

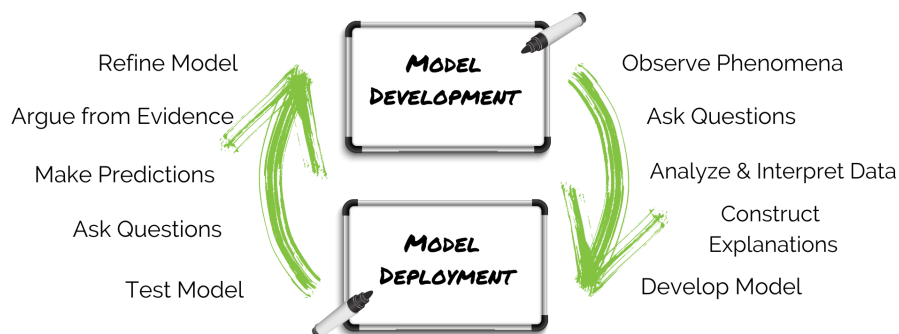
MODELING INSTRUCTION

Teachers transforming STEM education through Modeling Instruction

What is Modeling Instruction?

Modeling Instruction is a **guided-inquiry** approach to teaching science that organizes instruction around a coherent storyline of model development. This method provides content instruction while students are immersed in the process of *doing* science. Research has shown students in Modeling Instruction classrooms perform significantly better on measures of conceptual knowledge when compared to similar students in traditional classrooms.

How does Modeling Instruction work?



Modeling Instruction works within a flexible curriculum design that can be used in a variety of disciplines, from introductory classes through Advanced Placement courses. Modeling teachers act as facilitators and help students **construct explanations** and **defend their conclusions with evidence**.

In a Modeling classroom:

- ❑ Instruction is organized into modeling cycles which move students through all phases of model development, evaluation, and application in concrete situations.
- ❑ The teacher sets the stage for student activities to establish common understanding of a question to be asked. Then, in small groups, students collaborate in planning and conducting experiments to answer or clarify the question.
- ❑ Students present and justify their conclusions in oral and/or written form, including a formulation of models for the phenomena in question and evaluation of the models by comparison with data.
- ❑ Technical terms and concepts are introduced by the teacher only after students display conceptual understanding to sharpen models, facilitate modeling activities, and improve the quality of discourse.

What standards are addressed in Modeling Instruction?

Modeling Instruction is very well-aligned with the three dimensions of the Next Generation Science Standards. Students are involved daily with the science practices, disciplinary core ideas, and Modeling Instruction has a primary focus on the crosscutting concepts of systems and system models and energy and matter. Students will also leave a Modeling classroom with much improved 21st Century Learning Skills – critical thinking, collaboration, communication, and creativity.

How can teachers learn more about Modeling Instruction and professional development?

AMTA provides many opportunities for high-quality professional development throughout the spring and summer, both in-person and virtually. Visit www.modelinginstruction.org or email engage@modelinginstruction.org for more information.