectives for *Blood and Circulation*

**In this activity students will:**
- Observe and describe a body system responsible for supply and transport.
- Use this information to define a body system.
- Ask questions about the circulatory system.
- Explain how structure complements function in organs of the circulatory system.
- Cite examples of current research related to this system.

3. Design a learning cycle of instructional experiences and assessments for the students to engage in that will help students meet these standards. Students may be given teacher-planned investigations or may be guided to design their own investigations.

**The Learning Cycle**

The learning cycle is a sequence of activities that involve students in the learning process. The sequence found here is based on research from Lawson, Abraham, and Renner published in 1989. That has been adapted to include: Explore, Apply, Extend and Assess:

- **Explore:** Involves assessing students’ prior knowledge and providing opportunities for students to interact with content from the video.
- **Apply:** Includes having students use the content learned during the Explore section in a new way that is meaningful to future learning.
- **Extend:** Allows students to conduct further research around an area of interest within the topic.
- **Assess:** Provides strategies meant to inform students and teachers about the content and processes that have been learned.

**Explore**

The NSES Teaching Standard B states: “Teachers of science guide and facilitate learning.” This standard addresses the constant need to balance your predetermined goals with allowing students to set and meet their own learning goals.

*Focus and Support Inquiries:* Support student inquiries by making decisions about “when to provide information” and “when to connect students with other sources.” Knowing the best time to intervene is often determined by allowing students to ask questions and to explore concepts openly.
The NSES Teaching Standard C states: “Teachers of science engage in ongoing assessment of their teaching and of student learning.”

Assess in Order to Guide Teaching: The Program Overview or the Discussion Starter on the DVD can be used to gauge students’ prior knowledge. You can use student responses to make decisions about appropriate instruction and adaptations in order to meet the needs of individual students. Assessment can be in the form of student reflections from standards-aligned video clips or answers to questions found on the science quiz. Or, as in the following example, a simple graphic organizer can facilitate a formative assessment.

Example: T-Chart from Blood and Circulation

1. Ask students to fill out the “Know-New” T-Chart (see page 14). Have them list what they already know about the circulatory system (heart, blood vessels, blood, etc.) on the left side of their charts.

2. Show the Program Overview for Blood and Circulation. On the right side of the chart, have students list new things they have learned from watching the clip. Walk around the room and assist students in filling in their T-Charts. Replay the program as necessary to allow students to review sections of interest.

3. Once students have completed their charts, ask them to share what they have listed in the “New” column. Write these on the board. Have students write their own working definitions of the circulatory system. Once students have completed their definitions, collect and review their work to assess prior knowledge.

Conduct direct vocabulary instruction in the Explore phase. Research suggests that:

- Students must encounter words in context more than once to learn them.
- Instruction in new words enhances learning those words in context.
- One of the best ways to learn a new word is to associate an image with it.
- Direct vocabulary instruction on words that are critical to new content produces the most powerful learning.

Use the DVD Glossary with the linked video clips to expose students to new vocabulary words in context, along with associated video images. You can also find a printed version of the glossary terms in this Guide on page 16.
Example: Using the Glossary for Direct Vocabulary Instruction

*Blood and Circulation*

1. Present students with a brief explanation or description of the new term or phrase from the glossary. For example: “Capillary: A small blood vessel that connects arteries and veins.”

2. Present students with a nonlinguistic representation of the new term or phrase. Show the video clip associated with the term “capillary.”

3. Ask students to generate their own verbal description of “capillary.”

4. Ask students to create their own nonlinguistic representation of “capillary.”

5. Periodically ask students to review the accuracy of their explanations and representations. This can be done after the Apply activities.

Apply

Based on the information you gained from the Explore assessments, design appropriate activities for your students. Check the experiments listed in the Episode Guide (see page 11) for explanations of the demonstrations from the Bill Nye program as well as for additional experiments designed to help apply the knowledge gained.

