

South Central STEM Hub Newsletter

**GREATNESS
STEMS
FROM IOWANS**

Drake
UNIVERSITY

SOUTH CENTRAL IOWA REGION GOVERNOR'S STEM ADVISORY COUNCIL

STEM Happens



The Iowa Lego Users Group shared their enthusiasm with state fair goers. The group hosts meetings and events for Lego fans of all ages. For more information, visit iowalug.com.

STEM at the Iowa State Fair

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I AM STEM.



**Meet Marion County
Stand-Out
Rachel Morgan**

Knoxville High School's Rachel Morgan advises this: "BE CURIOUS." She's mapping out a bright STEM future and proof that Iowa's smaller communities

On August 17, the last day of the Iowa State Fair, an estimated 10,000 people filled the Grand Concourse to participate in 30 different STEM activities, make-and-takes and demonstrations. The day also featured four shows on the Fairview Stage. Volunteers from business, industry, schools, colleges, non-profits and the Governor's STEM Advisory Council volunteered for the day.



For the ultimate remote control experience, high school robotics team, Dark Matter, shared their robot with young techies.

"The Iowa State Fair provides a chance for us to reach a demographic that we might not reach on a daily basis," said Jacqui Linn, who coordinated the event for the Governor's STEM Advisory Council. "People come here from all walks of life and from all around the world."

Booths offered an array of STEM opportunities, including a robotics demonstration, engineering activities, electric current art work, plant growth make-and-take and much more.

Monica Post, creator of Camp in a Can, brought the science of frog eggs to the fair. The experiment uses the colloid in gelatin, similar to the colloid in frog eggs, to show how the eggs develop and grow.

"It's a mix of chemistry and biology," said Post. "This is a great place to learn about science. When you realize you are doing and experiencing science everyday, it helps students see STEM in their future."

Organizers hope the energy and interest at the fair translates into more children participating in STEM activities and experiences. Festivals also educate parents on options available to their children and provide a network for community members to connect with business.

To round out the day's events, participants were challenged to a scavenger hunt that took them all over the fair grounds. "STEM is a part of the fair already," said Linn, "We're surrounded by agriculture and technology, so being here just makes sense."



Monica Post demonstrates Camp in a Can's frog-egg experiment

offer great STEM opportunities.

Through 4-H, Rachel is involved in the SE Area Technical Team. Using GPS and ARCGIS software, Rachel is part a team that is partnered with National Geographic and the Fish and Wildlife Service.

Their goal is to map out the trees of the Neal Smith Wildlife Refuge Oak Savannah. This important project seeks to protect the globally endangered plants and animals represented in this ecosystem.

Besides 4-H, Rachel is active on the school's bowling and golf teams, camera club, NHS, and Junior Optimist Club. She also takes advanced science, technology and math classes.

This fall, Rachel plans to attend Simpson College and study Global Management and International Relations. While the field is not directly related to STEM, Rachel says that 4-H and STEM have "shaped the way that I think through problems...They opened up my horizons and allowed me the confidence to try new things."

Rachel encourages others to try STEM classes and experiences. "STEM is more than just science and math," she advises. "It's about progress and curiosity. It's about trying new things and being willing to experiment."



The Science of Center of Iowa brought supplies to make a kaleidoscope.

Join these fun learning experiences!

Upcoming STEM Festivals



SCI-Iowa presents... Maker Faire

Billed as the Greatest Show (and Tell) on Earth, SCI-Iowa hosts the first annual Mini-Maker Faire on September 1. General admission applies.

Projects include robotics, green tech DIY science, radio, rocketry, unusual tools or techniques, whimsical creations and more.

For more information, visit: <http://desmoinesmakerfaire.com>

Need curriculum support?
Check out materials through the SC STEM Hub's Library!

DMACC STEM Festivals

Ankeny Campus
DATE: October 28, 2014
TIME: 6:00-8:00pm
LOCATION: FFA Enrichment Center Atrium

Boone Campus
DATE: September 28, 2014
TIME: 5:00-8:00 pm
LOCATION: Boone Campus Commons

Helping People, Changing the World



STEM

- FREE
- Hands-on
- Family-friendly
- Educational
- Fun





Science • Technology • Engineering • Math

To register, visit: scstemhub@drake.edu

Sponsored by Drake's SC STEM Hub

GREATNESS STEMS FROM IOWANS

The SC and NC STEM Hubs are partnering with DMACC to bring you two STEM Festivals!

