

STEM-IN'

Indiana STEM News



**STEM
SCOUTS**

SCIENCE
TECHNOLOGY
ENGINEERING
MATH

It only took one STEM Scouts lab activity for

Stephanie Fortune to become a believer in the program. Fortune, a lab manager for the Robey Elementary School STEM Scouts lab, decided to volunteer with STEM Scouts as a fun opportunity to spend time with her daughter while fostering her STEM interest. She says her daughter is always questioning about how things work and why things are the way they are.

STEM Scouts builds on the natural curiosity of youth, like Fortune's daughter, while developing skills in teamwork, leadership and thinking outside of the box. During a recent engineering lab activity, Fortune described how the STEM Scouts became frustrated because their results weren't coming together the way they expected. She explained to the group that is how engineering works and they have to learn to keep making adjustments until they find the right solution.



Using hands-on activities and the guidance of volunteers like Fortune, STEM Scouts is offering youth in central Indiana the opportunity to explore and grow in their knowledge of STEM and build team work and leadership skills while having fun. Six elementary schools and two middle schools are now offering the STEM Scouts program as part of their after school opportunities. For more information on STEM Scouts, visit www.stemscouts.org/indianapolis, Find out how you, your organization, or school can be involved by contacting stemscoutsind@scouting.org, 317-813-7125.

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Statewide Robotics Initiative (TechPoint Foundation For Youth)

TechPoint Foundation for Youth (TPF4Y) has launched a statewide robotics initiative that will provide the opportunity for hands-on science, technology, engineering, and mathematics (STEM) learning experiences for Indiana elementary students.

Schools that take part in the Statewide Robotics Initiative will implement VEX IQ Robotics as an extracurricular program alongside select Project Lead The Way (PLTW) classroom activities. This initiative includes a partnership between the Indiana Department of Workforce Development, TPF4Y, PLTW, REC Foundation, and VEX Robotics. Building on the successful City of Indianapolis VEX Robotics model, the Robotics Initiative will award eligible elementary schools start-up resources to kick-off a competitive robotics program and provide professional development for elementary teachers. An estimated 400 elementary schools will receive funding during year one, with an additional 400 during the second year. After two years of successful implementation, over 1,000 teachers will have been trained in robotics education activities, reaching 80,000+ elementary students.

Indiana has the opportunity to be the first state to make robotics accessible to all elementary students. For more information, please visit our website at www.TechPointYouth.org/robots.

New Indiana Science Standards The Indiana State Board of Education has approved the newly revised 2016 Science Standards for the State of Indiana. The science standards revision process began well over a year ago and was modeled after the standards revision process implemented in 2014 for Mathematics and English Language Arts Standards. Additionally, the resources and supporting documentation for the science standards is similar to that of Math and ELA in order to remain consistent for Indiana's teachers.

When Indiana adopted new science standards in 2010, we led the country with the inclusion of Engineering and Technology Standards. Indiana will continue to lead and prepare students for the 21st century workforce by including Computer Science standards K-8. The Indiana Department of Education formed committees of teachers and professors in April of 2015 to review the 2010 standards. Committees were composed of a wide demographic of experts and geographically represented the entire state. These committees met virtually providing comments and suggestions in spreadsheets. Suggestions and comments were reviewed by a leadership team composed of master teachers, education and content professors, and then were vetted against the most up to date research in science education, the *Framework for K12 Science Education*.

The standards have been reviewed through multiple statewide public comment periods. Comments from the public were again considered by the leadership team, vetted against research, and where needed, revisions were made. Most importantly, the public comments provided the Department guidance about resources and implementation. The Department intends to provide a variety of supports for classroom teachers to implement the 2016 standards, including regional professional development, resource guides, correlation documents, and collaborations with organizations to provide additional support, such as with IUPUI and Nextech for Computer Science professional development. Examples of resources have been provided for review. With adoption, IDOE specialists will continue resource development anticipating all resources to be prepared by mid-May.

For more information or to read the standards go to: <http://www.doe.in.gov/standards/science-computer-science>

Indiana Afterschool Network – At the national forefront of out-of-school time STEM learning by Bob Abrams, IAN

Universities partner with Indiana Afterschool Network in STEM education study The Indiana Afterschool Network (IAN) mapping database (<http://www.indianaafterschool.org/state/mapping-database/>) currently includes information on 984 Indiana out-of-school programs. Of this total, 45% of the programs (443 of them) regularly offer STEM education programming.

The out-of-school time setting offers great opportunities to expand the STEM learning day. Without the requirements of in-school curricula, out-of-school time provides educators

with the flexibility to choose hands-on activities that are fun and engaging to students.

While the IAN was the first to create comprehensive standards for out-of-school time STEM learning and these standards are utilized by many programs throughout Indiana and nationwide, the informal learning environment does not have processes to certify teacher preparation or to assess teacher performances as mandated for in-class educators. Because of the great potential offered by the out-of-school time space to contribute significantly to STEM education, several universities have devoted considerable resources to researching the effectiveness of informal STEM programs in order to identify improvement opportunities.

Since 2013 the IAN has partnered, along with other state out-of-school networks, with the Program in Education, Afterschool, and Resiliency (PEAR) of Harvard University in the development and deployment of the Dimensions of Success (DoS) evaluation process for STEM. Currently the IAN is engaged in another such research project led by PEAR and the Institute for Measurement, Methodology, Analysis, and Policy (IMMAP) of Texas Tech University.

The Afterschool & Science, Technology, Engineering, and Math (STEM) System Building Evaluation is an eleven state capacity-building project that aspires to change the quantity and quality of STEM offerings to young people enrolled in informal science programs. In Indiana STEM programs are being studied in 15 afterschool sites around the state. Not only are DoS observations being conducted at each site, but the young people participating in these programs are also being surveyed to compile data on the following dimensions:

- Interest and engagement in science-related activities
- Knowledge and interest in science-related careers
- 21st Century skills, including critical thinking, perseverance, and cooperation
- Science identity and motivation to do science

The results of this study, which will be available later in 2016, promise to be very helpful in identifying the factors that need to be addressed in order to ensure that STEM learning taking place in out-of-school programs is high quality and effective.

Contact Bob Abrams, IAN STEM Coordinator -- babrums@indianaafterschool.org, 812-344-0405.

About STEM-IN' This newsletter is published six times per year by the I-STEM Resource Network. For inquiries and news contributions please email: istem@istemnetwork.org.

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EVERY student **EVERY** school **EVERY** day