



# Inquiring Minds (3-5)

Zoo Wild Pack Preparation Activity

## At a glance

Students practice their observation, questioning and prediction skills.

## Time requirement

One session of 60 minutes

## Grades

Grades: 3-5

Group size: 10-30

## Materials

Paper and pencils

Classroom pet (optional)

## Objectives

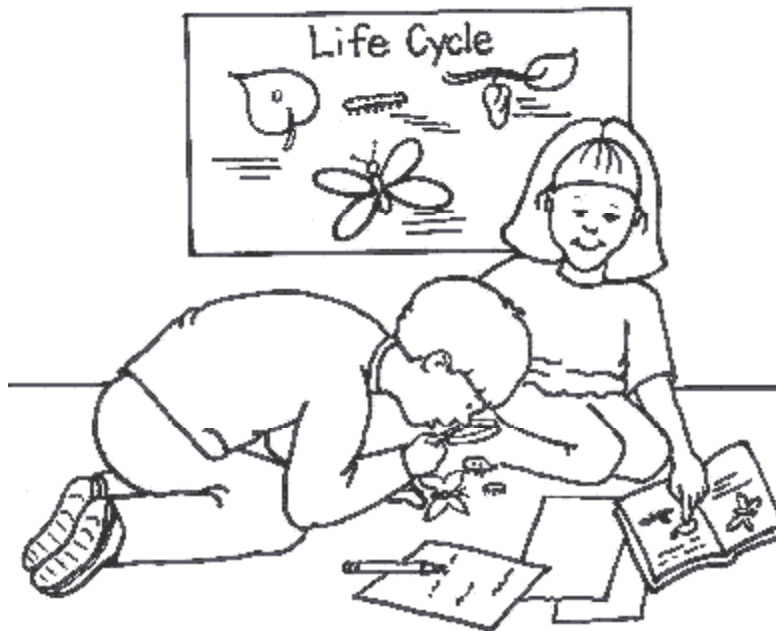
1. Students will be able to make direct observations.
2. Students will be able to develop comparative questions.
3. Students will be able to make reasonable predictions.

## Theme

The first steps in scientific investigation include observation, questioning, and making predictions.

## Goal

1. To practice observation, questioning, and prediction skills in preparation for Wild Pack investigations at the Zoo
2. To learn about the topics of Wild Pack investigations



**Academic standards - Science**

Ohio Science Academic Content Standards	Life Sciences <ul style="list-style-type: none"> <li>• Doing Scientific Inquiry (3:2) (4:6) (5:2,3) (6:4) (7:3)</li> </ul> Scientific Inquiry <ul style="list-style-type: none"> <li>• Evolutionary Theory (7:8)</li> </ul> Scientific Ways of Knowing <ul style="list-style-type: none"> <li>• The Nature of Science (6:1) (8:1)</li> <li>• Ethical Practices (6:2)</li> </ul>
Kentucky Core Content— Science	Standard 1 – The Nature of Science and Technology <ul style="list-style-type: none"> <li>• Scientific Views of the World (5.1.1) (8.1.1)</li> <li>• Scientific Inquiry (3.1.2) (6.1.3) (7.1.2)</li> </ul>
Indiana Science Standards	Biological Science <ul style="list-style-type: none"> <li>• Unity and Diversity (SC-06-3.4.2)</li> </ul> Unifying Concepts <ul style="list-style-type: none"> <li>• Interdependence (SC-04-4.7.1)</li> </ul>

**Background**

Engaging your students in scientific inquiry lets them become the scientists and make scientific discoveries, instead of just reading about them. Studies show that knowledge gained through self-discovery is more meaningful and lasting than if obtained secondhand.

The Q.U.E.S.T. experience outlines the steps of inquiry, which aligns with the scientific method.

