

Using Science and Environmental Investigations to Excite Students in Learning

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Why does science education matter?

**Why should we care about
teaching science?**

Why is science in general important?



Why does ELEMENTARY Science Matter?

STEM occupations are projected to grow by 17% from 2008-2018, compared to 9.8% growth for non-STEM occupations.

STEM workers command higher wages, earning 26% more than their non-STEM counterparts

Why does ELEMENTARY Science Matter?

61% of scientists say they first became interested in science before the age of 11.

Children who are not exposed to quality science experiences before adolescence are less likely to choose a career in science.

Why does ELEMENTARY Science Matter?

Science appeals to a wide variety of learning styles:

- **hands-on/tactile,**
 - **visual,**
 - **auditory,**
 - **social,**
 - **kinesthetic**

Why does ELEMENTARY Science Matter?

Science appeals to a wide variety of students

- **Gender**
- **Minorities**
- **English Language Learners**
- **Socioeconomic status**

Why does ELEMENTARY Science Matter?

85% of teachers would dedicate more time to hands-on science lessons if given the opportunity, but are prevented due to lack of time or other educational priorities.

Afterschool Programs can help!

Why does ELEMENTARY Science Matter?

42% of students say Science is the subject they are most interested in!

Social Studies (33%)

Math (13%)

English (7%)



A landscape photograph featuring a vibrant green field in the foreground, a single large tree on the left side, and a bright blue sky filled with soft, white clouds. The text is overlaid in the center of the image.

Science is fun!

Science is engaging!

Science helps you connect with your students!

Science leads to critical thinking, productive adults!



What is science?

Is it vocabulary?

Is it facts?

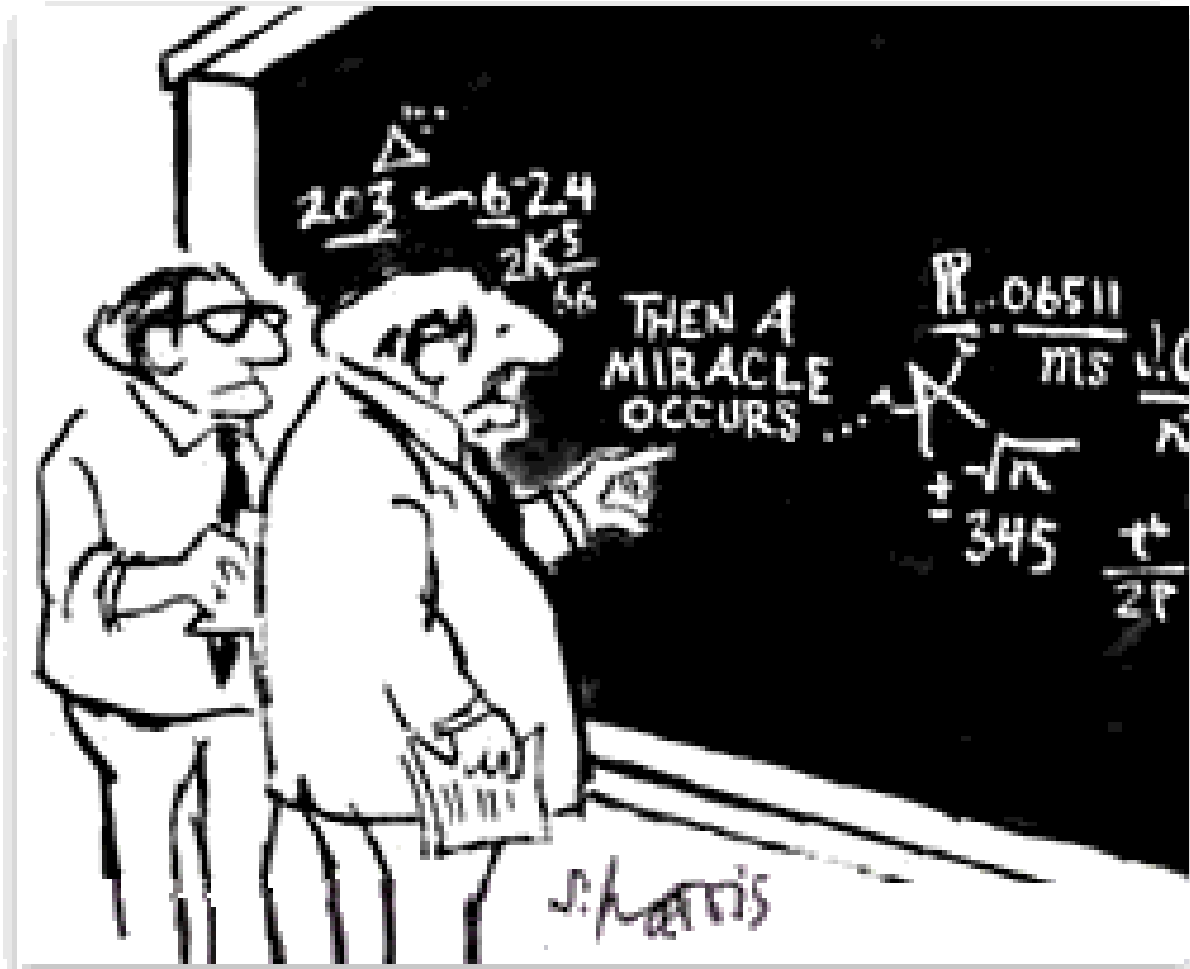
It is a process?

