Dec 17 2025

News, Resources, & Notes

this issue

Upcoming Events:

1. ITEEA Annual Conference, March 25-28, 2026. Virginia Beach
2. National Robotics Challenge, April 16-18, 2026. Marion
3. OTEEA School Exhibits and Restoration Innovation Challenge, April 17, 2026, Marion

OTEEA webinars online archive

OTEEA News, Resources, and Notes online archive

STEM is Elementary Newsletter Subscription And Archived Issues

STEM competitions and more resources spreadsheet

Link to OTEEA membership form

STEM Playbook

Future-Ready Skills Through Sports

STEM Playbook builds career skills and confidence through the games students love most.

A 7-Second Pit Stop: Engineering & Teamwork at Full Speed

A NASCAR pit stop lasts only a few seconds. Still, in that brief moment, teams change tires, refill fuel, make adjustments, and demonstrate exactly how teamwork, physics, and precision engineering come together under pressure.
This world is where **Brehanna Daniels** made history as the first Black woman tire changer in the NASCAR Cup Series. Coming from a multi-sport background, she mastered the reaction time, coordination, and pressure management needed to thrive on the fastest team stage in sports.

Every pit stop is a choreographed sequence where:

- timing is measured in hundredths of a second
- roles are crisp and specialized
- communication is lightning-fast
- biomechanics determine efficiency and safety

The pit stop is a live example of how well-designed systems outperform chaos every time.

Credit: Terrell Maxwell; Read the article on Today.com

Coach's Corner: The Anatomy of a Pit Stop

The precision and choreography of a NASCAR pit stop have become a surprising blueprint for other

industries, guiding how hospitals, factories, and even businesses improve performance under pressure. Let's take a closer look at one place where pit-stop thinking—and the kind of precision Daniels exemplifies—has made a measurable STEM impact: the emergency room.

Hospitals found that the delays in trauma care matched the same issues pit crews work to eliminate: unclear roles, slow communication, and unpredictable steps. Borrowing from NASCAR, ER teams put in place:

- **Defined roles** for every person in the room
- Fast, structured communication
- **Choreographed routines** to reduce intervention time
- Standardized checklists to avoid errors

These changes boosted speed, quality, and consistency—just like a well-run pit stop. Students can experience this thinking firsthand with a quick systems-mapping activity.

Student Challenge: Systems Mapping

Have students map the steps of a pit stop or ER response using sticky notes.

Ask them to identify:

- Which steps are essential?
- Which steps slow the process?
- What would they redesign?

Quickly, students can see how systems engineering saves time - and in some cases saves lives.

Want to bring STEM × Sports programming to your students?

Check out our offerings and pricing to see how you can launch high-energy, confidence-building learning at your school or site.

Learn More

Subscribe at their site for more design challenges

Nick Offerman on Being a 'Good Citizen of the Planet'

PBS NewsHour

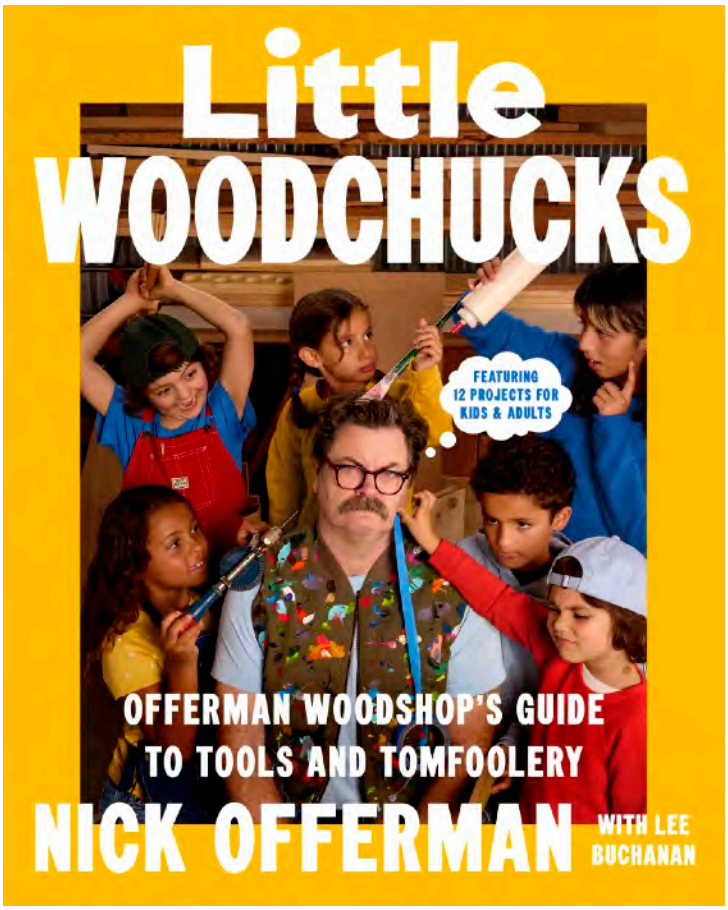
Actor and longtime woodworker Nick Offerman says he has a "responsibility" to continue making things by hand as the world becomes more automated.

