

Falling Post It

Level of Inquiry: Guided

Goals:

1. Students will improve their ability to design and conduct science experiments. (INQ3)
2. Students will be able to identify and use the concepts of dependent variables, independent variables, and controlled variables. (INQ4) (“Fair Test”)

Materials: Post its, stopwatch?, meter stick, rulers? and masking tape.

Give pairs of students a few minutes to drop post-its. Ask them to:

1. Observe carefully
2. Think of things related to falling that they already know
3. Begin thinking of questions they might have

Teacher leads a discussion of the following (one at a time) and records on chart paper or on the board:

1. What did you observe?
2. What do you already know about things that fall?
3. What questions do you have?

Teacher asks pairs of students to take a minute or two to discuss and identify a question that they would like to attempt to answer.

-Give students sets of two different color small post its.

-In groups (or as a class) discuss properties that could change about falling post its: Color, mass/weight, shape, size, height dropped, orientation, etc.. Write each property on a light colored post it and place on top of paper:

-Then properties to observe/measure, place these dark colored post its on the bottom: Time, “drift” (distance from center), how many times flip over, sound, etc...

-The good experiment uses one post it from the top (cause, independent variable), and one post it from the bottom (effect, dependent variable).

Students can pick their own, or as a group, or as a class.

The rest of the experiment uses the transfer of the post its from page to page to help students organize their procedure, collect data, make a graph, find trends, and organize and write conclusions.

This model can be used throughout the year to help structure experiments.

Pages can be omitted (such as writing out a full procedure, conclusion, or drawing a graph) as needed or appropriate

Our Scientific Investigation of

Names:

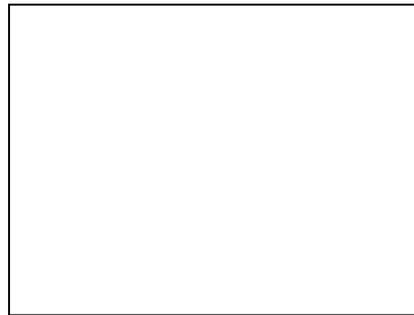
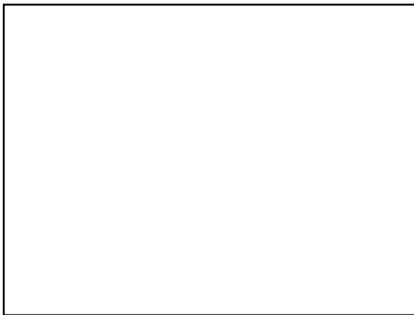
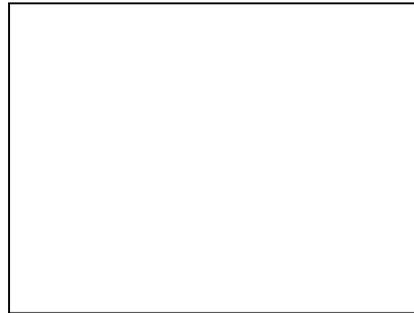
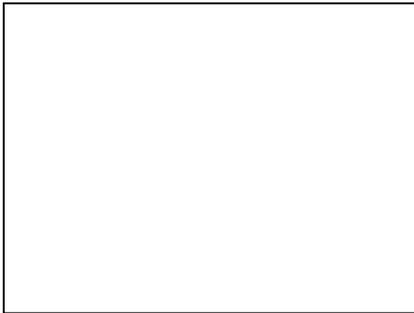
Date:

What do you already know about this topic?

What is a question that you would like to answer?

Things we can change (or vary) on purpose (*Independent Variable*) List

Write descriptions of things you can change (or vary) on purpose. Write one thing in each box.



Other things we can measure or observe (*Dependent Variable*) List

Write descriptions of other things you can measure or observe. Write one thing per box.



What is the question you and your partner would like to answer? (You may have changed your mind about the question since the last time you wrote it)

Choosing Variables

We will intentionally change

(Choose one variable from the Independent Variable list)

We will measure as the result

(Choose one variable from the Dependent Variable list)

We will NOT change any these factors so that we can conduct a fair test
(controlled variables)

Asking a Question and Making a Prediction

When I change: **(INDEPENDENT VARIABLE)**



what will happen to: **(DEPENDENT VARIABLE) ?**



Write out the question you will investigate:

We think that as we change the _____
Independent variable

the _____
dependent variable
will change.

We think this will happen because _____

The Design of Our Experiment

Scientists write a complete description of their experiments so that they can repeat the experiment and so that others can read their report and try it for themselves.

The *INDEPENDENT VARIABLE*:

The *DEPENDENT VARIABLE*:
(What we will measure or observe)

List of Materials We Will Use

What we will do (steps of our investigation):

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

Number of times we will repeat the steps
(to help us see if we are being consistent): _____

Data Collection

When we changed _____

we measured how it affected _____

Sample data collection chart:

		What happened (Dependent Variable) (include units of measure if appropriate)				
	What we changed on purpose (Independent Variable) (include units of measure if appropriate)	Trial 1	Trial 2	Trial 3	Average Of Trials	
<div style="border: 1px solid black; width: 100%; height: 100%;"></div>						
Control Group						
Experimental Group						
Experimental Group						
Experimental Group						

Graph of the Data

All graphs have a title.

Sample Graph

**What happened?
(dependent variable)**

**Include units of
measure as needed**



**What we changed
on purpose
(independent variable)**

**Include units of
measure as needed**

Are There Patterns in the Data?

When we purposely changed

(independent variable)

we observed that

(dependent variable)

changed in the following way:

Use your data to support your answer:

We know this because _____

Conclusion

Write a paragraph that summarizes your experiment. You should include statements about each of the following in this order:

1. Write the question you decided to investigate.

How _____ affects _____.

2. Write a sentence or two explaining what you did.

We changed _____ to measure _____ in this way:

3. Write a sentence or two describing what you found out by doing the experiment. Be sure to describe the data and patterns you found.

4. Write an answer to your question and describe how you know. Also explain whether or not your hypothesis was correct.

5. Explain why your results are valid and reliable.

Word Bank

You should be sure to use these words in your conclusion:

Independent variable
Dependent variable
Fair test
Hypothesis
Data
Pattern
Valid

The Next Thing I Want To Know

When scientists conduct experiments, new questions usually come into their mind. Did it happen with you?

The next thing that I want to know is: