



count · play · explore

Exploring STEM: Engaging Young Learners

Jon Dueck
jdueck@fcoe.org

countplayexplore.org

Lesley Gates
lgates@fcoe.org

 @lgates_science

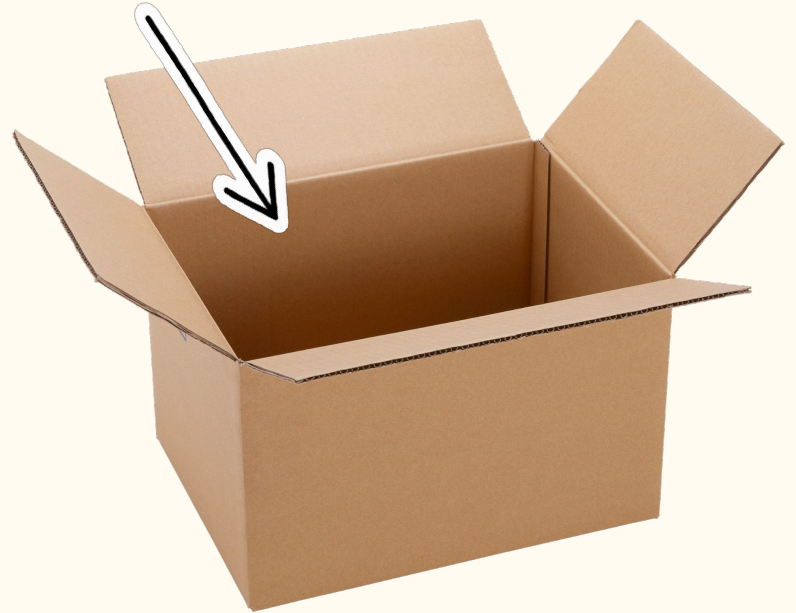
Let's EXPLORE!

Will it roll?

Objects that roll



Objects that do not roll



Guiding Questions

- What happened when you pushed the _____?
- Why do you think the _____ rolled?
- Can you show me all the ones that roll?
- Prediction/Pattern: Do you think the _____ will roll?
 - Shape?
 - Material?
 - How hard did we push it?



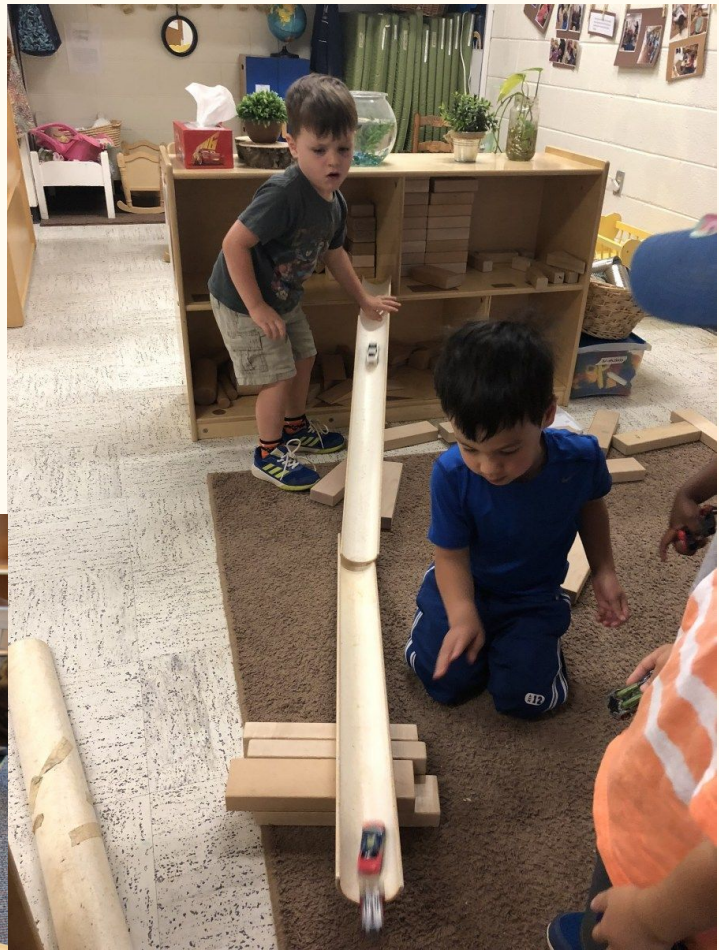
Extension Activity

Go on a “ROLLING” scavenger hunt, inside and outside the classroom!