In the following example from *Blood and Circulation*, the standards-based video clips provide background information, and an experiment from the Guide helps students apply what they have learned about arteries and veins.

Example: The Structure and Function of Arteries and Veins

1. Have students begin “Know-New” T-Charts, focusing on what they already know about the structure and function of blood vessels, arteries, and veins.

2. Watch the following chapters from the Bill Nye DVD *Blood and Circulation*:
   - Blood vessels
   - Heart pump and bloodstream
   - Capillaries

3. Complete the “Know-New” T-Charts.

4. Give students copies of the Student Recording Sheet (see page 15) and have them fill the sheets out as they conduct their experiments.

5. Do the experiment entitled “Pump it Up!” from the *Blood and Circulation* Episode Guide, in which students observe the apparent effects of pressure on arteries and veins.

6. Write down any remaining questions about the structure and function of blood vessels, arteries, and veins.
Extend

The NSES Teaching Standard D states: “Teachers of science design and manage learning environments that provide students with the time, space, and resources needed for learning science.” School administrators, parents, and the community can assist teachers in providing local resources that make science lessons pertinent and meaningful.

Identify and Use Resources Outside of the School: “The school science program must extend beyond the walls of the school.” Each Bill Nye DVD contains resources designed to facilitate such understanding, including:

- **Way Cool Scientist**, found in both Watch Program and Bonus Materials, in which scientists discuss their current areas of study. This real-world connection often results in a deeper student understanding of a particular career.

- Disney’s Edustation Web site, where relevant Internet links provide a starting point for students to further explore science topics.

- Try these video clips, with activities parents and students can do at home. The questions generated by students from these experiences can be used as foundations from which they may conduct their own research.

- Standards-aligned video clips and Bill’s demonstration video clips, which can help generate topics for further research. After viewing the clips, have students list their questions, perhaps about the most current developments in a topic. By conducting online or library research, students will find answers to their questions and will learn about a topic in greater depth.

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Example: Conducting Student Research Using *Blood and Circulation*

Ask students to choose one of the questions they had after completing the activities from *Blood and Circulation*. An example of a student research question might be, “How has the technology related to artificial hearts advanced in the last ten years?” Explain to students that they will be conducting research to find answers to their questions. Some students may want to complete online or library research, others may want to ask an expert in the field, while others may want to design and conduct a scientific investigation. Encourage students to write a detailed procedure for finding answers to their questions. Ask students to find one or more examples of current research dealing with the circulatory system that is related to their question. **Note:** Students with similar questions may work together to complete the assignment.
Assess

Once students have conducted the research, you may choose to assess them in a number of different ways:

- By having students write about what they learned in a journal.
- By having students submit projects or reports.
- By having students take the program quiz to gauge their understanding of certain facts in the video. You can either print the quiz (found in this Guide on page 18) and have each student complete it individually or use the DVD screen version and the scoring feature for whole-class assessment.
- By designing other standards-aligned questions to augment those that are provided.

While the quiz will provide you with information about what the students have learned, it does not assess how students have processed the information. Below you will find assessment ideas that can be used to measure both content and process.

A Sample Assessment for *Blood and Circulation*

1. Explain to students that an important aspect of scientific inquiry is to communicate findings to others. In this assessment, students will present the following information to their peers:
   - The question they investigated.
   - The method that was used to find answers to their question.
   - Problems or successes during the search.
   - Answers to their question.
   - Current research related to their question.
   - New questions that have arisen.

2. Distribute the rubric found in the Lesson Planning Worksheet (see page 13) to students so they know how they will be assessed. Make sure students understand the criteria found in the rubric. Before you begin, you may want to allow students to make changes to the rubric so that it is clearer or makes more sense from their perspectives.

3. Allow students time to gather information to answer their questions and to prepare for their presentations. As students conduct this work, walk around the room and ask questions to assess their progress and provide input as needed.

