



## TOMORROW STEMS FROM IOWA

**Drake**  
UNIVERSITY  
SOUTH CENTRAL IOWA REGION  
GOVERNOR'S STEM ADVISORY COUNCIL

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## Enhancing STEM Ed & Workforce Development at MidAmerican



*Visitors toured MidAmerican, highlighting work that relates to externships and schools. Forefront: Kathy McGrane, Mahesh Mathrubutham; Back: Marc Pedersen, Stephen Simmons. (Photos courtesy of Mahesh Mathrubutham.)*

### By Dr. Mahesh Mathrubutham, SC Advisory Board Co-Chair

I recently had the privilege of visiting the MidAmerican Training Center in Adel, Iowa, where I had the opportunity to meet **Kathy McGrane** (Teacher Extern), an inspiring teacher from Valley High School. As a member of the South-Central Iowa regional STEM Board, I was thoroughly impressed by the

collaborative efforts between MidAmerican Energy and local educational institutions to enhance STEM education and create valuable career opportunities for students.

## McGrane's Contribution

Kathy McGrane, an AP chemistry teacher, is working on an exciting project aimed at consolidating processes and information within MidAmerican's various trade programs. By utilizing existing standard operating procedures and documents, Kathy is creating comprehensive student guides that will be applicable across the entire MidAmerican system. This centralized approach ensures that technicians, apprentices, and journeymen have access to a single, reliable, and all-encompassing source of information, promoting efficiency and consistency across trades.



## Tour Highlights

During my visit, I was given a tour of the state-of-the-art training facility, which serves as the hub for technical training and education for MidAmerican Energy. This facility plays a crucial role in shaping the skills and knowledge of apprentices, trainees, and interns pursuing careers in trades such as electrician, welder, gas technician, among others. Additionally, it offers valuable internships to high school and college students who are keen on joining the MidAmerican team.

The MidAmerican Training Center is more than just a physical space; it serves as a knowledge base for technicians to learn new skills and advanced techniques. The facility houses dedicated teaching areas and labs where trainees and technicians can engage in hands-on activities using the same equipment they will encounter in the field. This controlled environment allows for valuable learning experiences, enabling mistakes to be made and lessons to be learned without any risk to the technicians or the public.

## Building Relationships

One aspect that particularly stood out to me was MidAmerican's focus on nurturing relationships with local schools and universities. By leveraging these connections, the company actively recruits high school and college interns, attracting young talent and introducing them to the possibilities of a rewarding career at MidAmerican Energy. Through these partnerships, MidAmerican not only invests in the future workforce but



also raises awareness among students about the diverse vocational trade opportunities that can lead to high-paying jobs.

The success of this collaborative model is evident in the MidAmerican Training Center's remarkable achievements over the past two years. While other energy companies and organizations were decentralizing their training programs, MidAmerican chose a different path, centralizing their training at this exceptional facility. This decision has resulted in a consistent level of understanding and knowledge across various trades within the MidAmerican system.



### Key Players

During my visit, I had the pleasure of meeting several key individuals who play integral roles in this educational endeavor.

**Andrea Bruxvoort**, the Director of Corporate

Training, demonstrated a deep commitment to fostering a culture of learning and growth. **Hajdi Zulic**, a Corporate Trainer, shared invaluable insights into the training programs and their impact on the workforce. **Stephen Simmons**, the Director of Trades and Crafts Training, highlighted the importance of hands-on experiences and the role they play in skill development. **Mark Peterson**, Kathy McGrane's extern mentor, exemplified the dedication and support to educators.

In conclusion, my visit to the MidAmerican Training Center was a true testament to the power of collaboration between industry and education. Through projects like Kathy McGrane's, MidAmerican Energy is shaping the future of STEM education and workforce development, providing young minds with the tools they need to excel in trades that are vital to our society.

\* \* \* \* \*

*Thanks to SC Regional Board Co-Chair Dr. Mahesh Mathrubutham for being our guest columnist. Mathrubutham is a research scientist, teacher, and inventor. He also serves as president of SuperBio, the nutraceutical company he founded.*

## 20 Teachers Extern at SC Locations



The STEM Teacher Forum took place at the DMACC Campus in Ankeny on July 20. Educators shared their experiences in small groups, learned how the STEM BEST program could help expand community partnerships, and networked ideas on how they plan to use the experiences in their classrooms.

This summer, South Central area businesses and organizations hosted 20 teacher externs. Please see the slideshow to learn more about all of them.

Next year promises to bring new opportunities for educators seeking an experience in the community, and it's never too early to plan ahead. Externs earn a stipend of up to \$5,000 and three graduate credits through the UNI's Continuing Education program paid for by Iowa STEM.

Visit Iowa STEM's website for info: <https://iowastem.org/externships>.

[Click to View Externship Slideshow](#)

## Goedken Lends Career Experience to Classroom



First-year teacher and long-time industry leader **Brad Goedken** (pictured above) served as the lunch keynote at the year's Externship Forum. He earned his Master's in Education and just completed his first year of teaching math at Ankeny High School.

Prior to that, he was an officer in the Air Force and teacher at the Air Force Academy. He's also earned a B.S. from Coe College in Computer Science, a Master's of Science in Mathematics from Creighton University, and MBA from University of Iowa. Once out of the Air Force, he served as Chief Information Officer, Chief Technology Officer, and Head of Operations at various financial institutions.

This summer, he externed at Accumold. "Every teacher should spend one or two days each year in a local company," Goedken noted.

### **"Better, Cheaper, Faster, Smarter"**

As an industry professional, his motto was "better, cheaper, faster, smarter." He said when he was in charge of 7,000 people, he was expected to reduce the number by 1,000. "As teachers," he advised, "we tell students...to take the statistics path. Whether a student studies statistics or not, they are a statistic." In other words, their work will be measured, evaluated, and compared in pursuit of better, cheaper, faster, smarter.

Goedken had advice on communication and group work. "We have to operate at the edge of tension." He said that students must learn to advocate, resolve, and compromise in groups to be successful in the work world. For him, it's less important to like the folks with whom he collaborates.

### **Continuous Improvement**

He closed his talk with two words for teachers on how to prepare students for the workforce: "continuous improvement." He said to spend a day with a community business. At the end of that day, follow it with a question like,

“Can I bring a couple of students with me in a couple of weeks?” He's sure they'll say yes.

Continuous improvement is a concept that resonates with many teachers. Whether it's building relationships, gathering knowledge, or designing lesson plans--great teachers are always working toward the next goal.

# STEAM on the Ridge Packs Hallways



Almost 350 people gathered for the STEAM on the Ridge Festival on July 28. The event moved inside to Edmunds Elementary as temperatures soared near 100 degrees. A special thank you to Des Moines Public Schools and Edmunds for welcoming students, exhibitors and volunteers.

Oakridge Youth Program Navigator **Jordan Colbert** partnered with the hub to lead the charge for the second year in a row. Here's a breakdown of some numbers:

- 210 students (Edmunds, Oakridge, Wilke House)
- 40 youth leaders (Oakridge, Wilke House)
- 72 exhibitors
- 13 silver cord and DMPS volunteers
- 8 Oakridge staff/volunteers
- 1 huge John Deere sprayer
- 1 MidAmerican bucket truck
- And so many smiles we lost count!

Students engaged in 24 booths full of hands-on activities meant to inspire their curiosity and launch further inquiry into science, technology, engineering, art, agriculture and math, connecting classroom concepts to real-

world experiences and careers.

Earlier in the day Oakridge held 6 workshops for middle school students. The morning workshops were stationed all across the campus and served over 40 students. Dr. Ian Roberts, DMPS new superintendent, and Teree Caldwell-Johnson, Oakridge Executive Director, visited, spending time with students and Oakridge leaders.

