

## Purpose

The vision for the Indiana Science Initiative [ISI] is to systemically reform K-8 science education in Indiana based upon scaffolded guided inquiry using research-based curricular materials enhanced with literacy education.



## Contact

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The Indiana - Science Technology Engineering and Mathematics (I-STEM) Resource Network, the Indiana Department of Education, and Eli Lilly and Company are working together to reform K-8 science education in Indiana through the Indiana Science Initiative (ISI). In 2009 a committee of K-12 educators, scientists, science educators, government agents, business leaders, and higher education faculty created the strategic plan for K-8 science reform. The plan addresses five essential areas: research-based curricular materials, professional development, assessment and evaluation, materials support, and advocacy and leadership.

## ISI Going Forward

Approximately 136 K-8 schools representing over 2,100 teachers and over 53,000 students have committed to ISI for six years (2011-2017).

- Includes ongoing professional development, materials management, and professional support
- Includes a \$7.7 million commitment from the schools towards research-based science instruction

ISI includes two ongoing evaluations conducted by external evaluators to study impacts on student learning, teacher knowledge and performance, impacts on teachers' pedagogical practices, perceptions of ISI quality, support for ISI instruction, impacts on students' interest in science, and effectiveness and quality of the professional development.

## ISI Data

In 2010-2011 approximately 1,000 teachers representing over 100 schools and approximately 40,000 students participated in an ISI pilot program. Pilot teachers attended professional development and used two research-based curricular modules. Of the schools that were in the pilot and continued with school-wide ISI adoption, we have looked carefully at 10 schools and the impact ISI has had on student performance in Science, English/Language Arts (ELA) and Mathematics. The overall percentage of students in ISI schools passing ISTEP+ has steadily increased from 2010-2014.

Analyzing 2014 ISTEP+ scores for 329 Indiana schools:

- Science pass rates in ISI classrooms were 11% above matched non-ISI classrooms
- ELA pass rates in ISI classrooms were 7% above matched non-ISI classrooms
- Mathematics pass rates in ISI classrooms were 8% above matched non-ISI classrooms



## **Indiana Science Initiative Fact Sheet for 2015- 2016**

### **Schools: 152**

ISI works with some of the largest school districts in the state, including South Bend and Evansville-Vanderburgh. ISI also works with a diversity of charter and non-public schools, such as the Tindley and Phalen academies, Teach for America, Brooklyn Elementary, and Our Lady of Lourdes and St. John the Baptist. The average Free-and-Reduced-Lunch rate of ISI schools is 62%, compared to the state average of 49%. All ISI schools are contracted through the 2016-2017 school year.

### **Teachers: 2,409**

ISI provides more science and mathematics instruction in Indiana than any other source, with more than 3,000 teachers trained since 2010. During the summer of 2014 ISI trained 516 teachers for 5,376 hours total. Additional trainings have continued during the school year to accommodate last minute staffing assignments. ISI integrates literacy and mathematics extensions into its training, and will add engineering in the summer of 2015. ISI is also holding three “STEM Saturdays” in South Bend in 2014-15. We are developing training and support for expanding building-level Science Leaders in ISI schools in 2015, a proven best practice in K-8 education.

### **Students: 51,336**

ISI engages students across Indiana with a rich, research-proven science and literacy curriculum that exceeds all other inquiry-based curriculum in the state. When taught with fidelity, the ISI curriculum improves student success as measured by statewide tests. Additionally, the curriculum is engaging and team-oriented, helping students learn critical thinking skills, work together on problem solving, and plan and execute investigations. We also believe that students benefit from organized STEM instruction during out of school time. We held our first teacher-led STEM camp in the summer of 2014 with 105 students in Richmond. We plan to replicate this model in our other school districts as funding allows.

### **Materials: Over 8 million pieces shipped weighing over 4 tons**

ISI ships and receives over 4 tons of curricular materials each year. ISI manages an inventory of 3,290 kits, scheduling shipping, returns, and refurbishment using a lean process that minimizes inventory while maximizing classroom time. In addition to inventory management, ISI focuses on the quality of its materials handling operations by measuring errors in kits delivered to teachers. ISI knows that when a teacher does not have the correct materials in hand, then learning might be compromised. In the 2013-2014 school year ISI recorded 4,361 errors for the 8,055,889 pieces shipped, resulting in an error rate of 541 PPM. For the 2014-2015 school year, ISI has reduced the error rate to 44 PPM – a 92% improvement.

### **Results: Four years of positive ISTEP+ improvements in Science and English Language Arts**

ISI has analyzed ISTEP+ performance at 107 schools around the state which have used the ISI curriculum for grades K-8 for 2014. Results from these 107 schools were compared to matched non-ISI classrooms in Science, English language arts, and Mathematics. Science performance (as measured by the passing rate for the ISTEP+ test) improved 11% compared to non-ISI classrooms. Additionally, ELA passing rates improved 7% and mathematics improved 8%. ISI knows that, when taught with fidelity, the ISI curriculum improves student performance.