4. Take a few minutes to clarify the rules of the presentation with the students. You may want to have multiple copies of the rubric available so that peers can rate the presentations.

5. As presentations are made, assess the quality of the student’s work as thoroughly and as equitably as you possibly can.

Congratulations! You have now completed the steps to set up a lesson plan using the Lesson Planning Worksheet. You have also explored many of the features of the Bill Nye DVD as well as the supplemental information found in this Teacher’s Guide. And most important, you’ve made significant strides toward incorporating DVD technology into your day-to-day instruction.
Science as Inquiry

Abilities necessary to do scientific inquiry

- Identify questions that can be answered through scientific investigations.
- Design and conduct a scientific investigation.

Understandings about scientific inquiry

- Different kinds of questions suggest different kinds of scientific investigations. Some investigations involve observing and describing objects, organisms, or events; some involve collecting specimens; some involve experiments; some involve seeking more information; some involve discovery of new objects and phenomena; and some involve making models.

- Current scientific knowledge and understanding guide scientific investigations. Different scientific domains employ different methods, core theories, and standards to advance scientific knowledge and understanding.

- Scientific explanations emphasize evidence, have logically consistent arguments, and use scientific principles, models, and theories. The scientific community accepts and uses such explanations until displaced by better scientific ones. When such displacement occurs, science advances.

Life Science

Reproduction and heredity

- Reproduction is a characteristic of all living systems; because no individual organism lives forever, reproduction is essential to the continuation of every species. Some organisms reproduce asexually. Other organisms reproduce sexually.

- In many species, including humans, females produce eggs and males produce sperm. Plants also reproduce sexually—the egg and sperm are produced in the flowers of flowering plants. An egg and sperm unite to begin development of a new individual. That new individual receives genetic information from its mother (via the egg) and its father (via the sperm). Sexually produced offspring never are identical to either of their parents.

- Every organism requires a set of instructions for specifying its traits. Heredity is the passage of these instructions from one generation to another.

- Hereditary information is contained in genes, located in the chromosomes of each cell. Each gene carries a single unit of information. An inherited trait of an individual can be determined by one or by many genes, and a single gene can influence more than one trait. A human cell contains many thousands of different genes.

- The characteristics of an organism can be described in terms of a combination of traits. Some traits are inherited and others result from interactions with the environment.
Regulation and behavior

- Regulation of an organism's internal environment involves sensing the internal environment and changing physiological activities to keep conditions within the range required to survive.

- Behavior is one kind of response an organism can make to an internal or environmental stimulus. A behavioral response requires coordination and communication at many levels, including cells, organ systems, and whole organisms. Behavioral response is a set of actions determined in part by heredity and in part from experience.

- An organism's behavior evolves through adaptation to its environment. How a species moves, obtains food, reproduces, and responds to danger are based in the species' evolutionary history.

Diversity and adaptations of organisms

- Millions of species of animals, plants, and microorganisms are alive today. Although different species might look dissimilar, the unity among organisms becomes apparent from an analysis of internal structures, the similarity of their chemical processes, and the evidence of common ancestry.

- Biological evolution accounts for the diversity of species developed through gradual processes over many generations. Species acquire many of their unique characteristics through biological adaptation, which involves the selection of naturally occurring variations in populations. Biological adaptations include changes in structures, behaviors, or physiology that enhance survival and reproductive success in a particular environment.

- Extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient to allow its survival. Fossils indicate that many organisms that lived long ago are extinct. Extinction of species is common; most of the species that have lived on the earth no longer exist.

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Earth and Space Science

Earth’s history

- Fossils provide important evidence of how life and environmental conditions have changed.

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History and Nature of Science

History of science

- Many individuals have contributed to the traditions of science. Studying some of these individuals provides further understanding of scientific inquiry, science as a human endeavor, the nature of science, and the relationships between science and society.

- Tracing the history of science can show how difficult it was for scientific innovators to break through the accepted ideas of their time to reach the conclusions that we currently take for granted.