To register for DMACC-Ankeny, click [HERE](#)!

To register for DMACC-Boone, click [HERE!](#)

DMACC's **Boone Campus** will host a free, family-friendly STEM Festival on **September 29, 2014**. The event will kick-off with **dinner offered from 5-6PM**. The **festival follows from 6-8PM**. It is open to the public, with a target audience of 3rd to 8th graders and their families. It will take place in the **Boone Campus Commons**. Registration is required for dinner, but festival walk-ins are welcome.

On **October 28, 2014**, DMACC's **Ankeny Campus** will host a similar STEM Festival. The event is open to the public and will take place from **6-8pm in the FFA Enrichment Center Atrium**. Refreshments will be available. Registration is appreciated, but walk-ins are welcome.



Students at Indian Hills Community College's STEM Festival explore green screen technology.

In the past, festival-goers from pre-school to retirement, learned about the geometry of bubbles, technology in robotics, germs on a cell phone and the science in music and art.

"This festival is a one-stop exposure to a variety of STEM opportunities," said Sarah Derry, SC STEM Hub Manager. "It's also a way for business, industry, educators and the community to network."

Presenters have included John Deere, Area 515, Boone High School's Robotics Team, The Science Center of Iowa and many more. Terri Vos from Vermeer Public Relations thinks the connections are great for kids, but good for business, too. "The earlier we get kids excited about STEM," said Vos, "the more it will carry through for tomorrow's workforce."

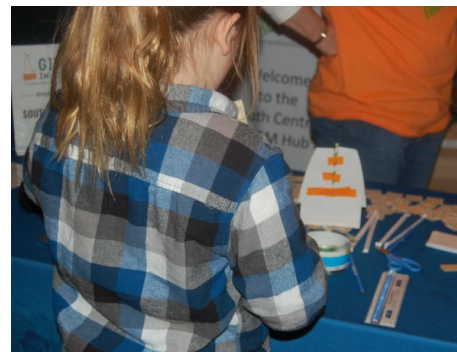
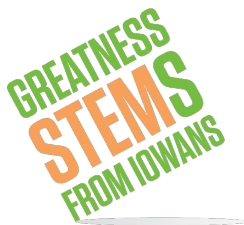
STEM Results

Three-part system yields **STEM Evaluation Results**

Each year, school districts that receive Scale-Ups are asked to complete a three-part evaluation, designed to look at the effectiveness of Iowa's STEM Initiative program.

Spearheaded by Governor Terry Branstad and Lt. Governor Kim Reynolds, the effort has become a bipartisan endeavor.

"Every one of the STEM programs rolled out to educators across Iowa this past year has met or exceeded its objective of inspiring greater interest in STEM among students," said Governor Branstad.



The Skimmer Kit was a great draw at SCI's Girls in Science Festival.

Come check us out! Materials may be borrowed for 2-6 weeks, depending on the item. They can be picked up and returned to Drake University's School Education. Please replace any consumables you use. You're also responsible for any damaged items. Some kits require teacher training.

Why check things out?

- If a class is already participating in a Scale-Up, the teacher might use the extra kits to create smaller working groups
- A teacher might have training or experience from another district and wish to implement in a new place
- An educator might want to check out a kit before applying for a Scale-Up

If you're interested, please email Sarah Derry at: scstemhub@drake.edu

In addition, if you have a need that is not on the list, please let us know. Perhaps we can find it via our network or add it to a future purchase.

Inventory List

Technology

30 Samsung Galaxy 7.0 Tablets

Kits, Equipment and Guides

-

"That's important because facts show that STEM careers pay, on average, \$10 dollars more per hour than non-STEM jobs, translating to average incomes of \$58,800 versus \$39,300 for all occupations."

Both teachers and students fill out a subjective form via the computer, then each STEM student participant is anonymously tied to grade-appropriate statewide testing. Here are the results from this year's study.

- Over 100,000 Iowa youth were involved in a Scale-Up
- 3,106 classrooms and clubs engaged
- Student achievement in science and math increased
- Student interest in STEM classes and careers increased
- The gender gap in STEM classes and careers is narrowing
- \$1.8 million in grant money was dedicated to STEM
- \$3.5+ million were cost-shared by businesses, post-secondary institutions, service providers and local school districts
- \$268,500 were invested by local industry
- STEM teacher certification launched

But there's still a lot of work to do.

