



# Module 2: Designing Your Experiment

Page 1 of 3

## Video 1: What is a Model System

Gemma's question is about dinosaurs, specifically two of her favorite dinosaurs from the movie. Her hypothesis was:

If the spinosaurus and t-rex lived in the same area, then the spinosaurus lived in the water so the two would not compete.

In order to test this hypothesis she needed to develop a model system.

What is a model system?	
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Her model system involves studying dinosaur fossil samples and comparing the amounts of heavy oxygen.

Dinosaur	Expected to live...	Relative Amount of Heavy Oxygen (Write Higher or Lower)
T-Rex	On Land	
Spinosaurus	In the Water	

Therefore, Gemma is using quantitative data for her experiment. What are you doing?

What type of data are you collecting, qualitative or quantitative?	
Why?	



# Module 2: Designing Your Experiment

Page 2 of 3

## Video 2: What are Experimental Variables?

Gemma now described to us the definition of a variety of variables. Lets review:

Please circle what type of variable each item serves as in Gemma's experiment

Item	Type of Variables		
Amount of Heavy Oxygen	Independent Variable	Dependent Variable	Confounding Variable
Type of Dinosaur	Independent Variable	Dependent Variable	Confounding Variable
Broken Machine	Independent Variable	Dependent Variable	Confounding Variable

What are the variables you have in your experiment?

What are your independent variables?

What are your dependent variables?

What are some potential confounding variables you may have?



# Module 2: Designing Your Experiment

Page 3 of 3

## Video 3: How do we conduct an experiment safely?

Gemma just walked us through 6 rules to follow to conduct experiments safely. Go through the following lab situations and suggest how you would improve the situation to make it more safe.

Lab Situation	What improvements would you make?
<p>Bobby wanted to try the experiments with salt and fire. His mom was at his brother's soccer game and so he found the materials himself, but could not find his lab coat. He did the experiment outside alone.</p>	
<p>Gemma was trying to analyze the dinosaur teeth samples at the lab. She started preparing her samples but got hungry so she ate her sandwich and watched the new spiderman movie while also monitoring the reaction of her samples.</p>	

Lets now consider what things you need to do to make your experiments safe

<p>What things in your experiment could be unsafe/dangerous?</p>	
<p>What personal protective equipment (PPE) are you going to need?</p>	