Science as a human endeavor

- Women and men of various social and ethnic backgrounds—and with diverse interests, talents, qualities, and motivations—engage in the activities of science, engineering, and related fields such as the health professions. Some scientists work in teams, and some work alone, but all communicate extensively with others.

- Science requires different abilities, depending on such factors as the field of study and type of inquiry. Science is very much a human endeavor, and the work of science relies on basic human qualities, such as reasoning, insight, energy, skill, and creativity—as well as on scientific habits of mind, such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.
Episode Guide
Evolution

Nifty Questions in This Episode

For how many years have living things on earth been changing?
What is the process of change called?
What is deoxyribonucleic acid?

Awesome Answers

Living things have been changing for over 3 billion years.
Evolution.
DNA, a molecule containing the genetic message.

Experiments shown on the video:

SHAKE-IT-UP MOSS

Objective: To show that mosses have evolved to survive in a variety of habitats.

- Collect some green moss from a park or wooded area. Put a fist-sized clump of moss in a blender and add about 2 cups of milk. Turn on the blender and process the moss/milk mixture. Remember, whatever you do: DON’T DRINK IT!
- Pour the contents in various outdoor locations that you will have regular access to: around walkways, among rocks, along a brick path, or in cracks in the sidewalk or driveway.
- Check the locations every few days. Watch as moss begins to grow; it will look very similar to the original moss you placed into the blender.

More interesting stuff to do:

FOSSILS FOR YOU

Objective: To create a “fossil” imprint.

- Fossils provide a record of what living creatures looked like long ago, allowing biologists to track evolutionary changes that have occurred over time. Make your own fossil and compare the imprint with the original organism.
- Obtain a small container, plaster of Paris, petroleum jelly, modeling clay, and a small natural object such as a leaf or shell.
- Apply petroleum jelly to the outside of your object, then gently press the shell or leaf well into the modeling clay. Carefully remove the object from the clay, leaving an imprint. (Keep your object handy.)
- In your container, make a thick paste by mixing the plaster of Paris with a little water. Pour the plaster into the imprint in the clay and let it harden for about 30 minutes. Remove the clay from the plaster.
- Look at the plaster cast of your object. How is it similar to the original? How is it different? Draw and label pictures to illustrate the similarities and differences.

SURVIVAL OF THE HIDDENEST

Objective: To demonstrate the adaptive value of camouflage.

- Enlist the help of a partner; he or she is the predator in this experiment. Obtain eight 12-inch pipe cleaners, each of a different color. Cut each one into 1/2-inch lengths. You will have 24 pieces of each color. This is your prey.
- Find an area of lawn where you can use string and small stakes to map out a square that is 7 yards to a side. Have your partner close his or her eyes while you scatter the pieces of pipe cleaner randomly in your grassy square.
- While you slowly count to 100, your partner picks up as many pieces of pipe cleaner as possible.
- How many pieces of each color did your partner find? Which colors were easier to see? If your partner were a predator and the pipe cleaners were prey, which colors would be most likely to survive and have a chance to reproduce? If the colors were hereditary, how would that affect the color distribution of the next generation?
# Lesson Planning Worksheet

**Lesson Title**

**Objectives**

**Estimated Time Required**

**Materials Needed**

**Explore**

**Apply**

**Extend**

**National Science Educational Standards**

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© Disney
As presentations are made, assess the quality of the student's work as thoroughly and as equitably as you possibly can. The following criteria can be used to assist in your assessment.