- More STEM teachers are needed
- Outreach to minority students must be increased
- Students enrollment in advanced STEM classes could increase
- As of 2012, there was an estimated 10,000 STEM jobs across Iowa that can't be filled by Iowa's current labor force
- Only 41% of Iowans surveyed knew what the acronym stood for; only 26% knew the year before

To read the complete report, please click [here](#).

Inspiring STEM

SC STEM Hub's Advisory Board Member Rosemary Peck

Rosemary Peck has always loved science, so it's just natural that she's part of the SC STEM Hub's Advisory Board. Perhaps it all began when her father took her fossil hunting. "When I found out that what I was holding was part of a living creature some 400 million years ago—that was amazing!"

Doing experiments were always her favorite days at school. "There is nothing like the contagious excitement of a room full of students engaged in science. If you have never experienced it, I would suggest volunteering at your local school."

Peck knows a thing or two about the local schools. She taught 6-8 grade science for 19 years. Currently, she's working with



K-6

- * EIE Design Windmills
- * Kidw ind Windmills
- * Kidw ind Wind Turbine
- * Kidw ind Wind Tunnel
- * AWIM Inspired by Nature
- * AWIM Jettoy
- * AWIM Skimmer
- * AWIM Straw Rocket
- * AWIM Gravity Cruiser
- * AWIM Motorized Toy Car
- * Camp in a Can Scales & Tails
- * EIE Parachutes
- * Carolina Patterns All Around
- * Carolina Microw orlds
- * Carolina Plant Grow th & Development

6-8

- * AWIM Gears
- * AWIM Fuel Cell
- * AWIM Glider

9-12

- * Light Sensor
- * Motion Detector
- * Labquest 2
- * Voltage Probe
- * TI Light Probe
- * Temperature Probe
- * pH Sensors
- * Adafruit ARDX-v1.3 for Arduino

Educator Books and Materials

-

K-5

- * Sally Ride Science Program (space)
- * EIE Designing Knee Braces
- * EIE Designing Bridges
- * EIE Designing Water Filters
- * EIE Designing Walls
- * EIE Designing Plant Packages
- * EIE Designing Maglev Systems
- * EIE Improving a Play Dough Process
- * EIE Replicating an Artifact
- * EIE Designing Alarm Circuits
- * EIE Designing Lighting Systems
- * EIE Cleaning an Oil Spill
- * EIE Designing Submersibles
- * EIE Designing Parachutes
- * EIE Evaluating a Landscape
- * EIE Designing Model Membranes
- * EIE Designing Hand Pollinators
- * EIE Making Work Easier
- * EIE Seeing Animal Sounds
- * EIE Safe Removal of Invasive Species
- * EIE Engineering Bubble Wands
- * EIE Designing Solar Ovens
- * AWIM The Design Experience, Challenge 2
- * Family Science
- * Push, Pull, Go
- * Carolina Student Notebook Blank
- * Plant Grow th and Development
- * Motion and Design
- * Soil

science teachers as a Great Prairie Area Education Agency Science Specialist, traveling to various districts and assisting with curriculum development. "I have found our teachers are working hard and are very interested in implementing curriculum that is engaging, hands on and involves STEM," says Peck.

With so many STEM career opportunities in Iowa and across the nation, this area promises future growth. For that reason, she's dedicated to giving Iowa students as many opportunities to explore and engage in STEM fields as possible.

"As educators, we need to develop the understandings and skills that will help students become science literate adults," says Peck, "to prepare them for the science and technology that will be a part of their everyday lives, and that would also allow them to pursue a career in a STEM field if they so choose."

From that first fossil discovery to district support, Peck hopes Iowa students look at science like she does and say, "That was amazing."

Scale-Up Professional Development Schedule



Gina Laidlaw integrated AWIM's pinball unit into her classroom last year. "It challenges and focuses all kids in lots of different ways," said Laidlaw.

Upcoming Professional Development Training Sessions

All 2014-2015 STEM Scale-Up recipients are asked to attend a professional development session before classroom integration. Qualified educators may go to any training throughout the state. Please contact the Hub manager in that area to ensure materials and space are waiting for you when you arrive.