Watch brief video (1:36)

Watch full interview (30:18) where they discussed his latest book, "Little Woodchucks," a guide to woodworking for kids, and much more.

Another interview where he builds a project and shows others from the book.

Today – Nick Offerman Shares Woodworking Projects From His New Book



The National Academy of Inventors & Genspiration Foundation – Genspiration Prize & Student Showcase

Apply by February 13, 2026

Students are developing inventive solutions to real-world challenges across the US, and the National Academy of Inventors' Student Showcase provides a national platform for them to share their work. The Genspiration Prize — awarded in partnership with the Genspiration Foundation — further expands this opportunity by recognizing exceptional K–12 and university innovators whose ideas show strong potential for societal impact. Held during the NAI Annual Conference on June 2–3 in Los Angeles, the Showcase offers students the chance to present their work to leading inventors, university presidents, researchers, and industry professionals.

Learn more about the Genspiration Prize and apply to the Student Showcase by February 13, 2026.

New Automation Packet

Engineering with Paper — Created by Dazzling Discoveries STEM Education Center

Brand new project packet now in the shop! Build your own mechanisms and create a movable scene with just paper, tape and scissors.

This fun, step-by-step illustrated project packet is a fun challenge.

This fun, step-by-step illustrated project packet is a fun challenge.

Great for upper Elementary, Middle and High School

Get the $20 Automaton Packet Now!

Modeling Technique Videos

Model Railroad Academy

These videos are designed with model railroading in mind but also work with architectural modeling.

Tree-Making Techniques

In this video, you will learn how to create realistic-looking trees. Such a mountainous layout like that on the Western Pennsylvania Model ...

WATCH NOW

Creating Coal Piles with Howard Zane

Howard Zane demonstrates how he creates a coal pile in a tender in this video. If your tender doesn't have a molded coal pile, the simplest way to ...

WATCH NOW

Concrete Tunnel Portals

Tunnel portals are present on almost every model railroad, so we need to know how to make them. MRA Contributing Editor Martin Tärnrot has ...

WATCH NOW

Technology and Engineering Education News and Resources

Activities, Contests, Student Opportunities, and New Technologies

ITEEA STEM Sparks

Exploring Aerodynamics with a Paper Mars Helicopter

Bring NASA-inspired engineering into your classroom with a simple, hands-on activity that sparks curiosity and creativity. The Paper Mars Helicopter project, adapted from NASA's educational resources, invites students to design, build, and test their own paper helicopters—while learning about aerodynamics, iteration, and problem-solving.

What Is the Paper Mars Helicopter Project?

This activity simulates the principles behind NASA's Mars Helicopter, Ingenuity, using everyday materials. Students construct a basic paper helicopter, then experiment with design modifications to improve flight performance. It's an engaging way to connect STEM concepts to real-world space exploration.

Read the full STEM Sparks article for full instructions, a template, and an explanatory NASA YouTube video.

ITEEA News

From Flat to Phenomenal: Innovating with Cardboard

Step into a world of creativity by reimagining learning with cardboard engineering. In this interactive session, discover how cardboard engineering can ignite a passion for integrated STEM in elementary learners, promoting a deeper application of technological and engineering literacy.