\* \* \* \* \*



## Thank you, Exhibitors!

- Blank Park Zoo
- C3 Robotics
- Circuit Breakers Robotics
- Creative Art Center
- Des Moines Art Center
- Des Moines Public Library
- Oakridge Leaders & Volunteers
- DMU Anatomy Ambassadors
- Dr. Chris Porter, Drake AI/Math
- Dr. Pramod Mahjan, Drake Pharmacy
- Drake Student Chapter of the American Association of Pharmaceutical Scientists
- East Penn Manufacturing
- Iowa Library for the Blind
- Jewels Academy
- John Deere + NESBE
- MidAmerica Energy Company
- Ms. Bosley, DMPS
- Mr. & Mrs. Wright, DMPS
- NASA Ambassador Dan Hoy
- Neal Smith Wildlife Refuge
- Next Step Adventures
- Oakridge Young Educated Artists
- Johnston Silver Cord Volunteers
- Third Space Creation Station
- Urban Oasis



## United in STEM: Cornbread Fest



**East Penn Manufacturing**



**Atomic Narwhals**



**John Deere**



**Thank you! Cornbread STEM Fest Exhibitors**



**Polk County 4H**



**Disco Duckbots**



**John Deere**

The Cornbread/Corn Bred Mini STEM Fest took place July 22. Thank you

to the exhibitors who created incredible, engaging activities. Those who attended got a powerful welcome into the areas of STEM.

The Hub was happy to host **John Deere, ISU Extension and Outreach Polk County 4-H, East Penn Manufacturing**, and robotics teams **Atomic Narwhals** and **Disco Duckbots**.

Technology in agriculture and beyond is key to Iowa's future, and the event's founder, **Bo James** of Hip Hope sees this event as a bridge between rural and urban communities and interests.

In addition to STEM, music and performances filled the day. Vendors were on-hand with products and food. And there was a job fair for those interested in improving career status. "We're highlighting Iowa's future," said James, "and we're promoting one Iowa culture." With inspiration like that, this festival is bound to grow.

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## Tiny Techies Training Takes on World



*"Today the classroom, tomorrow the world" --say t-shirts that NewBoCo Tiny Techies trainers Alison Mohr and Lori Randall wore.*

## 4 Take-Aways from Tiny Techies Training



### 4 -- Implementation

Educators from Urbandale and SE Polk discuss strategies for implementation.



### 3 -- Expertise

NewBoCo Trainer and SC Advisory Board Co-Chair **Alison Mohr** in action.



### 2 -- Strategies

A team of teachers from **Mt. Ayr** discuss classroom use. Attendees shared strategies throughout the day.



### 1 -- Connections

SE Polk's Altoona Elementary teachers talk with Polk Co. Extension's **Megan Freel** about future collaborations.

# STEM Cart Scale-Up Provides Consistency



*Teachers build and test Wiggle Bots and windmills. A special thank you to **Southeast Polk Schools** for providing workshop space.*

**Dr. Sarah Derry** hosted the SC's regional STEM Cart training in July. The STEM Cart was the most popular Scale-Up request, and Derry explained one feature that makes it exemplary.

"A benefit of STEM Cart is the materials allow for consistent reiterations and retesting," said Derry. "The same, durable materials make it easier for students to tweak designs, as compared to STEM challenges using recycled materials collected from home."

Consistent resources and durable supplies benefit young innovators, and that's the magic of STEM Cart.

## Weld Highlights Important Eval Stats



Iowa STEM Executive Director **Dr. Jeff Weld** (pictured above leading the Externship Forum this past July) provided a quick overview of some important stats from the latest Iowa STEM evaluation.

