

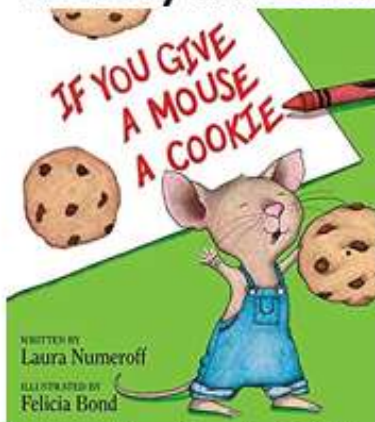
Crosscutting concepts should not be taught in isolation; repeated use of them within context of instruction is most effective.

Crosscutting Concept #2

Cause and Effect: Mechanism and Prediction

- Events have **causes that generate observable patterns**
- Simple tests can be designed to **gather evidence to support or refute** student ideas about causes.

Literacy Infusion:



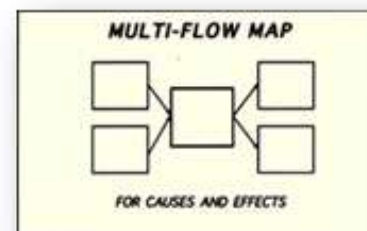
What are the effects of giving a mouse a cookie? Use this great story to teach Cause and Effect! Chart your students' questions and wonderings!

More Information

- Events have **causes**, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering
- Causality helps us understand things as simple as "If I don't water the plants they'll die."
- When teachers and parents ask children to explain "why" and "how" something works, they are giving the child the opportunity to think like scientists.
- New research has found that when children are asked to come up with explanations (even just to themselves) while learning, they are able to connect new ideas with prior Cause-and-Effect knowledge. By forming their own generalizations, children can more efficiently understand new information.

How Could I Teach That?

- If you want help kids learn better, **ask them to explain what they are learning in their own words**. Practice sequencing explanations and introducing them to sequence words such as First, Next, Then.
- Use www.seesaw.com to have students draw what they are thinking. Try the different tools to collect products of learning.
- Use a Multi-Flow Cause-and-Effect Thinking Map to support the teaching/visual cause-and-effect. Make a giant cause-and-effect graphic to place on the wall or floor so that you can teach this concept daily throughout the year. Use different color paper plates for "Causes" and "Effects" to teach the difference between the two.



These concepts connect knowledge across the science disciplines and have value to both scientists and engineers because they identify universal properties and processes found in all disciplines.