1. **Question & Observe**  
The first step is to observe closely and see what questions come to mind.
2. **Uncover a Comparative Question**  
The next step is to develop a meaningful, comparative question to investigate based on the observations.
3. **Explore Predictions**  
Make a prediction—one that can be tested. A prediction is simply a statement rather than a question. You should have a sensible reason for your prediction.
4. **Start Action Plan & Collect Data**  
Next step is to make a plan of how to answer the question and collect data. What do we need to measure? How long will it take? What tools do we need?

5. **Think Hard About Findings & Share Discoveries**

The last step is to summarize the results to find out whether the prediction was correct. What if the prediction was not true? That's important information, too. Scientists don't always get the answers they think they will. How can we share our findings? What further questions could we study based on our findings?

**Vocabulary**

*Comparative question*—a question that compares two or more things and goes beyond a simple a yes or no answer

*Data*—measurements or information gathered through scientific investigation

*Observe*—to watch something closely, or more generally to pay attention with all of your senses

*Investigation (inquiry)*—the process of asking questions and making discoveries through data collection, critical reasoning, reflection, and sharing ideas

*Prediction*—statement of what one thinks will happen

## Activity

### *Getting ready*

Ensure access to direct observation of an animal either in the classroom or outdoors.

### *Doing the activity*

Inform the students that you will be visiting the Zoo soon. While there, they will conduct investigations to sharpen their science skills while learning about wildlife. Today, students will be practicing the first three steps: Question & Observe, Uncover a Comparative Question, and Explore Predictions.

### Question & Observe

Ask the students to describe the first step in investigation. Even before questions begin to develop, one must observe.

How observant are the students? Test their observation skills with a simple game. Have the students study your appearance closely for about 30 seconds. Ask them to close their eyes while you change just one thing about your appearance. For example, roll up your sleeves, take off your glasses, or untie your shoes. Once the students open their eyes, how quickly can they spot the difference? Let several students take turns up front. Discuss how important it is for scientists to have keen observation skills.

Next, set up an opportunity for the students to directly observe an animal, whether in your classroom or in the schoolyard. Alternatively, play video footage of animals in the wild, perhaps from National Geographic. Instruct the students to observe the animal for 10 minutes and write down everything they notice about it. What does it look like? What is it doing? What questions come to mind? Ask each student to create a list of five questions based on their observations. Allow several students to share their observations and questions, jotting them down on the board.

### Uncover a Comparative Question

Looking at the short list of questions on the board, ask the students which of these is most interesting to them. Choose one question and rework it so that it is comparative and meaningful. For example, while the question of do hamsters eat apples is a valid one, it is simply a yes or no question. You just put some apple pieces in a bowl and wait to see if the hamster eats any. On the other hand, a question of whether hamsters prefer apples or lettuce is comparative and will mean more in the big picture. Try to come up with several different comparative questions.

### Explore Predictions

Now it's time to make a prediction for your comparative question. What do you think the answer to the question is and why do you think that? For example, one might predict that hamsters prefer apples to lettuce because they are sweeter. Ask the students to make predictions for their questions.

### *Wrap-up*

Now that the students understand how the scientific process begins, they are ready to learn about the specific Wild Pack questions they will investigate at the Zoo.

## Assessment

Have students observe wildlife in their backyards or pets at home and develop a comparative question and prediction.

*Unsatisfactory*—Question is not comparative and/or prediction not supported

*Satisfactory*—Question is comparative and prediction supported

*Excellent*—Question is comparative and unique and prediction is thoughtful and based on observation or other evidence and sound reason

## Resources

Dragonfly QUEST Leader's Guide: Leading Teams of Young Investigators on Astounding Expeditions. 1998. Contains detailed descriptions of each inquiry step and sample investigations. Available from Project *Dragonfly*, Miami University. Contact Connie Malone at 513-529-5103 or email malonecm@muohio.edu

Inquiry and the National Science Education Standards: A Guide for Teaching and Learning. 2000.

Yager, Robert E. Inquiry: The Key to Exemplary Science. 2009.

Further investigations and readings related to Wild Pack topics are supported at [www.WildResearch.org](http://www.WildResearch.org)

