

STEM-IN'

Indiana STEM News

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The Children's Museum of Indianapolis TCM provides workshops, teacher professional development, school programming, and outreach covering STEM subjects closely tied to our award-winning exhibits. *Dow AgroSciences ScienceWorks* has been reinvented to feed the curiosity of the next generation of young scientific explorers! Explore the work of real scientists like hydrologists, naturalists, and geologists. See how people like engineers and farmers use science process skills to ask questions and seek answers to help us in our daily lives. Our new *STEMLab* and *SciencePort* provide hands on STEM experiences for students.



In *Beyond Spaceship Earth*, experience the dynamic story of space exploration from NASA's Project Mercury program to the International Space Station (ISS). Discover astronaut artifacts, learn space-travel history and immerse yourself in the life of an astronaut. Transport yourself to the land of dinosaurs 65 million years ago in *Dinosphere* where you'll experience thundering footsteps, unusual plants, a brilliantly colored sky, and changing weather. Immerse yourself in three dramatic archaeological recreations in *National Geographic Treasures of the Earth*, you'll discover: the tomb of Egyptian pharaoh Seti I, the burial site of China's Terra Cotta Warriors, and the Caribbean shipwreck of Captain Kidd.

For more information and units of study, visit <https://www.childrensmuseum.org>.

Science Textbook Adoption Indiana adopted new science standards in April 2016. These new standards are unique

to Indiana, but based in part on the Next Generation Science Standards. The standards include not only updates to what students should know about science, but also seven crosscutting concepts that bridge disciplinary boundaries, connecting core ideas in science and engineering. And the new standards require inquiry-based learning with hands-on materials.

The seven crosscutting concepts are as follows:

1. *Patterns.* Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them.
2. *Cause and effect: Mechanism and explanation.* Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.
3. *Scale, proportion, and quantity.* In considering phenomena, it is critical to recognize what is relevant at different measures of size, time, and energy and to recognize how changes in scale, proportion, or quantity affect a system's structure or performance.
4. *Systems and system models.* Defining the system under study—specifying its boundaries and making explicit a model of that system—provides tools for understanding and testing ideas that are applicable throughout science and engineering.
5. *Energy and matter: Flows, cycles, and conservation.* Tracking fluxes of energy and matter into, out of, and within systems helps one understand the systems' possibilities and limitations.
6. *Structure and function.* The way in which an object or living thing is shaped and its substructure determine many of its properties and functions.
7. *Stability and change.* For natural and built systems alike, conditions of stability and determinants of rates of change or evolution of a system are critical elements of study

Altogether, the new science standards represent a leap forward for STEM education in Indiana.

Recently there was a statewide textbook adoption caravan where various vendors presented new science curriculum to teachers and administrators in eight different regions. I-STEM participated to offer the updated Indiana Science Initiative to schools. Attendance was high at many of the sites, and teachers across Indiana are genuinely interested in expanding science education in their classrooms.

But there also is an undercurrent that threatens science in Indiana: many schools do not have budgets to support the hands-on, inquiry model of science education included in the new standards. Some schools may choose to not upgrade their curriculum to these new standards, which is a local decision. Other schools are looking at “open source” science: science using free internet resources with a possible small budget for materials. Still other schools are looking to reduce or eliminate science, particularly in elementary grades, since science doesn’t really count in the current school accountability model. All of these approaches do not align with the new standards, but are reactions to the fiscal reality in many districts.

If you have an interest, please check with you local schools and ask: “What are you doing to expand STEM education in our schools?”

The SIXTH Annual Indiana Summit on Out-of-School Learning Indiana Convention Center, Downtown Indianapolis April 10-11, 2017, 7:30 a.m. - 5:00 p.m.

Hosted by the Indiana Department of Education and the Indiana Afterschool Network. Grab a great opportunity! Be part of the 2017 Indiana Summit on Out of School Learning, with the newest ideas in afterschool and summer programming.

It will be two days of exciting keynote speakers, networking events, exhibitors, and more than 50 innovative, engaging workshops on afterschool and summer learning. The Summit brings together our state’s top talent to share the latest advances in our field. Join more than 750 youth workers, educators and community partners to connect, learn, and access resources that advance learning opportunities for Indiana’s K-12 youth.

REGISTRATION NOW OPEN! Go to:

<http://www.cvent.com/events/2017-indiana-summit-on-out-of-school-learning/event-summary-62711324d7ce43ba836fae39f35c02a2.aspx>

Regular Rate (after January 15): \$95

STEM in the Indiana General Assembly HB 1001, the biannual budget bill for Indiana actually includes \$2M for STEM education! Termed “STEM Program Alignment” the budget calls for \$1M for each year, allocated to the State Board of Education. No additional details are provided, but this is a start towards coordinating STEM education in Indiana. The STEM Teacher and Recruitment Fund is budgeted to be renewed for \$5M per year through the Commission for Higher Education. And The DWD Skill-Up IN Grants are included under “Career and Technical Education Innovation and Advancement” for \$24.365M per year across many programs.

Indiana ESSA Call to Action The Indiana Department of Education is currently preparing the state plan to carry out the new Every Student Succeeds Act (ESSA), the replacement law to No Child Left Behind. ESSA generally places much more control in education spending, priorities and assessments in the state’s hand, making the state plan exceedingly important.

The IDOE has a web site with information about their plan and its timetable: <http://www.doe.in.gov/essa>. You can express your thoughts about STEM education via the public comments using the Feedback button at the website. The final submission must be approved by the Governor and submitted in September 2017.

The importance of quality STEM education in Indiana cannot be overemphasized. STEM must be a priority from the IDOE on down the line to every school. Please make your position known to the IDOE. Specifically, we should ask for:

- Include Science in the State Accountability Plan
- Restore STEM funding lost with the end of Math-Science Partnerships (need \$5M) under Title 4A
- Need more teacher professional development for Science/STEM under Title II

About STEM-IN’ This newsletter is published 12 times per year by the I-STEM Resource Network and the Indiana Afterschool Network. For inquiries and news contributions please email: istem@istemnetwork.org.

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