

# Non-Testable Question - Model or Simulation

## What Makes a Good Scientific Model?

A good model is:

- based on reliable observations.
- able to explain the characteristics of the observations used to formulate it.
- able to explain phenomena that were not used to develop the model.
- able to be refined when new, credible, conflicting observations arise.
- limited and simplifies a concept, theory, or object.
- *physical* (2-dimensional or 3-dimensional) or
- *conceptual* (digital or print) – To be considered for the District Science Showcase, it must be an original (student-created) model.
- a computer or physical simulation of a natural phenomenon.

From: <https://www.carolina.com/teacher-resources/Interactive/how-to-make-a-good-scientific-model/tr39525.tr>

For more background information on using/creating scientific models, read [this article](#) from KidzSearch Encyclopedia.

**Research Question** – A question that explains what was studied

(\*S indicates a suggested *simulation* - movement or manipulation of a model.)

### Possible Research Topics:

- What objects are in our solar system?
- How can I model the water cycle?
- How does the Moon revolve around the Earth, while the Earth revolves around the Sun? \*S
- How are arthropods and reptiles alike, and how are they different?
- What happens when an environment is polluted? \*S
- What happens when a river erodes the land? \*S
- How do a plant's roots prevent erosion?
- How can a plant's roots cause weathering?
- What happens when we add more mass to a wagon in a PHET web-based simulation? \*S
- What natural resources are needed to build a house in Minecraft? \*S

## What Else to Consider When Working with a Scientific Model

- **Research** Provide scientific facts to support the creation of the model or simulation.
  - *What natural world object or process does your model represent?*
  - *What characteristics of your object/process are included in your model/Simulation?*
  - *What data influenced the development of your model?*
- **Materials** List all the items that were used to complete the investigation.
- **Visual Representation** Provide your model or simulation **OR** a representation – picture, photo, drawing, etc. – of the model or simulation.
- **Explanation of the Model and/or Simulation** Describe the object or process the model represents or how the simulation works.
- **Conclusion** Summarize your findings, providing an answer to your research question.
- **Real World Uses Relating to Research**  
Include ways that the information might be used or be helpful in real-world scenarios.