In the South Central STEM Hub Region, the following training sessions will take place. Email Sarah Derry at scstemhub@drake.edu if you have any questions.

"The job of science specialist is exciting," says Peck, "as I get to work with districts and dedicated teachers on the science curriculum."

- * Sound
- * Ecosystems
- * Changes: liquid, solid, gas
- * Malarky and the Big Trap
- * The Three Little Pigs Sledding Adventure

7-12

- * Exploring the Nature of Light
- * Studying the Development and Reproduction of Organisms
- * Exploring Plate Tectonics
- * Exploring the Properties of Matter
- * CASE Training Notebook
- * Issues in Physical Science Text and Materials
- * Science and Global Issues Text and Materials

NSTA Teacher Resources

- * The Case for STEM Education
- * Everyday Engineering
- * Exemplary Science for Building Interest in STEM Careers
- * Integrating Engineering + Science in Your Classroom
- * Introduced Species
- * Teaching Science in the 21st Century
- * Teaching Science in the Two-Year College
- * Technology -Based Inquiry for Middle School
- * Technology in the Secondary Science Classroom
- * STEM Student Research Handbook



9/3 Pint-Size Science (PSS) - Drake University
 9/4 AWIM - Drake University
 9/10 Defined STEM - Drake University
 9/16 KidWind - Drake University
 10/8 EiE - Drake University
 10/9 EiE - Heartland AEA, Adel
 10/9 PSS - National Balloon Museum, Indianola
 10/10 PSS - Science Center of Iowa
 10/18 PSS - Science Center of Iowa
 11/14 FTC - Drake University
 6/2015 CASE - TBA

The North Central STEM Hub Region neighbors us to the north, and the following training sessions will take place. Please email Lynne Campbell at lynnecc@iastate.edu if you have any questions or wish to attend those sessions.

9/15 Defined STEM - Ames (tentative)
 9/17 KidWind Mason City - NIACC
 9/22 AWIM - ISU, Reiman Gardens
 9/23 AWIM - N. Butler (Greene)
 9/23 AWIM - Mason City NIACC
 9/25 EiE - Mason City NIACC
 9/26 EiE - Ames
 9/30 KidWind - ISU, Reiman Gardens
 10/15 PSS - Marshalltown
 10/8 PSS - Ames
 10/17 PSS - Webster City
 10/18 PSS - Science Center of Iowa
 10/18 FTC-MU - Gallery
 10/24 EiE- Ames

Events

There's more! Don't miss these events:

Sept 1 [Maker Faire](#), SCI-Iowa
 Sept 3 Pint-Size Science Training, SCI-Iowa
 Sept 4 AWIM Training, Drake
 Sept 10 Defined STEM Training, Drake
 Sept 12 State-wide STEM Board Members Mtg, Iowa City
 Sept 16 KidWind Training, Drake
 Sept 29 STEM Festival, [Boone's DMACC Campus](#)
 Oct 4-5 [Creek Freaks](#), metro area
 Oct. 8 EiE Training, Drake
 Oct. 9 EiE Training, Heartland AEA, Adel
 Oct 9 Pint-Size Science Training, Indianola - Nat. Balloon Mus.
 Oct 10 Pint-Size Science Training, SCI-Iowa
 Oct 18 Pint-Size Science Training, SCI-Iowa
 Oct 21-22 [ICTM - ISTS Math Science Conference](#), ISU

Become a Volunteer!

Q: Why does John Deere software developer **Jason Faas** volunteer as a mentor at Des Moines Christian Schools?

A: "Science and all STEM programs are exciting. This is a great opportunity for kids. I got inspired at a young age and that lead me into a great field."

If you'd like to volunteer, call your local school or click [HERE](#) for a STEM calendar of events.

Spread the word about STEM EVENTS in your community!



Joseph takes home new Lego from the Iowa Lego Users Group at the Iowa State Fair's STEM Festival. He engineered his award-winning structure by "making sure the bottom didn't tip."

Visit the South Central
[STEM Calendar](#)

To submit your STEM event, click [here!](#)



Oct 28 STEM Festival, [Ankeny's DMACC Campus](#)

Nov 1 FIRST Tech Challenge Training, Drake - Olmsted Center

June 15 CASE Training, TBA

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