



# STAC

**SCIENCE & TECHNOLOGY  
ADVANCEMENT CENTER**

## Planning and Carrying Out Investigations With AI: Variables, Procedures, and Fair Tests

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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# Session Goals

By the end of this session, you will be able to :

- identify how AI can support investigation planning without replacing student thinking
- help students evaluate variables, procedures, and fair tests
- design a task where students critique and improve an investigation plan



# Why Investigation Planning Requires Critical Thinking Skills

Students must:

- Identify independent, dependent, and controlled variables
- Design procedures that produce reliable, repeatable results
- Anticipate and prevent confounding factors

Common challenges:

- Overlooking variables
- Missing controls
- Following procedures without understanding reasoning



# Planning and Carrying out Investigations with AI

- AI can generate procedures quickly
- but a generated procedure is not the same as a well-reasoned investigation
- students still need to decide what to test, what to control, and whether the design is fair
- For Planning & Carrying Out Investigations, the thinking is in the choices



# How AI Can Help

AI provides scaffolding by:

1. Suggesting variables to consider
2. Highlighting missing steps or procedural flaws
3. Offering multiple approaches to test the same phenomenon

AI can support planning, but students must evaluate and justify design decisions.

# Using AI to Pressure Test an Investigation Plan



**Tool Agnostic. Ready  
to Use.**





# Thank you!

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# NSTA Survey Session 6