Extension Activity

Centers: Provide a tray with different objects along with objects (such as blocks) to build ramps. Does it roll?



Toddler

What do
you notice?



Toddler

What do
you notice?



Preschool



Extension Activity - STEAM

ART CONNECTION: Marble Painting!
Painting with round and not-so-round objects

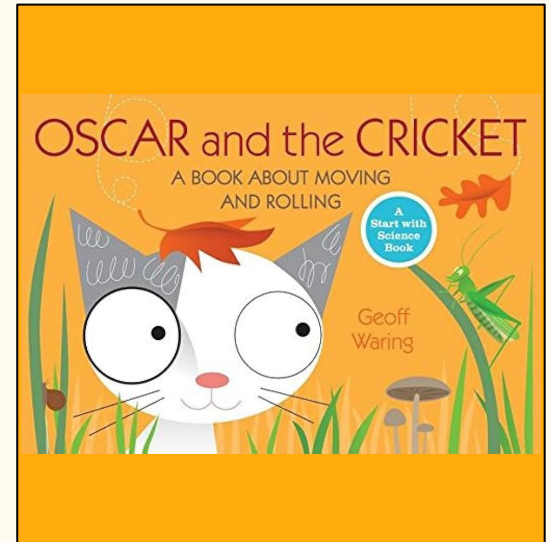
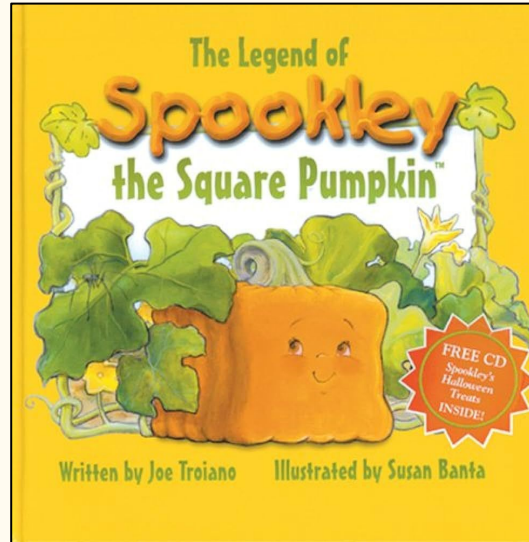
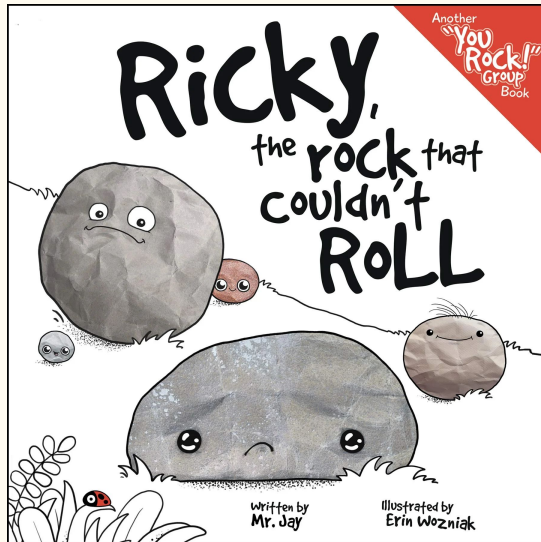


Materials:

- Tray or pie pan
- Piece of blank paper that fits tray
- Tape
- Paint
- Objects that roll (marbles)
- Objects that don't roll so well (pennies)