👇 Watch now and elevate your professional learning journey!

📣Share Your Voice: Help Shape ITEEA's Strategic Future

ITEEA Board of Directors has drafted **a revised strategic plan** built around four key goals, each supported by strategies and activities to shape how we advance our mission and strengthen our impact.

An an ITEEA member, **your perspective matters**. We invite you to review the draft plan and share feedback to ensure it reflects the priorities and aspirations of our most important stakeholders. Your input will help shape a plan that is both visionary and responsive to the needs of the education community.

👉Please complete this survey with your feedback by Wednesday, December 31.

New National Academies Website

The new website helps you discover and follow the work that matters to you. You will find updates on upcoming events, active projects and their progress, and the latest news from across the National Academies.

TED Talk: the Surprisingly Simple Reason Teams Fail

In 1999, a NASA mission to Mars failed ... not from a technical glitch, but because people weren't talking to each other. Psychology professor Tessa West explores how assumptions, overlooked details and "hidden languages" can quietly sabotage even the smartest teams — and explores the small shifts in communication that can make a big difference in how information lands. (Read transcript)

Watch now

NASA News

Test, Tinker, Repeat

When NASA engineers want to test a concept for exploring Mars, they have to find ways to create similar conditions here on Earth. That's why a team from NASA's Jet Propulsion Laboratory in Southern California took three research drones to California's Death Valley National Park and the Mojave Desert earlier this year to hone navigation software that could expand the range of terrains that a future Martian helicopter can safely operate over.

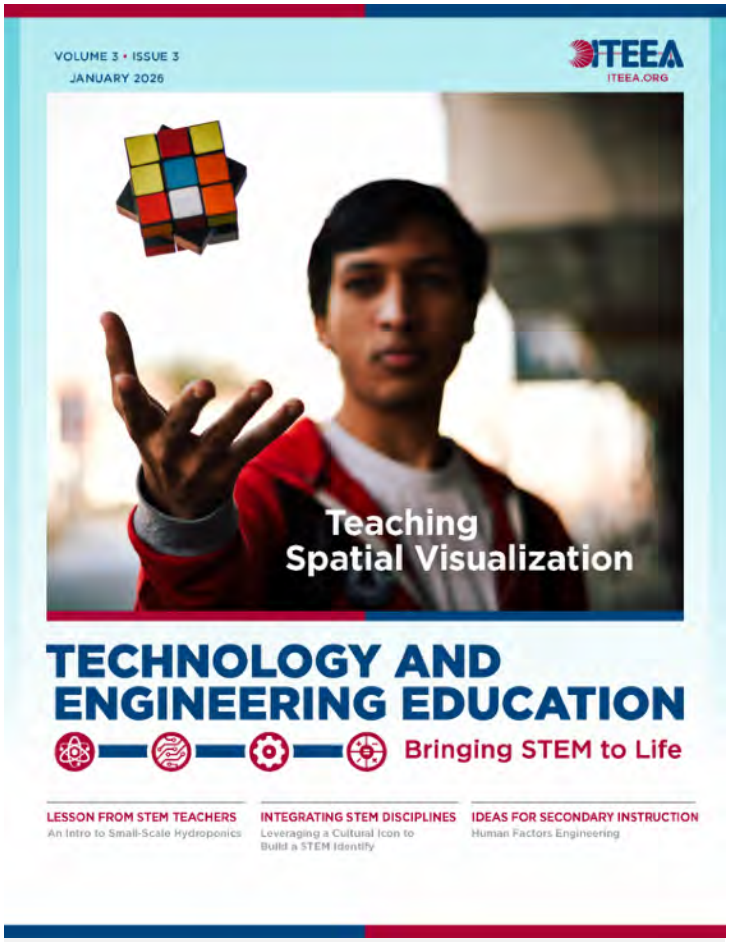
Read more

Invention Challenge Brings Student Engineers to NASA JPL

Teenagers wielding power tools and plywood demonstrated their engineering prowess at the annual Invention Challenge at NASA's Jet Propulsion Laboratory in Southern California on Friday. Also in evidence: lots of small motors, 3D-printed gears, PVC pipe, and duct tape.

