

Using Models Effectively

SD Science Content Standards:

K-12 Nature of Science

K-12 Science, Technology, Environment, and Society

Materials:

Various science models – many are available to borrow from ESA 2 Lending Library

Lesson Plan:

Help students make sense of using models in the classroom. Students can develop misconceptions of the “real thing” based solely on models used in and for the classroom. Teach students how to analyze the quality and usefulness of models while guiding students towards higher order thinking skills.

Students analyze by comparing the model to the real thing or by comparing different models of the same thing. This can be done at individual, small-group, or whole class level. Pose questions for analyses:

Younger students:

How is our model _____ like a real _____?

How is it not like a real _____?

How could we make it more like a real _____?

Older students:

How is the model similar to that which it represents?

How does the model differ from that which it represents?

What sort of misunderstandings could this particular model lead to if taken too literally?

How might the model be improved?

Expansion Questions:

Which model is most like that which it represents?

Which model is easiest/hardest to understand? What makes it that way?

Which model requires the most explanation from the teacher?

What are the advantages and disadvantages of multiple models?

Can you think of a better model?

Students can further develop understandings by designing, building, and explaining their own models.