



Lesson Plans

(for use with the award winning CD, Martian Television Invasion)

The Scientific Method

Designed for kids in Kindergarten through 6th grade.
Created through a partnership with Thaddeus Rex, Inc. and
the Indianapolis Symphony Orchestra's Education Department.

T-Rex Lesson Plan

The Scientific Method

Grade Levels: 4-5

Designed for use with the Martian Television Invasion CD

Objective: Students will learn to use the Scientific Method by experimenting with percussive sounds of classroom objects.

- 1) Class Discussion: Ask students if they know what scientists do. What kind of things do they study? Make a classroom list on the board. (Note: Scientists study everything! From animal behavior to body odor to what kind of cars people want to buy!)
- 2) Tell the students that to study anything scientists all over the world use what is called the "Scientific Method."
- 3) Write the following words on the board:

Observation

Hypothesis

Prediction

Experiment

Theory

Tell the students they are going to listen to a song about the Scientific Method. Ask them to listen for what each of the above words means. It may be necessary to listen to the song a few times to allow students to capture all of the information.

- 4) Classroom Discussion: What does the song tell us about each of the words on the list? What else do you know about these words?

Example:

Observation

be curious, wonder why

observation requires noticing with all of your senses

ask questions about what you observe

Hypothesis

real good guess to explain something

Prediction

tell what will happen next based on the hypothesis

Experiment

run tests to see if the prediction is correct and the hypothesis true

Theory

strong hypothesis

never failed inside any experiment

passed every test you can imagine

- 5) As a class do an observation exercise. Ask students to observe everything they can about a piece of plain paper using their senses.

What does it look like?

What does it sound like?

What does it smell like?

What does it feel like?

- 6) Teacher Demonstration: Ask the students to watch as you hold a piece of paper in the air with one hand and move the other hand very slowly into it (hitting it softly). How would they describe the sound it makes?
- 7) Tell students: “The question that I have is, how can I make the sound loud or soft? Have the class create a hypothesis (a good guess) about what makes the sound louder or softer. (i.e. your hands original distance from the page, speed at which you hit it, the part of your hand that is used, how many times you hit it, etc.)
- 8) Make a prediction based on the class hypothesis. “If I hit the paper _____ I predict that it will be louder.”
- 9) Experiment: Test the hypothesis. Is the prediction accurate for the piece of paper? When you find a result that confirms the hypothesis (i.e. hitting the paper faster increases the volume), apply the test to other classroom objects (a desk top, book, trash can). “If I hit the _____ faster it gets louder.”
- 10) Have the class formulate a theory that has passed all of your tests (i.e. The volume of an object being hit increases as the speed of the hit increases.)

NOTE: Scientists must thoroughly test a hypothesis before it can become a theory (assumed to be a fact) because it is very embarrassing and bad for a scientists career if they proclaim a new theory to the world and are later proven wrong. That’s why scientists work so hard to try and prove their own hypothesis wrong. They figure if they can’t prove it’s wrong, no one else can either, and if no one can prove a hypothesis wrong, it must be right. Right!?

Extension: Listen to the song again. Have students write a multi-paragraph essay about how they applied each aspect of the Scientific Method in their classroom.

This classroom lesson plan was created in collaboration with the Indianapolis Symphony Orchestra Education Department.