

Experimenting with “Ask, Test, Repeat”

Three steps for scientific inquiry.



Curriculum Connections

- A1.** Oral and Non-Verbal Communication (A1.1, A1.2, A1.3)
- A2.** Foundations for Reading and Writing (A2.5, A2.6)
- A4.** Expressing Ideas and Creating Texts (A4.1)
- B12.** Scientific Investigation and Engineering Design (B12.1, B12.2, B12.3, B12.4, B12.5)
- C15.** Self-Regulation (C15.3, C15.4)
- D19.** Identity and Self-Image (D19.1, D19.3)

Key Takeaways

- *Ask, Test, Repeat* is a framework for scientific inquiry and engineering design processes.
- Every scientific inquiry begins with a question.
- Asking questions is a multipurpose skill that can be improved with practice.
- Observation and prediction are essential parts of the process.
- Trial-and-error is how science is supposed to be done.
- Normalize “failure” and remember all outcomes are opportunities to learn.
- Students’ inherent curiosity and innate scientific approaches can help them see themselves as STEM-capable.

Strategies & Tips

- **Provide question starters for inspiration.**
Who, what, when, where, why and how are the starting points of scientific inquiry.
- **Create opportunities to ask and model forming questions.**
Model asking questions and give students the opportunity to generate their own questions during activities like reading.
- **Use STEM tools and vocabulary in a variety of activities.**
Using tools and language associated with STEM in a wide range of activities can help a student develop their STEM identity.
- **Practice making and recording observations.**
Bolster skills by creating and labelling diagrams, drawing pictures, writing keywords or other activities focused on documenting an experience.
- **Reflect on both process and outcome.**
Ask questions like “what surprised you?” or “what would you do differently?” as a reminder that all results have value. Avoid questions like “did your experiment work?” that imply science is about expected results rather than discovery.
- **Repeat your experiment.**
When possible, give students the chance to try the experiment again with changes that reflect what they’ve learned.