What is science?

SCIENCE IS LIKE ORDINARY
MAGIC, BUT PERFORMED
BY ACADEMICS.

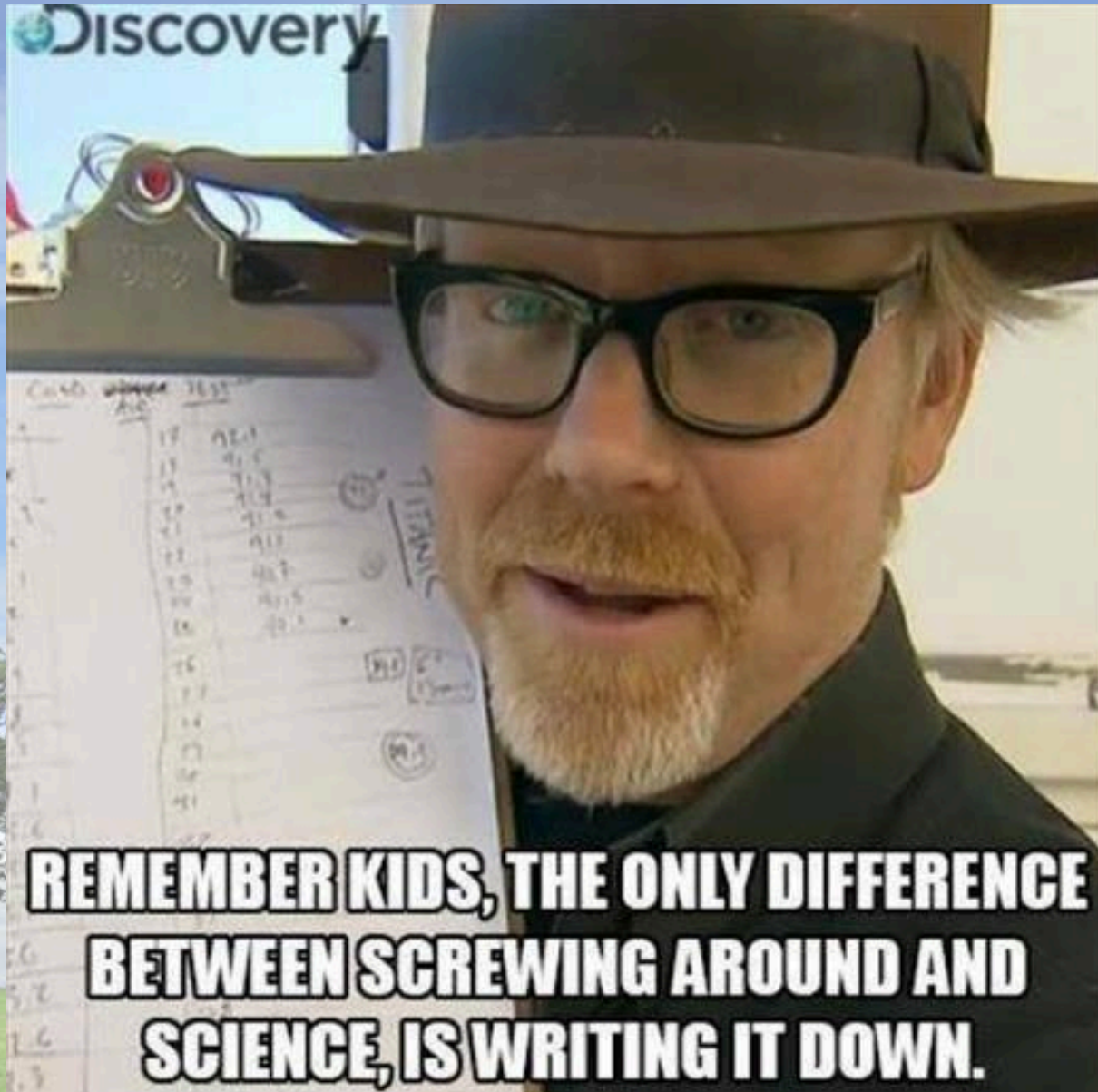


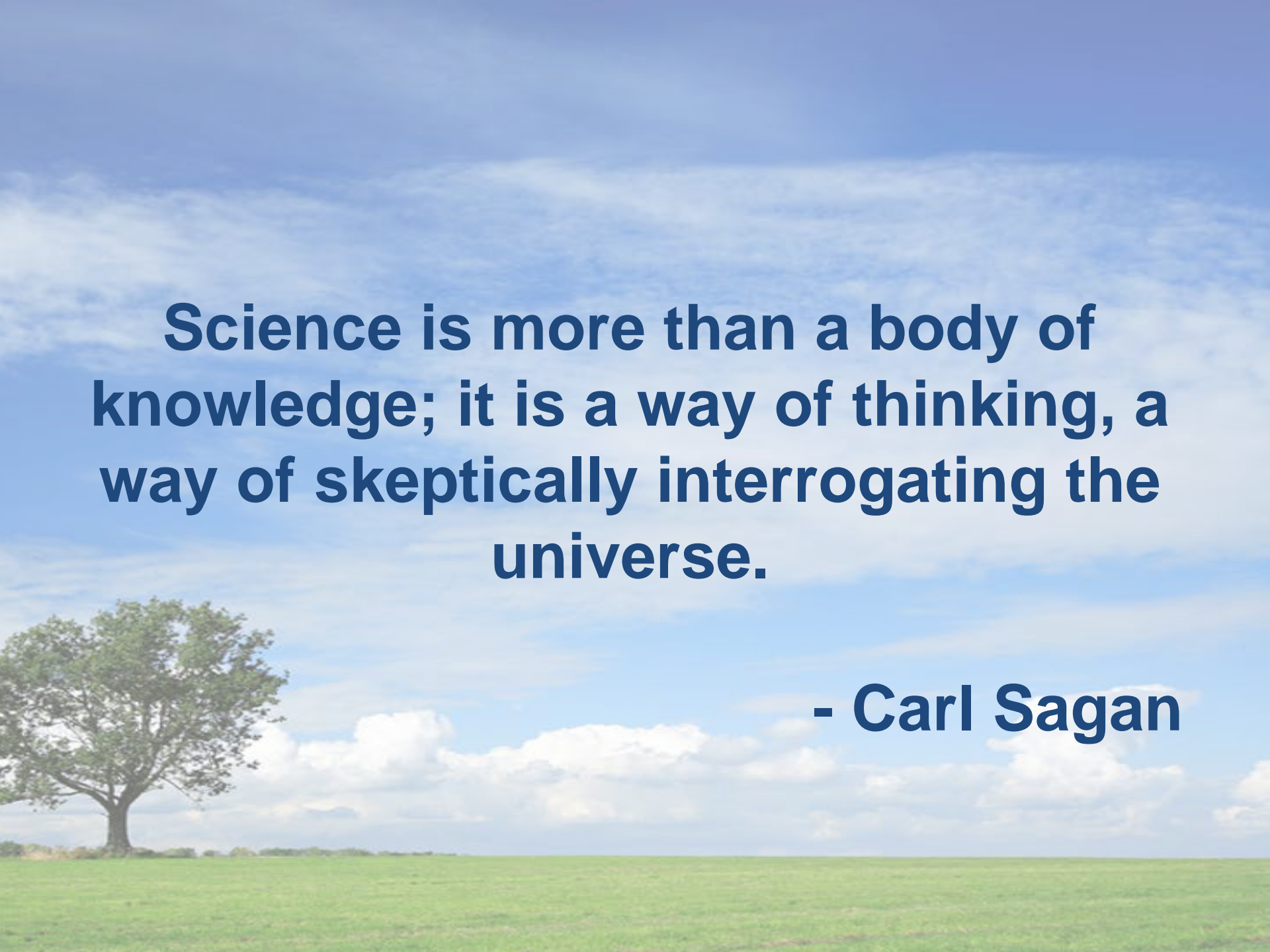
What is science?