Extension Activity

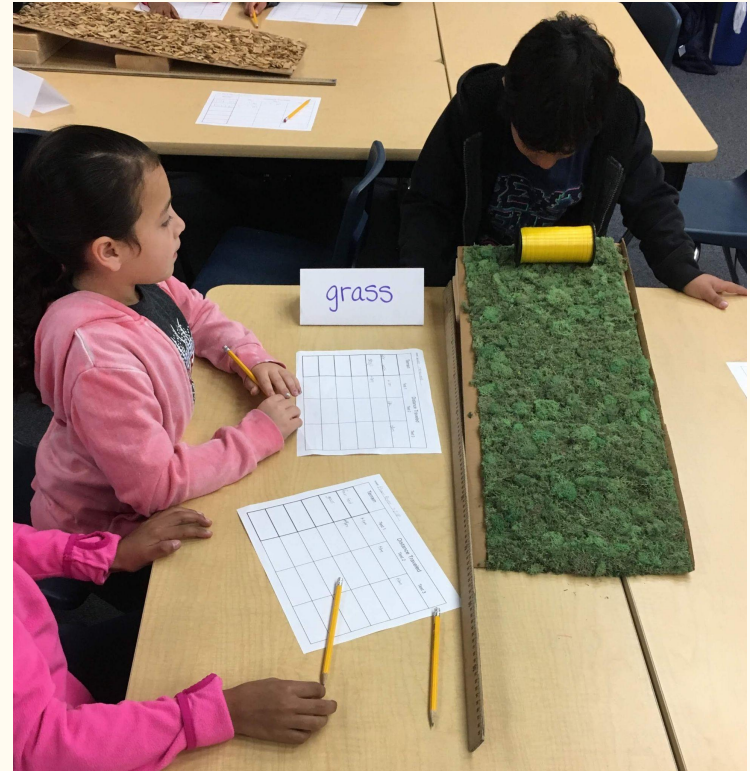
Literacy connections through children's books.



Concept Development for 3rd Grade

How do we deepen the concept of objects that roll for older students?

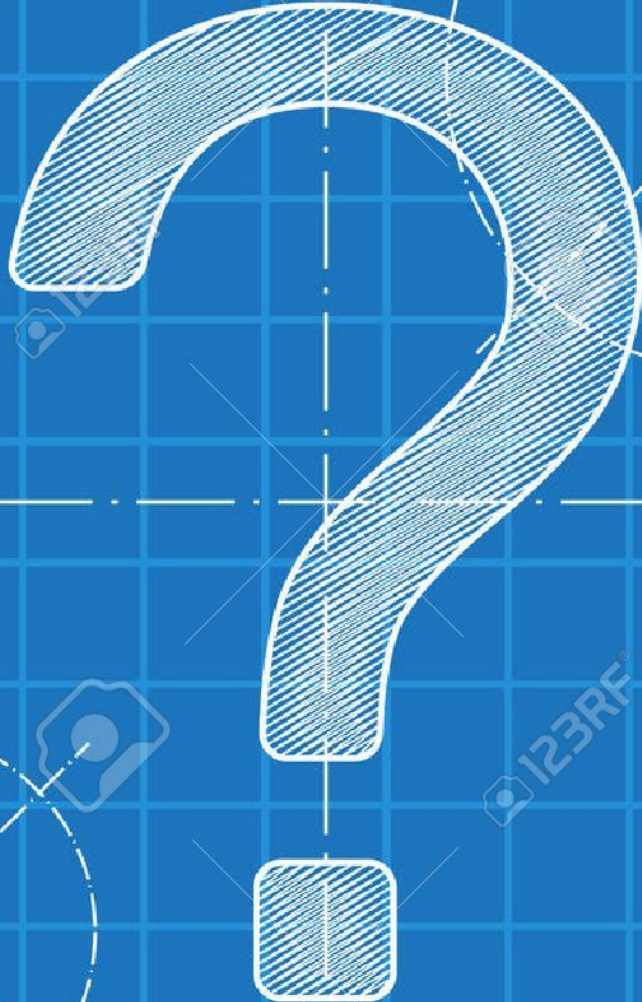
Teacher created a learning sequence that combined science, social studies, and math.





What do
you think
of when
you hear
the word
STEM?

Drop your
thoughts
and ideas
in the chat.



What does STEM really mean?

STEM is an acronym that stands for **science, technology, engineering, and math**. STEM subjects develop creators, thinkers, problem solvers, doers, innovators, and inventors.

STEM is a **teaching philosophy** that integrates all four disciplines together into a single, cross-disciplinary program which offers instruction in real-world applications and teaching methods.