Read more

Explore the January Issue of *TEE*: From Hydroponics to Electric Guitars



Discover the January 2026 issue of *Technology and Engineering Education*, packed with innovative ideas to energize your classroom! Explore how building spatial visualization skills boosts math performance, creativity, and engineering confidence; learn the essentials of small-scale hydroponics for hands-on STEM learning; and see how stories can bring the engineering design process to life through ScaffoldEDP. Plus, dive into a unique electric guitar project that integrates physics, engineering, and digital fabrication to foster STEM identity among girls and gender-expansive youth.

More info here

Ohio STEM Learning Network

Ohio STEM Learning Network

December 8 Newsletter

Discover E – Chats With Change Makers

Watch November video here

2026 Central Ohio STEM Expo

February 28, 2026
The Point at Otterbein University

CENTRAL OHIO STEM EXPO

Get Ready for a Fun Filled Day of Knowledge and Exploration!

The Central Ohio STEM Expo is a free educational outreach event for students in Kindergarten through 8th grade that will feature fun, interactive activities and exhibits in the Science, Technology, Engineering and Math fields.

Read more and register

Turning Waste Into Learning: TileChalk Initiative Transforms Tile Residue Into Classroom Chalk

Ceramic Tech Today

Students at an underserved school in Bangladesh use chalk sticks and slate boards created from wastewater sludge and broken tiles, respectively. Credit: DBL Ceramics, YouTube

Ceramics manufacturing is a time- and energy-intensive process, which means upfront costs can be substantial. But given the right market demands, investing in this industry can pay off in the long term, as we are currently seeing in the South Asian country of Bangladesh.

Read more

Little Bins for Little Hands

Looking for an easy way to introduce **coding** this holiday season? Try our **Christmas Algorithm Coding Game**—a simple, screen-free way to teach kids about algorithms and sequencing using festive grids and direction cards.

Just print, cut, and play! Kids can arrange holiday objects to create new puzzles every time and write their own "code" to solve them.

If your kids enjoy this, you might also love two more Christmas coding favorites:

- **Christmas Secret Coding Pictures** → Kids reveal hidden images using coded directions
- **Binary Alphabet Christmas Ornaments** → A fun way to explore how computers really read information

Three free super low-prep ways to weave computer science into your December plans!

And if you want all your holiday STEM activities in one place—including engineering challenges, science experiments, and printable worksheets, check out our **Christmas STEM Pack** with step-by-step instructions and ready-to-go templates. Or grab the **All Access Pack** and go! These are for purchase.

Drones in School News

The Latest Tips From Screecher

Our Drones in School Pro Pilot, Spencer Cannizzaro (Screecher FPV), shares his tips for flying the December Simulator Race. Watch this video to make sure your pilots get their best time on the track!

Watch video

Read full newsletter

When Should Students Begin Learning About AI?

STEM Education Coalition

Much of the As artificial intelligence spreads to a growing number of career fields, experts say it's important to introduce concepts surrounding the technology starting in elementary school, including how to — and how not — to use it, as well as how it works so students gain an understanding of why the algorithms behave the way they do.

Code.org, a nonprofit dedicated to expanding computer science education, especially to underrepresented populations, is still exploring just how early an understanding of AI should be built, said Karim Meghji, chief product officer. The organization started out aiming its offerings at high school students, and then it filtered down to middle schoolers and, occasionally, the later grades in elementary school.

Read the full article here.

What Would Education's Omission as a 'Professional Degree' Mean?

STEM Education Coalition

Pursuing a doctoral degree in the social justice for education program at the University of San Diego was an opportunity that second-year student Reyan Warren long thought would never be afforded to her.

So when Warren — who also currently teaches high school English in a rural school community in Adelanto, California — heard that the U.S. Department of Education is proposing the omission of education from programs considered to be a "professional degree," she said the proposal made her feel sad.

Read the full article here.

2025-26 Great Big Home and Garden Show Student Design Contest Update

All entry forms were due Monday, December 15th.