"I THINK YOU SHOULD BE MORE EXPLICIT
HERE IN STEP TWO."

What is science?





Science is more than a body of knowledge; it is a way of thinking, a way of skeptically interrogating the universe.

- Carl Sagan

**Vocabulary and facts are used to
complete the process of science...
they are not, in and of themselves,
science.**



Think about the scientific process!



Think about the scientific process!

1. Make an observation



Think about the scientific process!

1. Make an observation
2. Ask a Question



Think about the scientific process!

1. **Make an observation**
2. **Ask a Question**
3. **Do Background Research**



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4. **Construct a Hypothesis**



Think about the scientific process!

1. **Make an observation**
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4. **Construct a Hypothesis**
5. **Test Your Hypothesis by Doing an Experiment**

Think about the scientific process!

1. **Make an observation**
2. **Ask a Question**
3. **Do Background Research**
4. **Construct a Hypothesis**
5. **Test Your Hypothesis by Doing an Experiment**
6. **Analyze Your Data and Draw a Conclusion**

Think about the scientific process!

1. **Make an observation**
2. **Ask a Question**
3. **Do Background Research**
4. **Construct a Hypothesis**
5. **Test Your Hypothesis by Doing an Experiment**
6. **Analyze Your Data and Draw a Conclusion**
7. **Communicate Your Results**

Think about how kids learn!

1. **Make an observation...** When I drop something off my highchair, the dog eats it.
2. **Ask a Question...** I wonder if the dog would eat my broccoli?
3. **Do Background Research...** The dog eats my carrots, peaches, hamburger. So, broccoli seems logical.
4. **Construct a Hypothesis...** The dog will eat my broccoli.
5. **Test Your Hypothesis by Doing an Experiment...** Drop the broccoli off the highchair. Wait for the dog to come over. The dog unfortunately does not eat my broccoli.
6. **Analyze Your Data and Draw a Conclusion...** Dogs do not like broccoli.
7. **Communicate Your Results...** Point to the broccoli is now on the floor. Scream!

Think about fixing the copier!

1. **Make an observation... The copier is broken**
2. **Ask a Question... Why is it broken?**
3. **Do Background Research... There does not seem to be a jam in the paper feeder... The toner is full.**
4. **Construct a Hypothesis... I don't think there is any paper.**
5. **Test Your Hypothesis by Doing an Experiment... Open the paper drawer to check the paper level.**
6. **Analyze Your Data and Draw a Conclusion... There is no paper, add paper.**
7. **Communicate Your Results... Tell everyone the copier is now fixed.**