STEM is an **educational program** developed to students for **college and careers** in the fields of science, technology, engineering and mathematics (STEM).



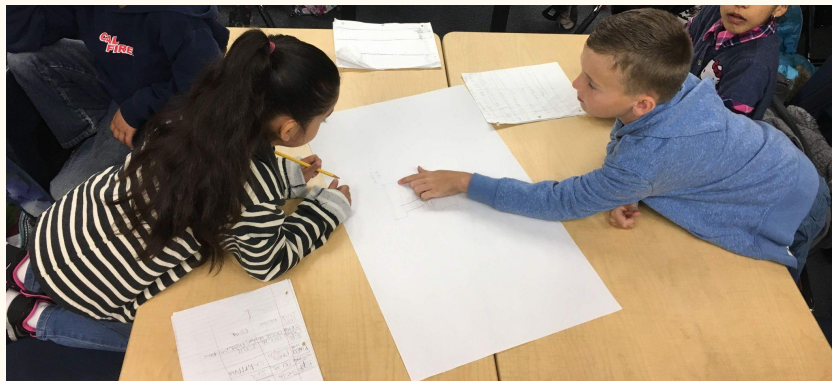
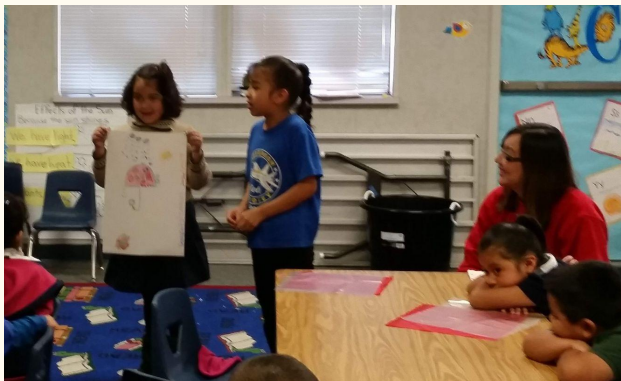
**Why is STEM important and
how do young children benefit
from STEM experiences?**



#1

STEM encourages language skills.

- Oral language skills
- New vocabulary
- Explaining processes
- Communicating ideas

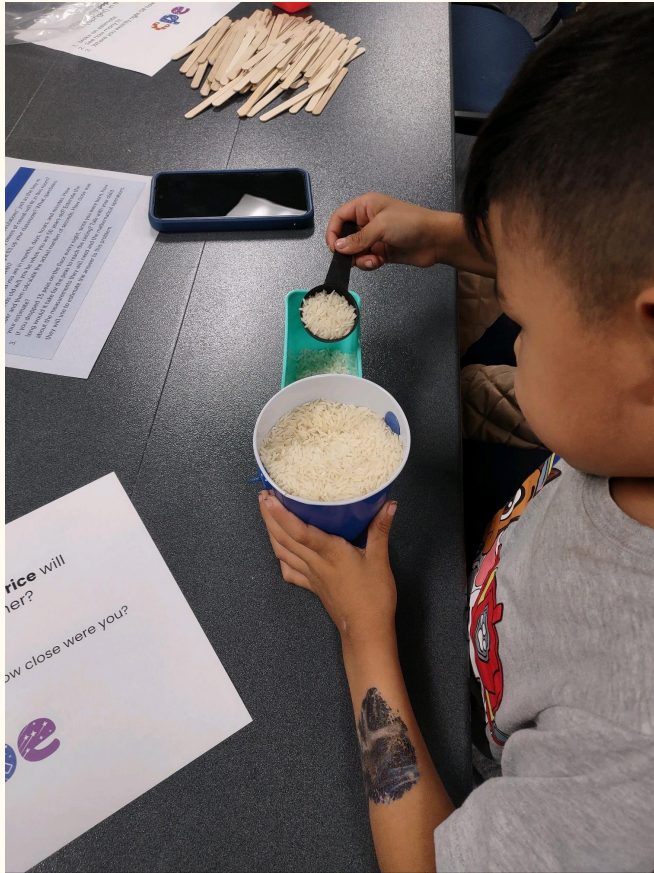


#2

STEM connects students to real-world problem solving.

