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# Developing and Using Models to Construct Scientific Knowledge

**Overview:** Modeling is a core practice for scientists as they use a variety of models to develop, refine, and communicate their ideas. In this workshop, participants will actively engage in a Pre-AP model lesson with an attention to modeling. They will examine how the Pre-AP shared principles and science areas of focus support student engagement in science practices such as modeling and scientific argumentation. Participants will then consider how they can apply new learning within their own classroom context to support students in constructing and then modifying their own scientific knowledge as new information becomes available.

**Teachers will:**

- Connect the Pre-AP science area of focus, attention to modeling, to student engagement in constructing and modifying scientific knowledge.
- Plan to support student construction of scientific knowledge through attention to modeling and incorporation of the Pre-AP shared principles.

## Agenda at a Glance (In-Person)

<p style="text-align: center;"><b>Welcome and Opening</b></p> <p style="text-align: center;"><i>Establish a collaborative learning environment and introduce, at a high level, the Pre-AP Program.</i></p> <p style="text-align: center;">45 minutes</p>
<p style="text-align: center;"><b>Why Modeling?</b></p> <p style="text-align: center;"><i>Connect personal experience to the process of modeling through professional reading and dialogue.</i></p> <p style="text-align: center;">45 minutes</p>
<p style="text-align: center;"><b>Zooming In – Pre-AP Science Areas of Focus and Shared Principles</b></p> <p style="text-align: center;"><i>Examine Pre-AP science areas of focus and shared principles to determine how they support student construction of scientific knowledge through modeling.</i></p> <p style="text-align: center;">60 minutes</p>
<p style="text-align: center;"><b>Attention to Modeling in Action</b></p> <p style="text-align: center;"><i>Experience a Pre-AP model lesson from a student perspective and analyze evidence of how the development and revision of models support student construction of scientific knowledge.</i></p> <p style="text-align: center;">120 minutes</p>
<p style="text-align: center;"><b>Attention to Modeling in Your Classroom</b></p> <p style="text-align: center;"><i>Connect attention to modeling and the Pre-AP shared principles to the participant’s own classroom instruction.</i></p> <p style="text-align: center;">40 minutes</p>
<p style="text-align: center;"><b>Reflection and Closing</b></p> <p style="text-align: center;"><i>Synthesize the day’s learning to connect best practices and support participant action steps.</i></p> <p style="text-align: center;">20 minutes</p>

## Agenda at a Glance: One-Day Model (Virtual)

Below is a sample agenda of a Pre-AP Readiness Workshop scheduled for one day. One-day workshops are 6 hours total (5 hours of instructional time, 1 hour of break time). There is a maximum of 28 participants per workshop.

Day One Schedule – 6 hours	
<b>Segment 1</b>	Welcome and Introduction to Pre-AP
<b>Segment 2</b>	Exploring the Pre-AP Shared Principles and Areas of Focus
<b>Segment 3</b>	Model Lesson and Classroom Application
	Lunch
<b>Segment 4</b>	Model Lesson and Classroom Application
<b>Segment 5</b>	Collaborative Planning
<b>Segment 6</b>	Group Share
<b>Segment 7</b>	Reflection and Next Steps

## Agenda at a Glance: Two-Class Model (Virtual)

Below is a sample agenda of a Pre-AP Readiness Workshop scheduled across two classes. Participants meet twice within two weeks for 2 hours 30 min each class. There is a maximum of 28 participants per workshop.

Class One Schedule – 2.5 hours		Class Two Schedule – 2.5 hours	
<b>Segment 1</b>	Welcome and Introduction to Pre-AP	<b>Segment 4</b>	Welcome Back
		<b>Segment 5</b>	Model Lesson and Classroom Application
<b>Segment 2</b>	Exploring the Pre-AP Shared Principles and Areas of Focus	<b>Segment 6</b>	Collaborative Planning
<b>Segment 3</b>	Model Lesson and Classroom Application	<b>Segment 7</b>	Group Share
		<b>Segment 8</b>	Reflection and Next Steps