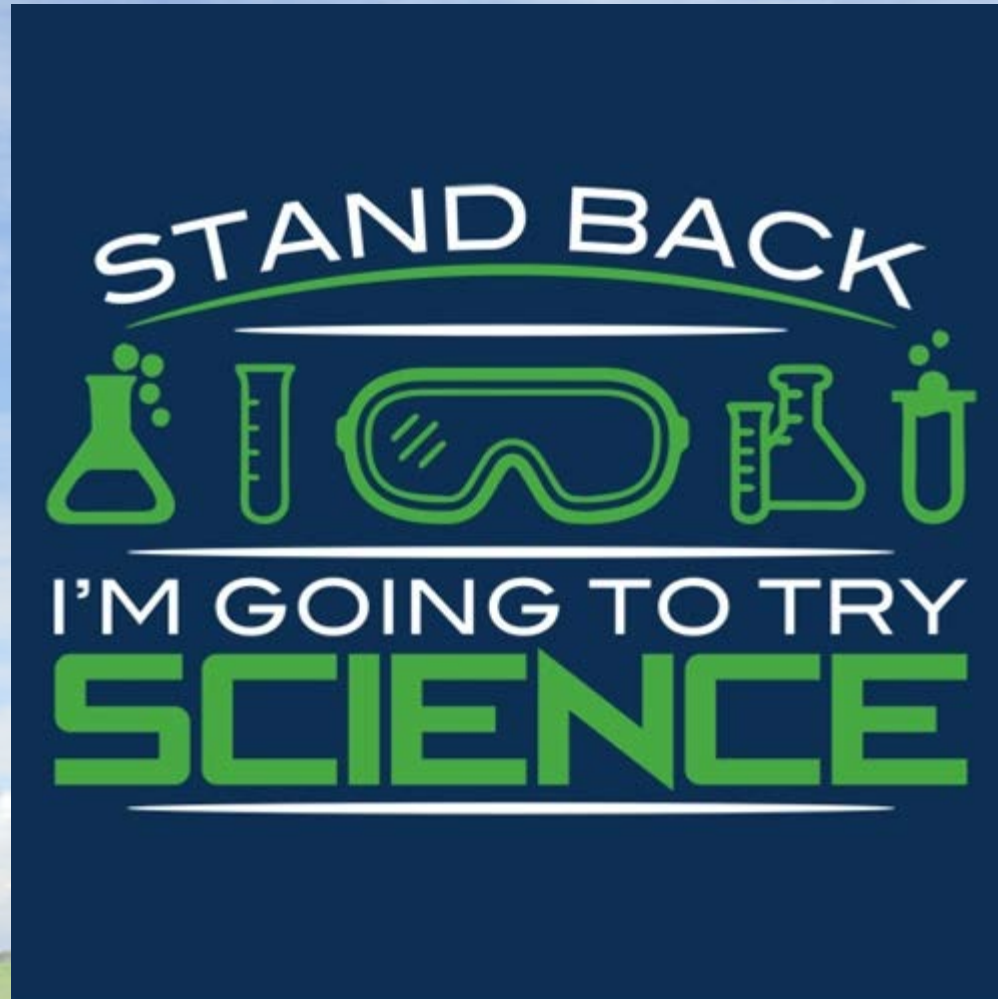
Why Science?

**Science is in EVERYTHING
we do!**

**We need kids who know how to do science...
Not just the facts.**



Let's do science!



Think about the scientific process!