- Equipped to appreciate and solve real-world issues
- Meaningful lessons





#3

STEM lessons are engaging.

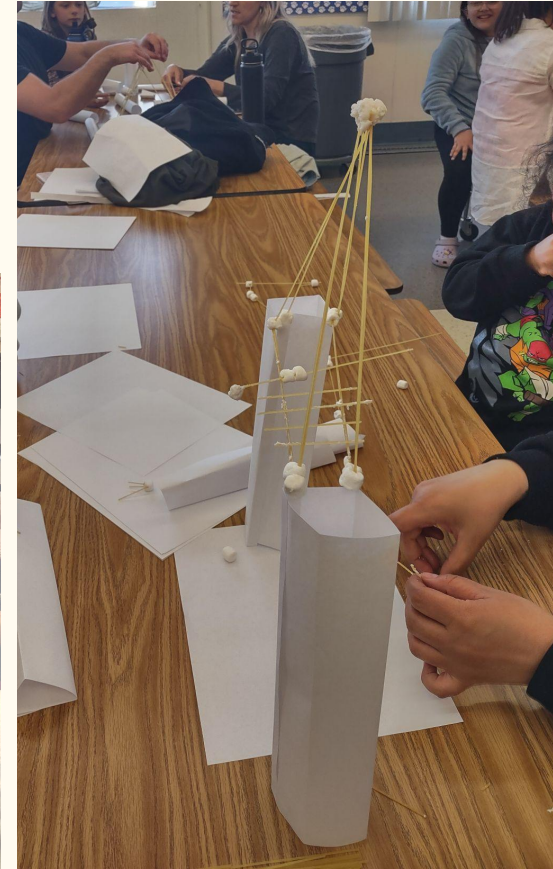
- Natural curiosities
- Gives students the tools to
 - Question
 - Investigate
 - Hypothesize
 - Explore

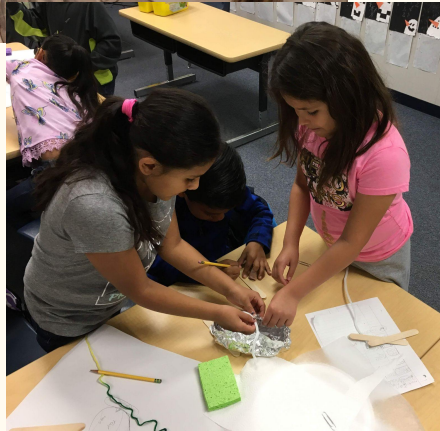


#4

STEM boosts confidence in all students.

The hands-on aspect of STEM activities provide access to all students and can be adjusted to meet students' needs.





#5

STEM activities support critical thinking skills.

- Social skills
- Collaboration
- Compromise
- Creativity

#6

Early exposure to STEM can reduce diversity gaps.

STEM for preschoolers may be the first spark in student groups that are traditionally underrepresented in these fields.



Children's Literature and STEM



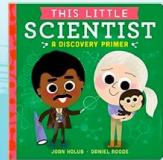
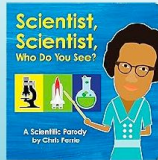
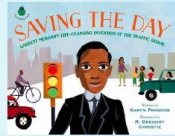
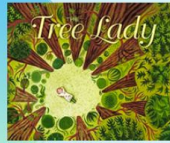
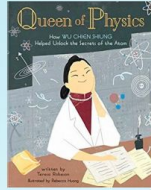
BOOKS THAT HIGHLIGHT CHARACTER TRAITS

- Perseverance
- Creativity
- Curiosity
- Resilience
- Confidence
- Adaptability



STEM BOOKS

~SCIENTISTS & ENGINEERS~

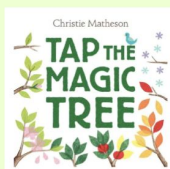


BOOKS THAT HIGHLIGHT SCIENTISTS & ENGINEERS

- Career connections
- Diverse representation allows children to see themselves as doers of STEM!

STEAM Explorer Guides

STEAM EXPLORERS: BOOK GUIDE



**AUTHOR/
ILLUSTRATOR:**
Christie Matheson

Watch how the apple tree changes throughout the seasons as you count, tap, pat, rub, touch, shake, jiggle or wiggle and turn the page.

