

The Training Game

Academic Content Standards:

Grade Six

- Science: Identify that hypotheses are valuable even when they are not supported.
Describe why it is important to keep clear, thorough and accurate records.
Identify ways scientific thinking is helpful in a variety of everyday settings.
Describe how the pursuit of scientific knowledge is beneficial for any career and for daily life.
- Mathematics: Select, create and use graphical representations that are appropriate for the type of data collected.
Understand the different information provided by measures of center (mean, mode and median) and measures of spread (range).
Design an experiment to test a theoretical probability and explain how the results may vary.
- Language Arts: Define the meaning of unknown words by using context clues and the author's use of definition, restatement and example.
Analyze examples of cause and effect and fact and opinion.
Write informational essays or reports, including research, that present a literal understanding of the topic, include specific facts, details and examples from multiple sources and create an organizing structure appropriate to the purpose, audience and context.

Grade Seven

- Science: Explain that variables and controls can affect the results of an investigation and that ideally one variable should be tested at a time; however it is not always possible to control all variables.
Identify simile independent and dependent variables.
Choose the appropriate tools and instruments and use relevant safety procedures to complete scientific investigations.
Identify faulty reasoning and statements that go beyond the evidence or misinterpret the evidence.
Show that the reproducibility of results is essential to reduce bias in scientific investigations.
Describe how repetition of an experiment may reduce bias.
Describe how the work of science requires a variety of human abilities and qualities that are helpful in daily life (e.g., reasoning, creativity, skepticism and openness).
- Mathematics: Read, create and interpret box-and-whisker plots, stem-and-leaf plots, and other types of graphs, when appropriate.

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**Cleveland Metroparks Zoo
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The Training Game

Academic Content Standards (Continued):

Grade Seven

- **Language Arts:** Define the meaning of unknown words through context clues and the author's use of comparison, contrast, definition, restatement and example.
Analyze examples of cause and effect and fact and opinion.
Write informational essays or reports, including research, that present a literal understanding of the topic, include specific facts, details and examples from multiple sources, and create an organizing structure appropriate to the purpose, audience and context.

Grade Eight

- **Science:** Choose the appropriate tools or instruments and use relevant safety procedures to complete scientific investigations.
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).
Apply appropriate math skills to interpret quantitative data (e.g., mean, median and mode).
Identify the difference between description (e.g., observation and summary) and explanation (e.g., inference, prediction, significance and importance).
Explain why it is important to examine data objectively and not let bias affect observations.
- **Mathematics:** Use, create and interpret scatterplots and other types of graphs as appropriate.
Evaluate different graphical representations of the same data to determine which is the most appropriate representation for an identified purpose; e.g., line graph for change over time, circle graph for part-to-whole comparison, scatter plot for relationship between two variants.
- **Language Arts:** Define unknown words through context clues and the author's use of comparison, contrast and cause and effect.
Analyze information found in maps, charts, tables, graphs, diagrams, cutaways and overlays.
Write informational essays or reports, including research, that...(a-e).

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The Training Game

Goals and Objectives:

- Goal: Students will learn the fundamentals of animal training and why it is important in a zoo setting.
- Objective(s): Students will
 1. identify the steps that are involved in training an animal,
 2. learn how to determine reinforcers,
 3. train an animal or fellow classmate and evaluate the outcome.

Materials Needed:

- Access to the library or Internet.
- Pencil and paper.
- M&Ms, pennies, or some form of reinforcement that would be appropriate for the persons being “trained”.
- Stop watch.
- Clicker, whistle, or bell.

Program:

Pre-Distance Learning Activities:

1. Break into groups and list all of the steps that are involved in riding a bicycle. Groups will trade lists and add steps that are missing. Continue until the lists have passed through each group.
2. Using the library or Internet, research animal training techniques. What did you discover? Are there similarities? Did the author convince you that this was an effective method?

Distance Learning Program (Topics)

- I. Basics of Training – Steps
- II. Reasons to Train
- III. Reinforcement
- IV. Animal Guests and their Natural Behaviors
- V. Question and Answer

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The Training Game

Program (Continued):

Post-Distance Learning Activities:

1. Do the training “game” in class as demonstrated in the Distance Learning program. Pick a “trainer” and have him or her “train” some “animals” (other students in class). Have the “trainer” write down a behavior (example: jump up, jumping jack, turn around, lay down, sit, etc. Keep it a “natural” human behavior.). Give to the teacher but do not tell anyone else. Remember there can be no talking by the trainer or the observer. Start the stop watch. Use the clicker to establish a bridge to the reward. To do so, click and then give M&Ms (or reinforcer) immediately until the clicker is associated with the reward. Start training the behavior by using approximations (small steps). Stop the stop watch or timing device when the “behavior” is learned. How much time did it take? Try another behavior with another trainer and group. Repeat procedure one to two more times. What behavior was the quickest to teach? Which one was the longest? (*Have your students use math and graphing to answer these questions.)
2. Acquire a young rat or mouse for the classroom. (See supplemental handout) Please be sure to have the proper means to care for the animal (food, shelter). Allow two weeks for acclimation. Choose a behavior that would be appropriate to train this animal to do. (Hint: Train only one behavior at a time. Wait two days before training another behavior.) To start, choose an easy, natural behavior such as carrying an object from one place to another. Avoid training a behavior that could become an annoyance later on – such as chewing.) Write down the steps needed to train and determine the reward that is best suited for the mouse or rat. Establish a bridge (a whistle, bell, or clicker) and link it to the reward. This may take from one to five days. Once the association has been made, start training. Keep track of how long it takes to train your animal to learn this behavior. (Hint: Keep your sessions short – five-ten minutes.)

How long did it take for your animal to learn this behavior? How many sessions? Were you effective in your method? Would you change anything? (For example, if you are working with a nocturnal animal, is there a better time to train your animal?) If your “experiment” was successful, try a more challenging “behavior.” Again follow the same procedure (you won’t need to establish the reward since that has already been done). Keep track of the session time and evaluate your progress. (Challenge Activity)

3. Write a report about your “experiment.” What did you train your animal to do? What was your procedure (steps)? Was training the animal successful? Why or why not? What would you change to make it more effective? What would logically be the next behavior you would train? (Challenge Activity)



The Training Game Supplemental Materials

Behavior Training Vocabulary List

Behavior: the response of an individual, group, or species to stimulation or its environment

Bridge: a means of connection or transition that links the reward to the desired behavior

Condition (Train): to modify or adapt so that an act or response previously associated with one stimulus becomes associated with another

Conditioned Response: the response that the conditioned stimulus elicits after it has been repeatedly paired with an unconditioned stimulus. The conditioned response may be similar in form to the unconditioned response.

Conditioned Stimulus: Learning to respond to a substituted stimulus. A dog associates the ringing of a bell to food being provided and will salivate at just the sound of the bell.

Reinforcement (Reward): an object or action that strengthens by additional assistance, material, or support (example: M&Ms)

Unconditioned Response: response occurs to an unconditioned stimulus without prior conditioning.

Unconditioned Stimulus: a simple inborn reflex involving taste receptors, sensory neurons, networks of interneurons in the brain, and motor neurons



Conditioned Learning Rat

Materials Needed:

- Rat
- Rat food
- Bedding
- Rat “home”
- Water bottle
- Clicker
- Ping-pong ball

Experiment Objective:

- Can you condition a rat?

Background:

Rats are used in behavioral studies by scientists and by students of all ranges, from grade schools to colleges. They are particularly useful in experiments because they have higher IQs than mice and most other small laboratory animals. From these experiments, scientists gain valuable insight into the basic steps of learning. Of course, they must draw conclusions carefully, because rats are not nearly as intelligent and complex as humans.

Training your rat is different from taming and playing with it. Before you train your rat, you should always have a specific goal in mind (e.g., training your rat to walk a short distance on its hind legs). You should also be certain that your rat can actually do what you are asking of it. If your plan does not seem to be working, change it. (Hint: Start with a simple behavior, then move to more difficult behaviors.)

A good trainer uses an individual rat’s natural talents to train the rat to do seemingly complicated feats. You, too, should find out what your rat enjoys doing. Some rats are good at jumping, while others are better at climbing. (It is the same as if you are talented at running but not catching.) Ideally, you have been playing with your rat and know what it likes to do. By incorporating its natural tendencies into tricks, you will reinforce what the rat already enjoys.

Note: Review instructions on lesson plan to help with the following procedure.

Procedure:

Conditioning your rat to come: (Hint: Break down into smaller steps if necessary.)

1. Allow 2 weeks for the rat to acclimate to his/her new setting.
2. Familiarize your rat with his name by saying his name every time you play with him, visit him, walk past him, etc.
3. Once your rat is familiar with the way his name sounds you may begin teaching him to come to you when his name is called. Reward him, even if he takes one step.
4. Require him to move further and further each time until he runs across the room.
5. Remember to be patient and allow your rat time to learn to come to you.

Procedure (Continued):

Conditioning your rat to sit up: (Hint: Break down into smaller steps if necessary.)

1. Allow 2 weeks for the rat to acclimate to his/her new setting.
2. Familiarize your rat with his name by saying his name every time you play with him, visit him, walk past him, etc.
3. Hold his favorite treat above his head until he raises, even if he only takes his front paws up off the ground and doesn't stand up, still praise him and give him a treat.
4. Work slowly until you require him to totally stand to get the treat.

Try conditioning your rat to ride on your shoulder or walk on its hind legs.

Explore Results:

Review your records, how long did it take the rat to respond to the new stimuli? How long did it take for the rat to learn each behavior?