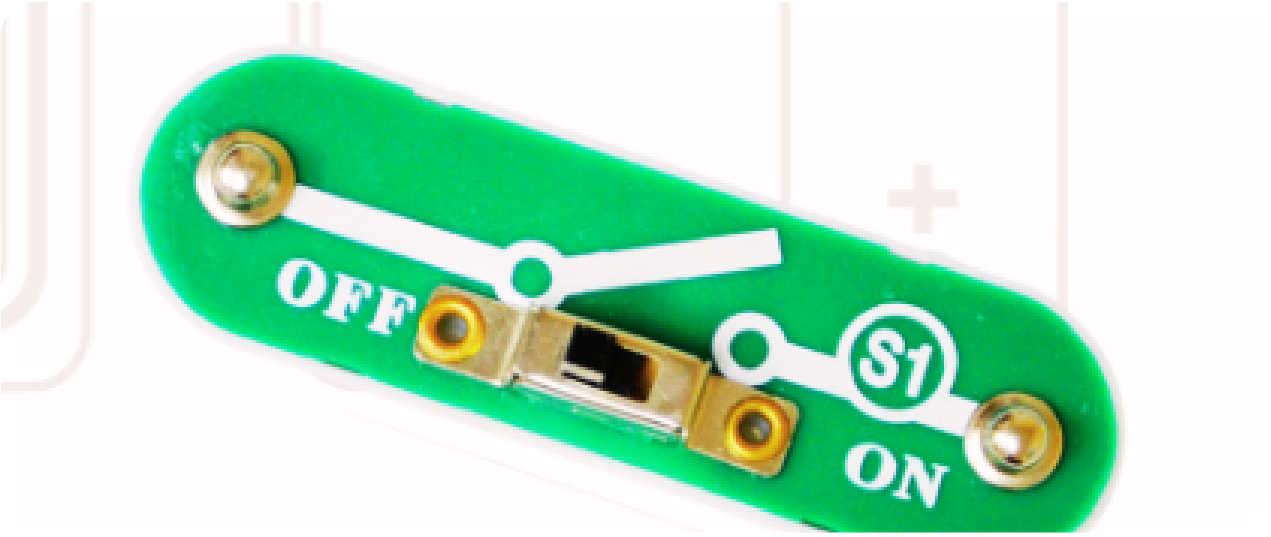
SNAP CIRCUITS Education

S.T.E.A.M. EDUCATION

NEWSLETTER



Between 2013 and 2023, STEM employment increased by 26%.

https://www.nsf.gov/nsb/updates/us-science-technology-engineering-mathematics-talent

Science and engineering (S&E) occupations are expected to grow almost 10% in the next 10 years.

https://www.nsf.gov/nsb/updates/us-science-technology-engineering-mathematics-talent

Spring into STEAM!

Spring weather has arrived and the climate in our classrooms are changing. Anticipation of testing prevails in Spring.

With this shift in schedules & pressure to perfom, teachers can feel stressed and hurried. The focus of this edition is high leverage literacy activities that you can integrated into you STEM class.

I hope by including authentic reading and writing, you can help students prepare to their best AND help you enjoy the meaningful work that you do.

Use hashtags to be featured and found:
#SnapCircuits and #SnapCircuitsEducation

https://elenco.com

Cross-Curricular Connections

A Cross-Curricular Lesson Spotlight

Tessellation Trials

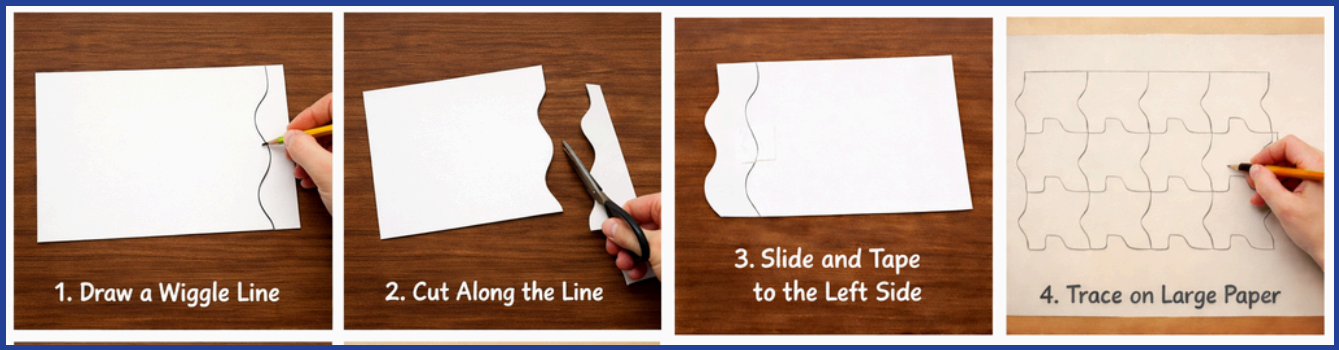
Math, Design, Art, Reading, Writing

Materials:

- Cardstock
- Coloring Supplies
- Large pieces of paper or posterboard
-

Directions:

- Give students a piece of cardstock. Have them create a wiggle on the right side from one corner to the other.
- Have students cut on the wiggly side to remove a piece of the cardstock.
- Students then move that piece to the left side of the cardstock and flip it over so that the edge of the left side will line up with the new right edge.
- Tape this additional piece to the left side to try it out.
- This should create a tessellation, but students will trace and check their work.
- Students can trace the shape on a larger piece of cardstock or paper.
- Students should check that there isn't any gap or overlap between the traced left side and the right side as the shape is slid, or translated, across the poster.
- If the tessellation is correct, students may create a tessellation on a large piece of art.
- If there are gaps or overlaps, have students try again, either by retaping the piece of the left side, or by re-doing the process after observing another student.
- To see examples of famous tessellations by MC Escher, students can visit https://mcescher.com/gallery/
- Once the tessellation has been traced, students can color the artwork.
- Folllowing, students can create a written presentation about the process, their choice of color, what their work represents, etc.



Cross-Curricular Connections

A Cross-Curricular Lesson Spotlight

Tessellation Trials

Learning Objectives:

- CCSS.MATH.CONTENT.8.G.A.1
- Verify experimentally the properties of rotations, reflections, and translations:
- a. Lines are taken to lines, and line segments to line segments of the same length.
- b. Angles are taken to angles of the same measure.
- c. Parallel lines are taken to parallel lines.
- CCSS.MATH.CONTENT.8.G.A.2
- Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.
- CCSS.MATH.CONTENT.8.G.A.3
- Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
- CCSS.MATH.CONTENT.8.G.A.4
- Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.

Standards for Mathematical Practice:

- MP2: Reason abstractly and quantitatively
- MP4: Model with mathematics

Pre-Activity Purpose

Today, you will create a piece of art using a tessellating shape. A tessellation is created by a repeated set of shapes without overlaps or gaps.

After-Activity Assessment

Discussion:
Look at your classmate's tessellations.
Do you see patterns in the types of shapes that people used to create the tessellations?
Did anyone use a combination of shapes?

INTERVIEW: COLLEEN JOZAITIS

S.T.E.M. Educator

Colleen Jozaitis is a STEM educator. She teaches grades 3-5 with lessons focused on NGSS Science and Engineering Practices. Through her lessons, she integrates makerspace activities and tons of hands-on learning!

How did you get involved in STEM?

I shared with my superintendent that my ideal job would be to do all the science experiments with all the students in the school so that teachers could focus on the other content areas. This was right when the Next Generation Science Standards were being introduced. My superintendent told me to come up with a vision and list my qualifications. The job ended up being more focused on the engineering standards, since they were harder for teachers to teach in their classrooms. I took the engineering standards and developed a program for 3rd, 4th, and 5th graders.

When I first started, I taught all 36 classes once a week all year. I didn't have space or shelving. We restructured the program, and I have a new space that is large and feels industrial. Now I teach 9 classes everyday for a whole quarter and students can actually finish their projects over the 9 weeks.

You can follow Colleen's teaching at

https://www.facebook.com/frankfort157c
https://www.instagram.com/frankfortsd157c

What are the most valuable aspects of STEM?

Kids working together!
They have to problem solve and collaborate. Students learn to listen to each other.
Students also learn how to be critical of the project they are working on. They have to constructively judge the project by looking at specific mechanical or engineering skills, and communicate that something needs to change because of this reason or that reason. Part of this communication is learning how to be kind, and how to agree and disagree with your teammates.

How do you define STEM?

STEM is integrating science, forms of technology (even a ruler can be considered technology), engineering, and math in an innovative way to solve everyday problems. Sometimes I include art, particularly when students are engaged in makerspace activities. Subjects are blended so kids don't realize they're doing each separate strand.
In terms of teaching, I introduce the engineering/design process through minilessons. Then, students do challenges that help them develop an understanding of mechanics and motion. This allows them to take risks, experience failure, and adapt to challenges. They have to communicate and work together. Adaptation and taking risks is so important. The greatest learning is taking place when students experience failure and keep trying.