Ages: 2 to 5 years

ATOS Level: n/a

Lexile: n/a

ISBN: 978006227445

Copyright: 2013



Tap The Magic Tree

How does an apple tree change throughout the year?

What is STEAM? Learning through science, technology, engineering, the arts, and mathematics. Through STEAM, students problem solve, innovate, create, and collaborate.

STEAM Topics in this Book: changes over time, counting, nature, seasons, plants

Activities To Do Together: Tap the Magic Tree invites children to notice how living things change over time.

Before you read the book with your child:

- Ask your child to tell you how they've changed as they've gotten older or tell your child about changes you've noticed. Maybe your child has grown a new tooth or gotten taller.
- Notice the tree branches on the cover of the book. Some have flowers, others have apples, some branches are covered in yellow and orange leaves. There is a branch with no leaves too. Compare the branches. How are they alike? How are they different. Ask your child why they think the branches look so different.

While reading the book with your child:

- Have fun together following the directions in the book and predicting how the tree will look on the next page.
- Count leaves, bees, buds, apples, and birds.

When you have finished reading the story:

- Go outside and look at trees together. Talk about how the trees look compared to the trees in the story.

STEAM EXPLORERS: BOOK GUIDE

Conversations During Daily Routine with Toddlers:

1. Outside Time - Look at leaves together. Notice the differences in the leaves you find.
2. Snack Time - Serve a snack that grew on a tree, apples, oranges, pears, etc. Cut the snack into slices. Count the slices together before you eat them
3. Art Time - Collect leaves together. Sort the leaves into groups of big, medium, and small leaves. Make a tree with large leaves on the bottom, medium sized leaves in the middle, and small leaves at the top.
4. Discovery Time - Encourage your child to touch the bark of different types of trees. Talk about how the bark feels. Look for signs of animals and insects living on or near the trees.

Questions for STEAM Thinking:

1. How did the tree in the story change throughout the year?
2. What type of tree is this story about? Why do you think so?
3. What animals did you notice in the story? How do you think the tree is important to these animals?
4. What season are we in right now? How do deciduous trees look at this time of year?
5. Apples grew on the trees in this story. What else have you noticed that grows on trees?
6. The tree on the last page of the story has a nest, two birds, and three leaves. What do you think is going to happen next. Why?

Early Math Project Resources:

Visit [Tap The Magic Tree Activities](https://) (https://

Vocabulary

STEAM words found in the story: again, breeze, bud, four, leaves, little, more, once, one, petals, snow, ten, three, tree, trunk, two

Related STEAM words: angiosperm, deciduous, evergreen, fall, gymnosperm, precipitation, seasons, spring, summer, temperature, weather, winter

Words to build reading comprehension: bare, gentle, jiggle, patient, wait, wiggle, whooshing

Related Books: *A House for Hermit Crab* by Eric Carle; *Plant the Tiny Seed* by Christie Matheson; *Press Here* by Hervé Tullet

Click this link to the [World Catalog](https://bit.ly/47DDRxC) or enter <https://bit.ly/47DDRxC> in your browser, to find *Tap the Magic Tree* in the public library.



