



HOW TO USE THIS GUIDE

- 1 Duplicate the DFTV student page of your choice (pp. 3–6), and distribute it to your students. Read the questions posed by the young scientists. Encourage your students to describe how they would investigate the questions. Guide them through the steps of developing an inquiry (see below).
- 2 If you have videotapes of the episodes featured in this guide, play the video segment to see how the DFTV kids investigated the questions and what their results were. The investigations are also described on page 7 of this guide and on the DragonflyTV Web site. Apply the ideas learned in the DFTV example to the classroom activity “Do It, Get To It,” or encourage students to do the investigation described in “Take It Outside!”
- 3 If your students develop investigations of their own, encourage them to visit the DragonflyTV Web site, pbskids.org/dragonflytv, and click on DFTV Boards. Kids can describe their investigations, and share their ideas with others.

OBSERVATIONAL

1. Write the question: How does A compare to B? Make a hypothesis.
2. Decide what to measure or observe for both A and B and how to do it.
3. Make multiple observations when possible. Record all results.
4. Organize the data in a table or chart, looking for differences or similarities.
5. Write an answer to the original question. Also write down any new questions that come up during this investigation.

EXPERIMENTAL

1. Write the question: If I change A, what happens to B? Make a hypothesis.
2. Choose the independent variable (the thing you change) and dependent variable (the thing that is affected) and how to measure them.
3. Do multiple trials when possible.
4. Organize the data into a table, and prepare a graph. Look for patterns or trends.
5. Write an answer to the original question. Also write down any new questions that come up during this investigation.

Student Page

What's Up?

We're Robyn and Alex, and we love to visit the Pittsburgh Zoo & PPG Aquarium to hang out with our favorite creatures: sea lions! The zookeepers here want to make the animals feel like they are in the wild as much as possible. In the wild, sea lions spend much of the day hunting and playing. That got us wondering: **How could we give the sea lions more chances to play and hunt, just like they enjoy doing in their natural habitat?**

How Would You Investigate This Question?

To figure out how to create a realistic natural habitat for sea lions, make yourself familiar with how the creatures live in the wild. What sorts of information should you gather about their activities? What should you know about their diet? Write your ideas in your notebook and discuss them with your classmates. Then discuss them with your teacher, watch the DragonflyTV video, or go to pbskids.org/dragonflytv to see what Robyn and Alex did and what they learned about keeping their sea lion friends happy and healthy.

Do It, Get To It

Does your class have a pet guinea pig, hamster, or gerbil? Devise a test to determine their food preferences. Take regular hamster chow (the kind with lots of different seeds and grains) and sort the mixture into the different ingredients. Keep the sunflower seeds apart from the corn, apart from the millet seeds, etc. Put each type of seed into its own little dish. Place the dishes into the animal's cage. Then watch to see if the animal selects the seeds in one dish over the others. Repeat the observation for several days. What does your pet prefer?



Take It Outside!

Whether it's winter or summer, birds are always on the lookout for food. Some birds peck at seeds, others hunt for worms, and some even eat fruit or berries. Set up an observation experiment where you put out different kinds of bird food outside your window. Which kind of food attracts birds? Learn to identify the birds in your area. Is there a kind of food that attracts the most birds? Which food doesn't seem to attract any birds at all?

About the DFTV Investigations

(for the educator)

ICE BIKES

NATIONAL SCIENCE EDUCATION STANDARD

Science and Technology Grades K–4:

Understanding about Science and Technology

Physical Science Grades 5–8:

Motions and Forces

The boys acquired three rubber tires, installing 50 studs in the first, 100 studs in the second, and 150 studs in the third. They recorded the time it took to go around a 200 meter ice track once from a complete stop, doing several trials for each tire. For the conditions of the track (wet and slushy), they found the 100-stud tire gave them the shortest race time, and the most control.

As with many technology investigations, one looks for trade-offs. More isn't always better. Discuss with students the importance of identifying the limits of a technological innovation.

SEA LIONS

NATIONAL SCIENCE EDUCATION STANDARD

Life Science Grades K–4:

Organisms and Environments

Life Science Grades 5–8:

Regulations and Behavior

Robyn and Alex received permission from the zoo to select three types of fish to feed the sea lions at the next three feedings: frozen fish; small live trout; large live trout. They kept the weight of fish the same at each feeding, and recorded the time for the sea lions to consume all the fish. They also observed the sea lions for ten minutes after feeding, to monitor their activity levels. They found that feeding the sea lions live fish induced positive behaviors, keeping the sea lions active and alert. Discuss the challenges in controlling variables when conducted investigations into animal behavior. Time of day, age of the animal, changes in the animal's routine can all influence the observations one makes.

CURLING

NATIONAL SCIENCE EDUCATION STANDARD

Physical Science Grades K–4:

Motion of Objects

Physical Science Grades 5–8:

Motions and Forces

The girls first looked for the relationship between the direction of rotation of the curling rock and the direction of its curl. Secondly, they investigated the effect that sweeping has on the rock's motion. They used a digital laser timer to gauge the speed of the rock, then measure the distance of the slide, either sweeping it or not. They compared swept and unswept rocks of similar initial speed, and found that all rocks, regardless of speed, glide farther when the ice in front of them is swept. Encourage your students to look for science investigations in the sports they enjoy.

VOLLEYBALL

NATIONAL SCIENCE EDUCATION STANDARD

Life Science Grades K–4:

Organisms and Environments

Life Science Grades 5–8:

Regulations and Behavior

The girls scrimmaged with another team to test whether the number of players communicating influenced their team's success. They played ten serves where no player talked, ten serves where only the captain talked, and ten serves where all six players talked. They found that they did win more volleys once everyone was communicating, although they were aware that this is a skill that comes with practice.

Human behavior experiments are difficult to conduct, given all the factors that can influence an outcome. This investigation is a good example of a non-traditional investigation relating to a popular sport. Encourage your students to develop other creative investigations like this one.

For more details on these investigations, visit pbskids.org/dragonflytv.
Use the search option to quickly find the specific segment.