



Ohio Academic Standards Addressed By Zoo Program

ARE PRIMATES RIGHT HANDED OR LEFT HANDED?

Program description:

Students will think about their hand preference. Using inquiry and a variety of tools, they will discover whether the Zoo's primates are right handed or left handed.

Ohio Science Standards addressed by this program, organized by grade band and then standard:

GRADES 3-5

Standard: Life Sciences

Benchmark B: Analyze plant and animal structures and functions needed for survival and describe the flow of energy through a system that all organisms use to survive.

Indicators:

Grade 3

2. Relate animal structures to their specific survival functions (e.g., obtaining food, escaping or hiding from enemies).

Benchmark C: Compare changes in an organism's ecosystem/habitat that affect its survival.

Indicators

Grade Five

5. Support how an organism's patterns of behavior are related to the nature of that organism's ecosystem, including the kinds and numbers of other organisms present, the availability of food and resources, and the changing physical characteristics of the ecosystem.

Standard: Scientific Inquiry

Benchmark A: Use appropriate instruments safely to observe, measure and collect data when conducting a scientific investigation.

Indicators:

Grade 5

1. Select and safely use the appropriate tools to collect data when conducting investigations and communicating findings to others (e.g., thermometers, timers, balances, spring scales, magnifiers, microscopes and other appropriate tools).

Benchmark B: Organize and evaluate observations, measurements and other data to formulate inferences and conclusions.

Indicators:

Grade 3

2. Discuss observations and measurements made by other people.

3. Read and interpret simple tables and graphs produced by self/others.
5. Record and organize observations (e.g., journals, charts and tables).

Grade 4

2. Analyze a series of events and/or simple daily or seasonal cycles, describe the patterns and infer the next likely occurrence.

Grade 5

2. Evaluate observations and measurements made by other people and identify reasons for any discrepancies.
3. Use evidence and observations to explain and communicate the results of investigations.

Benchmark C: Develop, design and safely conduct scientific investigations and communicate the results.

Indicators:

Grade 3

6. Communicate scientific findings to others through a variety of methods (e.g., pictures, written, oral and recorded observations).

Grade 4

4. Explain the importance of keeping conditions the same in an experiment.
5. Describe how comparisons may not be fair when some conditions are not kept the same between experiments.
6. Formulate instructions and communicate data in a manner that allows others to understand and repeat an investigation or experiment.

Standard: Scientific Ways of Knowing

Benchmark A: Distinguish between fact and opinion and explain how ideas and conclusions change as new knowledge is gained.

Indicators:

Grade 4

1. Differentiate fact from opinion and explain that scientists do not rely on claims or conclusion unless they are backed by observations that can be confirmed.

Grade 5

1. Summarize how conclusions and ideas change as new knowledge is gained.

Benchmark B: Describe different types of investigations and use results and data from investigations to provide the evidence to support explanations and conclusions.

Indicators:

Grade 4

3. Explain discrepancies in an investigation using evidence to support findings.

Grade 5

3. Explain why an experiment must be repeated by different people or at different times or places and yield consistent results before the results are accepted.
4. Identify how scientists use different kinds of ongoing investigations depending on the questions they are trying to answer (e.g., observations of things or events in nature, data collection and controlled

experiments).

Benchmark C: Explain the importance of keeping records of observations and investigations that are accurate and understandable.

Indicators:

Grade 3

2. Keep records of investigations and observations and do not change the records that are different from someone else's work.

Grade 4

2. Record the results and data from an investigation and make a reasonable explanation.
4. Explain why keeping records of observations and investigations is important.

Grade 5

5. Keep records of investigations and observations that are understandable weeks or months later.

GRADES 6-8

Standard: Life Sciences

Benchmark A: Explain that the basic functions of organisms are carried out in cells and groups of specialized cells form tissues and organs; the combination of these cells make up multicellular organisms that have a variety of body plans and internal structures.

Indicators:

Grade 7

1. Investigate the great variety of body plans and internal structures found in multicellular organisms.

Benchmark B: Describe the characteristics of an organism in terms of a combination of inherited traits and recognize reproduction as a characteristic of living organisms essential to the continuation of the species.

Indicators:

Grade 6

7. Recognize that likenesses between parents and offspring (e.g., eye color, flower color) are inherited. Other likenesses, such as table manners are learned.

Grade 7

8. Investigate the great diversity among organisms.

Grade 8

3. Explain how variations in structure, behavior or physiology allow some organisms to enhance their reproductive success and survival in a particular environment.

Standard: Scientific Inquiry

Benchmark A: Explain that there are differing sets of procedures for guiding scientific investigations and procedures are determined by the nature of the investigation, safety considerations and appropriate tools.

Indicators:

Grade 6

1. Explain that there are not fixed procedures for guiding scientific investigations; however, the nature of an investigation determines the procedures needed.

Grade 8

2. Describe the concepts of sample size and control and explain how these affect scientific investigations.

Benchmark B: Analyze and interpret data from scientific investigations using appropriate mathematical skills in order to draw valid conclusions.

Indicators

Grade Six

3. Distinguish between observation and inference.
4. Explain that a single example can never prove that something is always correct, but sometimes a single example can disprove something.

Grade Seven

5. Analyze alternative scientific explanations and predictions and recognize that there may be more than one good way to interpret a given set of data.
6. Identify faulty reasoning and statements that go beyond the evidence or misinterpret the evidence.
7. Use graphs, tables and charts to study physical phenomena and infer mathematical relationships between variables (e.g., speed and density).

Grade Eight

3. Read, construct and interpret data in various forms produced by self and others in both written and oral form (e.g., tables, charts, maps, graphs, diagrams and symbols).

Standard: Scientific Ways of Knowing

Benchmark A: Use skills of scientific inquiry processes (e.g., hypothesis, record keeping, description and explanation).

Indicators:

Grade 6

1. Identify that hypotheses are valuable even when they are not supported.
2. Describe why it is important to keep clear, thorough and accurate records.

Grade 8

1. Identify the difference between description (e.g., observation and summary) and explanation (e.g., inference, prediction, significance and importance).

Benchmark B: Explain the importance of reproducibility and reduction of bias in scientific methods.

Indicators:

Grade 7

1. Show that the reproducibility of results is essential to reduce bias in scientific investigations.
2. Describe how repetition of an experiment may reduce bias.

Grade 8

2. Explain why it is important to examine data objectively and not let bias affect observations.