Here are a few of the fresh cuts Weld shared from 2021-22 academic data:

- Participants in STEM Scale-Up Programs who graduated high school between 2017-21 chose STEM majors at Universities 47.7% of the time, compared to non-participants at 37.6%.
- STEM participants were +2 in math and +3 in science on statewide test compared to peers.
- Minority kids in STEM were +6% Proficient or Advanced in science and +5% in math on Iowa tests compared to peers.
- 94% of teachers doing STEM Scale-Up are more confident - said one: "It is an entirely new way of thinking and teaching and helped me know that it is OKAY if I don't know everything!"
- 67% of Iowa counties have a STEM BEST -- most of them rural (70%) collectively cost-sharing at \$1,302,616 in 2021-22.
- 224 Iowa workplaces have taken in Externs, cost-sharing a total of \$1,184,580.
- Nine in ten Iowans say STEM should be a priority in local schools (while 44% believe it is a priority now).
- There's ominous news too -- math is slipping in Iowa and across the U.S., for example, but Iowa STEM is amping-up efforts.

The whole report is available here: <https://tinyurl.com/STEM-2022-Report>

# Calling all STEM Program Providers



**Providers: [Click to Apply](#) or [Learn More](#)**

### **Students & teachers depend on great programs!**

If your organization offers a STEM program that could be scaled to educators across Iowa, please consider applying! Starting this month, Iowa STEM will be seeking program proposals for the 2024-2025 academic year.

The Council's intention is to bring top STEM education opportunities to all learners, especially those historically underserved. Scale-Up is the key to the jumpstart or expansion of inspiring and engaging curriculum for grades preK-12.

If you are interested in providing STEM programming in Iowa and would like to be considered for the Scale-Up Program initiative, please submit a proposal.

### **Important Dates**

August 15: Request for Proposals Opens

September 19: Deadline to submit a Proposal

### **Organizations eligible to Present a Proposal:**

- County Government
- For-Profit Organization (Other than Small Business)
- Nonprofit with 501C3 status
- Nonprofit without 501C3 status
- Private Institution of Higher Education

- Public/State Controlled Institution of Higher Education
- Small Business
- State Government
- Others that provide a PreK-12 STEM program.

### Questions?

Email Scale-Up Project Manager Dr. Sarah Derry at [sarah.derry@drake.edu](mailto:sarah.derry@drake.edu)

# Events Calendar



Mark your  
calendar!

**2023 STEM Day  
at the Fair**

*August 20*

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Dedicated to building a strong STEM education foundation for all Iowans

## Spring/Summer Events

- Aug 2 -- Tiny Techies Training, Altoona
- Aug 4 -- Codejoy Make-a-thon
- Aug 7-8 -- Discover Drones, Carlisle
- Aug 8 -- WaterWorks, West Des Moines
- Aug 9 -- Ioponics Training, Grinnell
- Aug 9 -- Positive Physics and Chemistry Training, virtual
- Aug 11 -- Codejoy Make-a-thon
- August 11 -- STEM Cart Training, Urbandale
- August 20 -- STEM Day at the Fair
- August 23 -- Positive Physics and Chemistry Training, virtual
- September 25 -- Iowa Department of Education Science Leadership, UI
- September 30 -- Wayne Co. STEM Festival, Corydon
- October 3 -- Iowa Department of Education Science Leadership, ISU
- October 7 -- WaterWorks Training Day 2, West Des Moines
- October 19 -- Iowa Department of Education Science Leadership, BVU
- February 9 -- I'll Make Me a World Education Day
- February 10 -- I'll Make Me a World Celebration Day

**Visit our calendar** for details and more events.



*Above: SC Advisory Board at the Iowa Architectural Foundation*

**THANK YOU, SC Board Members,** for your service to students, educators, and the community.

- Bridgette Andrews
- Creighton Cox
- Katrina Cummings
- Sherry Ford
- Jon Holmen
- Magan Lewis
- Mahesh Mathrubutham
- Ronda McCarthy
- Alison Mohr
- Joe Murphy
- Amber Pargmann
- Scott Schultz
- Laura Williams

Alison Mohr & Mahesh Mathrubutham serve as co-chairs.

Email **the hub** if you'd like information on how to get more involved with STEM.

Email us details on your STEM event so we can help you share the information.



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