



# STAC

**SCIENCE & TECHNOLOGY  
ADVANCEMENT CENTER**

## **Multimodal AI for Science: Using Images, Data, and Diagrams to Deepen Understanding**

NSTA AI in Education Pathway

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# About Us

The ***Science & Technology Advancement Center (STAC)***, is a nonprofit organization that works with states, districts, and companies to design, develop and implement high quality science programs. We focus on integrating new and emerging technologies in classroom settings to support 3-dimensional learning.

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# Why Multimodal AI Matters

*Expanding Entry Points into Science Thinking*

Students often:

- Describe without explaining
- Misread graphs/diagrams
- Fail to connect representations

Multimodal AI Supports can Help Students:

- Interpret images, graphs, diagrams, datasets
- Generate initial explanations
- Surface patterns students may miss

# Capabilities in Action

“Describe what’s happening in this image”

“What patterns do you see in this dataset?”

“How does this graph connect to the diagram?”

**AI outputs typically can support:**

- Accurate observations
- Pattern recognition
- Occasionally identifying flawed or superficial explanations



# The Instructional Shift

*From Answer Getting → Sensemaking*

Don't ask: "Is the AI right?"

Ask:

- "What is the *AI not noticing*?"
- "Where is the reasoning incomplete?"
- "What evidence supports or contradicts this?"

**Introduce a simple routine:**

**Critique → Revise → Extend**

**Critique:** What's missing or incorrect?

**Revise:** Improve the explanation

**Extend:** Add deeper reasoning or new data



# Practical Moves for Teachers

## AI as Observation Partner

Prompt: “What do you notice in this image?”

Students verify/add observations

## AI as Pattern Finder

Prompt: “What trends appear in this dataset?”

Students confirm with evidence

## AI as Explanation Draft

Prompt: “Explain this phenomenon”

Students critique and revise

## Representation Translator

“How does this graph relate to this diagram?”



# Strengths, Limitations, and Takeaways

## *Using Multimodal AI Responsibly*

### **Strengths:**

- Rapid interpretation of complex inputs
- Multiple entry points for diverse learners
- Supports early-stage sensemaking

### **Limitations:**

- Can misinterpret visuals/data
- Often lacks causal depth
- May sound authoritative but be wrong

### **Takeaways:**

- AI supports—not replaces—scientific reasoning
- Design tasks where students:
  - Evaluate
  - Revise
  - Build explanations

**Where in your next unit could AI help students think, not just answer?**

# Multimodal AI for Science







# Thank you!

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# NSTA Survey Session 12