Christie Matheson

TAP THE MAGIC TREE

TURN
THE PAGE
TO MAKE A
CHANGE



**AUTHOR/
ILLUSTRATOR:**
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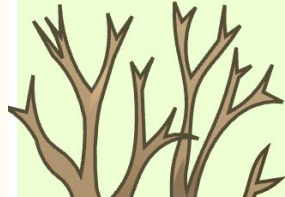
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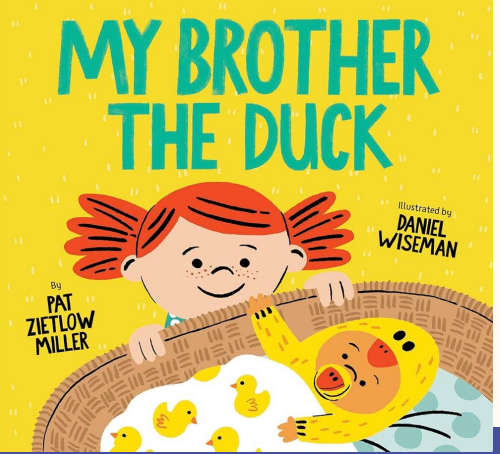
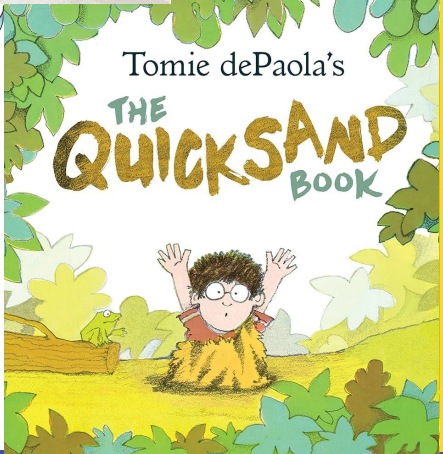
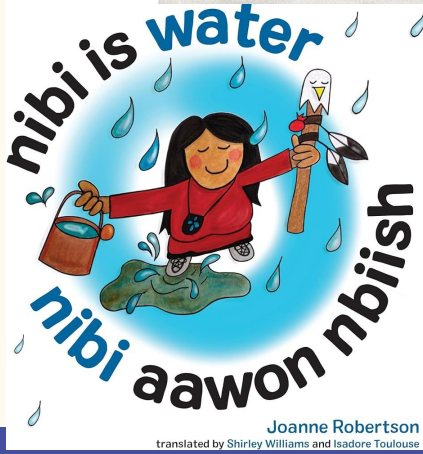
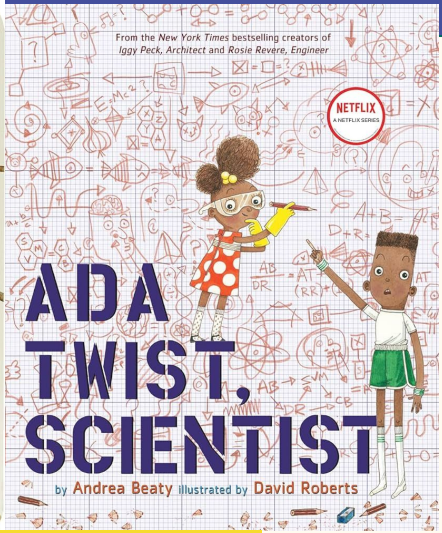
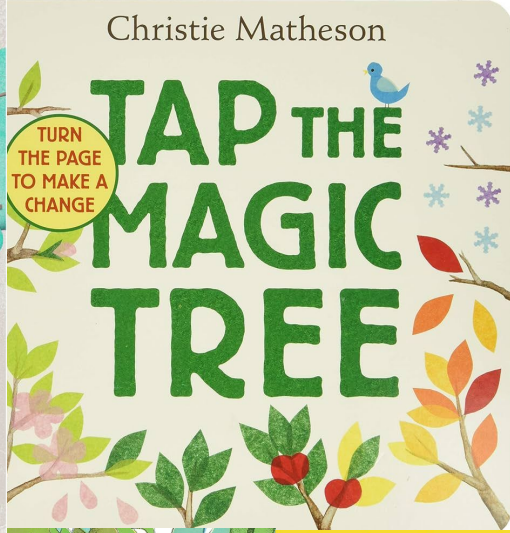
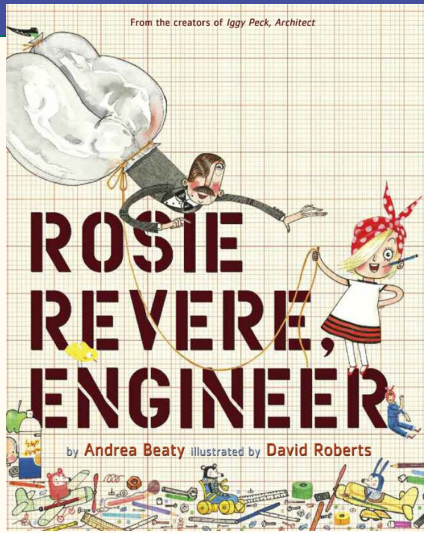
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