<table>
<thead>
<tr>
<th>Name of Student</th>
<th>Question Investigated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Initial Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Question is broad and not well defined</td>
</tr>
<tr>
<td>2 Question is defined but limited to single-answer responses.</td>
</tr>
<tr>
<td>3 Question is clear and might elicit multiple responses that may lead to new ideas and additional questions.</td>
</tr>
<tr>
<td>4 Question is engaging and provokes new ways of thinking about an issue.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Methods for Finding Answers</th>
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</thead>
<tbody>
<tr>
<td>1 Students do not share planned or actual methods.</td>
</tr>
<tr>
<td>2 Students share methods but they are unclear or vague.</td>
</tr>
<tr>
<td>3 Students share methods but not the problems or successes of using the methods.</td>
</tr>
<tr>
<td>4 Students share methods and problems or successes in using the methods.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Student results are undefined.</td>
</tr>
<tr>
<td>2 Student results are incomplete and do not adequately answer the question.</td>
</tr>
<tr>
<td>3 Student results are complete, adequately answer the question, and include current research related to the question.</td>
</tr>
<tr>
<td>4 Student results are complete, include current research, and have resulted in one or more additional questions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Student is not prepared to speak.</td>
</tr>
<tr>
<td>2 Presenter has distracting mannerisms and avoids eye contact with the audience.</td>
</tr>
<tr>
<td>3 Presentation is clean and clear with some eye contact and very few distractions.</td>
</tr>
<tr>
<td>4 Presentation is exceptional and unique. Presenter uses regular eye contact and avoids distractions.</td>
</tr>
</tbody>
</table>
Bill Nye the Science Guy
Student “Know / New” Chart

<table>
<thead>
<tr>
<th>Know</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write down what you know about the topic of the video.</td>
<td>Write down information from the video that is new to you.</td>
</tr>
</tbody>
</table>
Bill Nye the Science Guy
Student Recording Sheet

Title of Experiment ________________________________________

Question: (What are you testing?) ________________________________________

Procedure: (Describe the experiment) ________________________________________

Materials: (List what you used) ________________________________________

Observations: (Record what happened) ________________________________________

Results: (Make your own data table)

Conclusions: (Use your observations and results to describe what you learned) ________________________________________

Name ___________________________ Date ___________________________
Evolution
The slow process of change by which organisms have acquired their distinguishing characteristics.

Genes
Units of hereditary information found in every living thing. These units transmit information from one cell to the offspring of the next generation and determine, for example, who you are and what you look like.

DNA Molecule
Abbreviation for DeoxyRiboNucleic acid, a chemical material found chiefly in the nucleus of cells that transfers genetic information.

Primordial soup
The seas and atmosphere as they existed on Earth before the existence of life.
### Extinction
Describes a species in which every member has died.

### (Natural) Selection
The process in which a species can survive in an environment because of favorable genetically determined traits.

### Fossils
The remains or traces, often found in rock, of an organism that lived on Earth very long ago.

### Artificial Selection
Selection by humans of animals and plants with desirable characteristics for use in breeding over several generations.
True or False? Circle T or F

1. Children of living things are completely different than their parents. T or F

2. Darwin believed that finches changed over thousands of generations due to interactions with the environment. T or F

3. Birds are similar to dinosaurs in how they reproduce. T or F

4. All organisms are essentially the same on the inside. T or F

5. Giraffes have long necks because they stretch in order to reach their food. T or F

6. Because they adapted to environmental conditions the giant ground sloth can be seen in the wild today. T or F

7. Fossils provide information about evolution. T or F

Multiple Choice: Circle the letter of the best answer

8. Which of the following is true about the rate of evolution?
   A. Evolution can occur over a weekend
   B. Evolution occurs in several months
   C. Evolution occurs over hundreds of years
   D. Evolution occurs over millions of years

10. What happens when environments change and species cannot adapt?
   A. Their populations increase
   B. The animals are not affected
   C. The animals cannot survive and are gone
   D. None of the above

9. What can scientists learn from fossils?
   A. Fossils show how life has changed on Earth
   B. Fossils show how living things have stayed the same for many years
   C. Fossils show that ammonites currently have soft shells
   D. All of the above
### Answer Key

**Evolution**

<p>| | | | | |</p>
<table>
<thead>
<tr>
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**ARTIFICIAL SELECTION**