We do have a minor programming update: The HGS has run out of space, so we will be displaying the finalists at the home and remodeling expo instead. The contest, judging, and awards/finalists announcement are still planned for the indicated dates.

If you have any questions, let Erik Ward know.

NEO:STEM Now Newsletters

Building the Future of STEM in Northeast Ohio

Connecting schools, businesses, and communities to inspire curiosity, develop future-ready STEM skills, and open doors to new opportunities.

Read December 5 Newsletter here

Read December 12 Newsletter here

The Kid Should See This

The Kid Should See This

Smart videos for curious minds of all ages

Here are some selected videos.

- Why the metric system matters
- Building a LEGO Candy Cane Catapult
- Mathematical Present Wrapping with Katie Steckles
- Carol Of The Mandalorian, a holiday Star Wars piano mashup

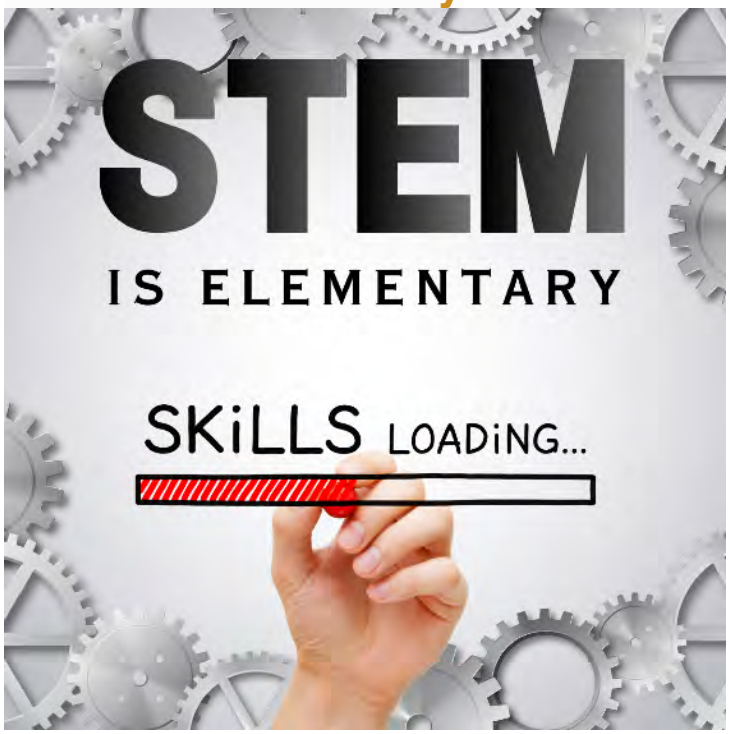
History Facts

- Gas prices include nine-tenths of a cent due to a 90-year-old law.
- Unlocked: A Brief History of Keys
- Abraham Lincoln's hat once caught a bullet intended for the president.
- There's a new medieval castle being built.
- Nostalgia was once considered a disease (and it could be fatal).

Interesting Facts

- The Postal Service has a dedicated unit for deciphering bad handwriting.
- Pringles inventor Fredric Baur's ashes were buried in a Pringles can.

STEM Is Elementary



The December issue of STEM is Elementary is available hereThis group sends greeting cards to strangers

This Group Sends Greeting Cards to Strangers

Random Acts of Cardness uses mail to lift spirits

A private Facebook group with more than 8,600 members is doing its part to preserve a tradition that might seem out of step in the digital age: mailing greeting cards.