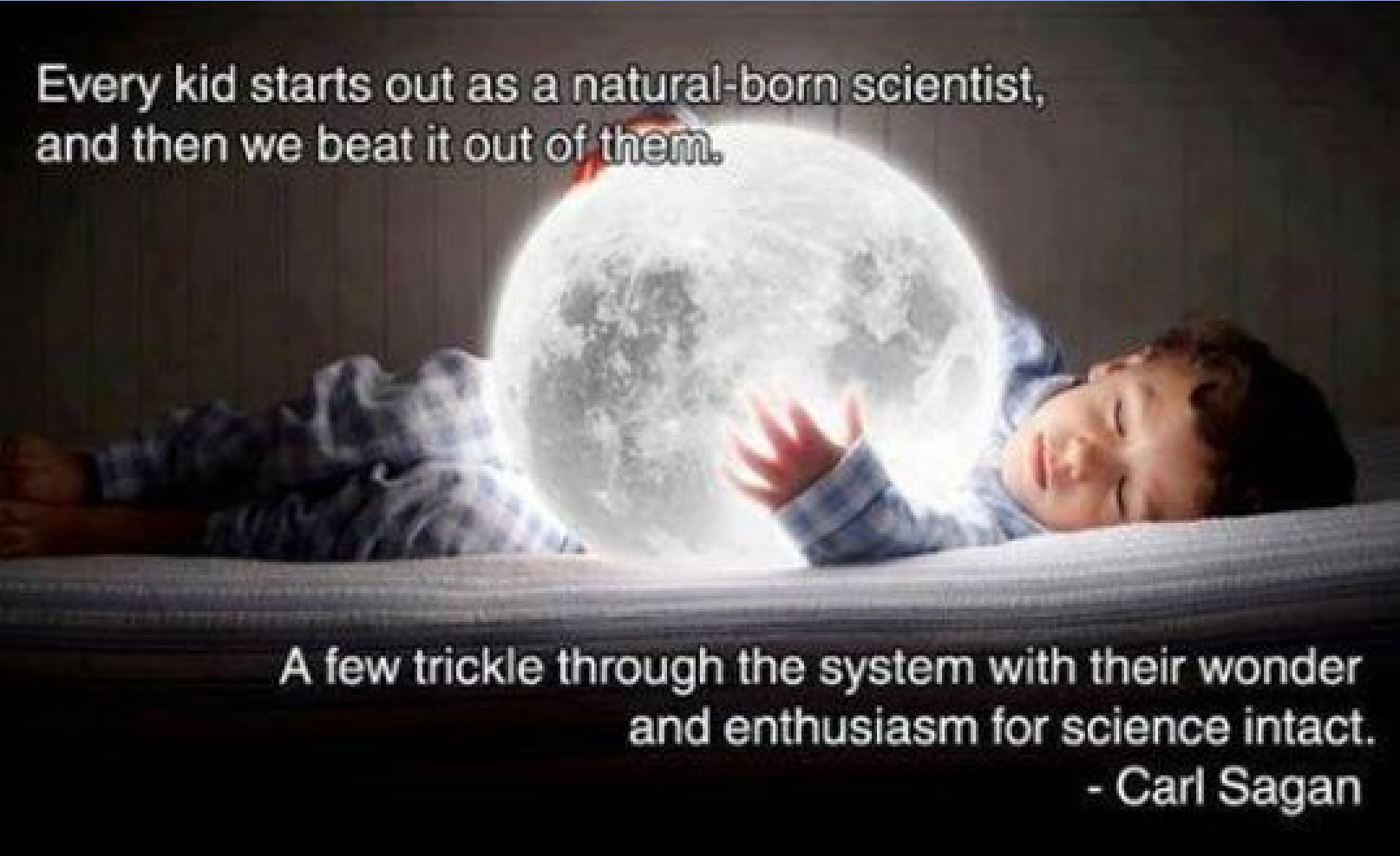
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Examples of LONG TERM STEM Investigations

- **What do worms eat? Composting bins**
- **What birds live on our school grounds. Site survey**
- **What do specific birds eat? Bird feeders**
- **What flowers attract more insects? Garden**
- **What do seeds need to grow? Seeds, Garden**
- **How do we build a bat house? Engineering & building**

Examples of LONG TERM STEM Service Learning

- **How can we help pollinators?**
 - **Pollinator garden.... Planning? Where? What species? Funds?**
- **How can we fix the giant lake formed when it rains?**
- **How can we increase biodiversity on the school grounds?**
- **How can we get the bats out of the school, while still keeping them in the ecosystem?**

A young child with dark hair, wearing a blue long-sleeved shirt, is lying in bed. The child is holding a large, glowing, translucent globe of the Earth. The globe is illuminated from within, showing the continents and oceans. The child's eyes are closed, and they appear to be in a state of peaceful contemplation or sleep. The background is a dark, wood-paneled wall. The overall scene is set against a backdrop of a bright blue sky with scattered white clouds and a green field in the foreground.

Every kid starts out as a natural-born scientist,
and then we beat it out of them.

A few trickle through the system with their wonder
and enthusiasm for science intact.
- Carl Sagan