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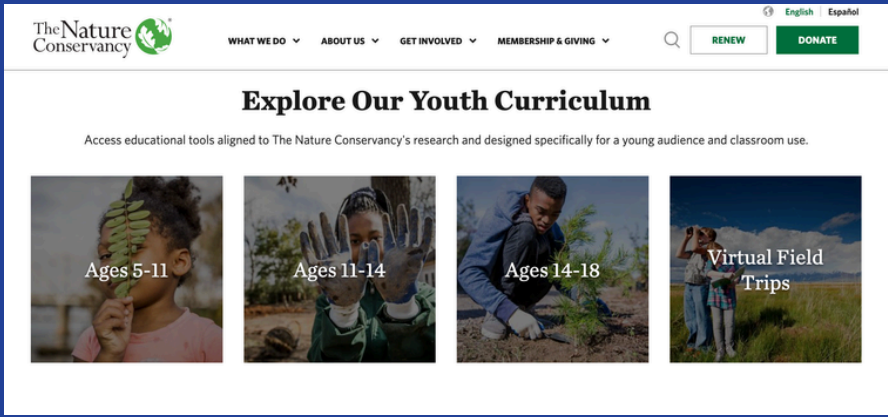
Access Ally

This section features low-cost resources that can be used to teach about S.T.E.A.M.

The Nature Conservancy's Nature Lab



Why it's great

- Over 1,000 scientists have contributed to this site.
- Free Units with high-quality, standards-aligned lessons.
- Family Guides to share with parents and community.
- Organized by grade bands and easy to use.

https://www.nature.org/en-us/about-us/who-we-are/how-we-work/youth-engagement/nature-lab/

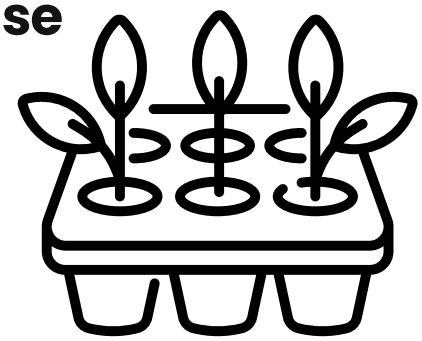
SNAP CIRCUITS

Snap Circuits is launching a fresh curriculum.

New additions to the digital resources include: a scope and sequence, 10 revised lesson plans, center cards, challenge cards, vocabulary cards, and a non-fiction text for each lesson, & student worksheets and assessments,.

Makerspace Challenge

Build a Mini-Greenhouse



Materials

container with a cover
seeds
seed starting medium

Directions

1. Find a container that you can cover with a clear lid/plastic wrap. This can be a plastic bottle that is cut in half, clear plastic egg carton, or even two plastic cups taped together.
2. Place seed starting medium in the base of the container. Wet this moderately, so when squeezed, it holds it shape without sopping water.
3. Plant 3 seeds in your container following the directions on the seed packet.

Extension: Thinking Outside the Box

What is the best way to secure the lid to the container?

Does your plant need lots of sun? deep soil? What special conditions does it need to grow?

Do you have a plan for watering the seedling? How can you monitor the amount of water?

What tools did you use?

What tools do experts use?

[Check out the printable Makerspace Challenge Card (reproducible)](https://bit.ly/monthlymakerspace0326)
https://bit.ly/monthlymakerspace0326

Artificial Intelligence Ideas for All

Each month, this section will share how real educators are leveraging AI to teach. These ideas range from how to create materials with AI to how to teach students to use AI.

University of California, Merced, has a library guide that includes resources and videos for educators about AI.
This is a great introduction to AI for those who are less familiar with Ai, what it is, and how it may be used.

Included on this site:

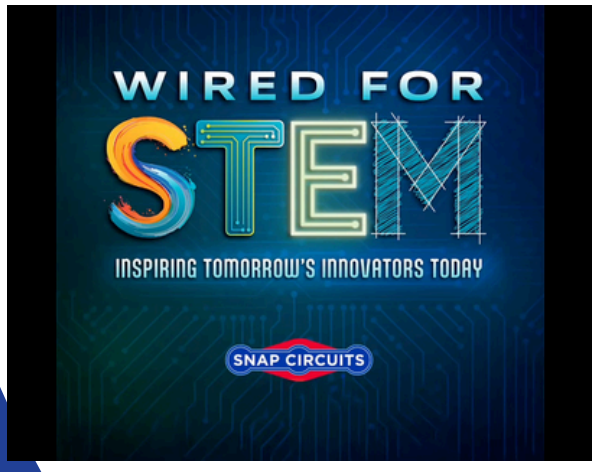
- Generative AI for Educators (MIT Raise and Google developed a course for eductors)
- AI for Instructors and Students (Videos that showcase practical AI in education)
- Articles for educators

If you have ideas you'd like to share about using AI in education, please fill out this form:
https://forms.gle/JSitukT2PeToph3t6

https://elenco.com

Podcast Preview

March Episode: STEAM on a Shoestring



Watch Episode 6 with Amber MacDonald & Tim Conlin on YouTube

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newsletter
compiled and edited
by Sarah Margalus