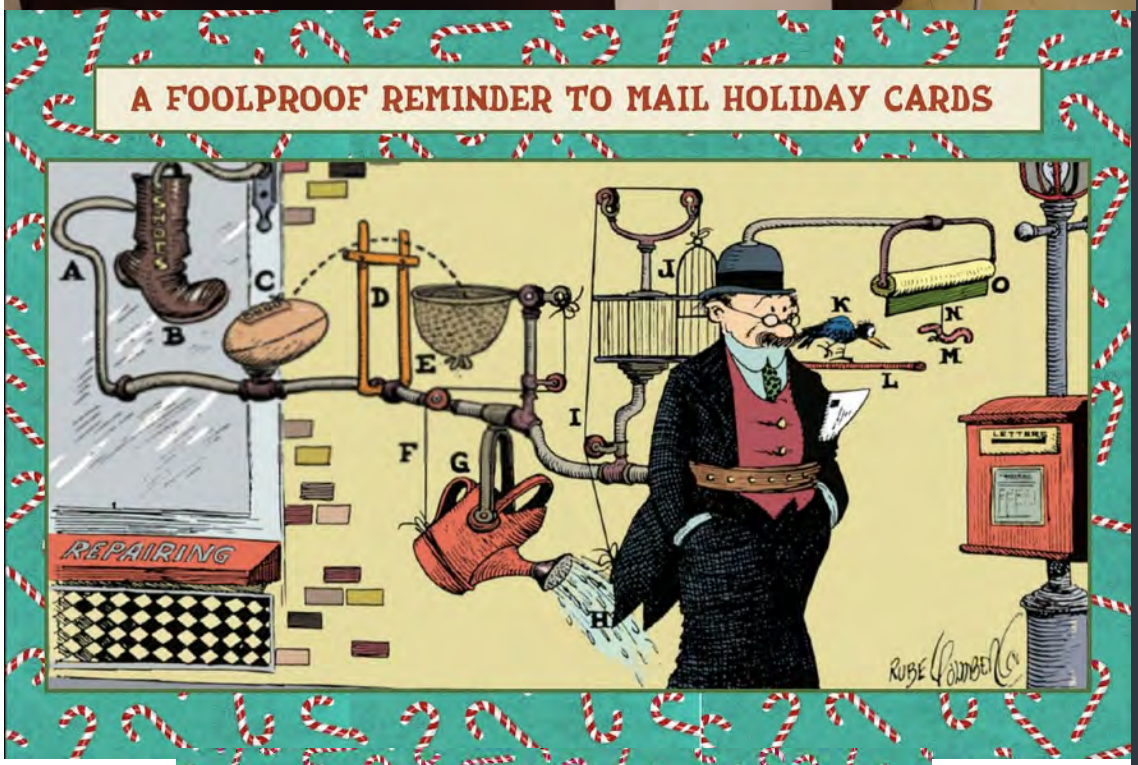
The group, called Random Acts of Cardness, allows members to post greeting card requests for themselves or others, such as a co-worker dealing with an illness or a loss, or a friend celebrating a birthday or anniversary.

Other members then respond to the requests by mailing cards to strangers to provide them with a pick-me-up.

"We are entirely a volunteer organization, and everybody is welcome to join," said Megan Evans, a Wickliffe, OH, resident who started Random Acts of Cardness after her own spirits were lifted by greeting cards while recovering from a serious illness in 2015.

In addition to providing a place for people to request greeting cards, the group organizes activities, including a drive that resulted in more than 700 cards being mailed to members of the military during the COVID-19 pandemic.

Read more



PROFESSOR BUTTS GETS CAUGHT IN A REVOLVING DOOR AND BECOMES DIZZY ENOUGH TO DOPE OUT AN IDEA TO KEEP YOU FROM FORGETTING TO MAIL YOUR WIFE'S LETTER. AS YOU WALK PAST COBBLER SHOP, HOOK (A) STRIKES SUSPENDED BOOT (B) CAUSING IT TO KICK FOOTBALL (C) THROUGH GOAL POSTS (D). FOOTBALL DROPS INTO BASKET (E) AND STRING (F) TILTS SPRINKLING CAN (G) CAUSING WATER TO SOAK COATTAILS (H). AS COAT SHRINKS, CORD (I) OPENS DOOR (J) OF CAGE ALLOWING BIRD (K) TO WALK OUT ON A PERCH (L) AND GRAB WORM (M) WHICH IS ATTACHED TO STRING (N). THIS PULLS DOWN WINDOW SHADE (O) ON WHICH IS WRITTEN "YOU SAP, MAIL THAT LETTER."

rubegoldberg.org

"As we enjoy great advantages from the inventions of others, we should be glad of an opportunity to serve others by any invention of ours; and this we should do freely and generously."
–
Benjamin Franklin