



## Case for Support 2015-2016

The Invention Convention  
A program of The Ohio Academy of Science  
1500 W 3<sup>rd</sup> Ave. #228  
Columbus, OH 43212  
614-565-5731  
[www.inventionconvention.org](http://www.inventionconvention.org)

## HISTORY

Invention Convention began in 1993 as the brainchild of the Columbus Dispatch Printing Company in Columbus, Ohio. The Dispatch wanted to reach out to the Sandusky community to play a more significant role in the future success of the community's youth. They decided to focus on sharing good news and they built the concept of "invention convention" – focusing on bringing creative problem-solving skills and unique math and science curriculum to area schools. What they didn't realize, was that this program had such an amazing educational value to it, that educators in Columbus said, "We have real value here, we must have this program in our schools too!" The Dispatch then formed a 501c3 entitled, "Just Think, Inc." and in 2014, The Ohio Academy of Science took Invention Convention under its wing where it thrives today! During the past 21 years, The Invention Convention has been a tremendous success in Ohio, and as a free program, has awarded more than \$700,000 in college scholarships, taught invaluable problem-solving skills, built self-esteem, rewarded creativity, and has helped shape the future workforce of Ohio.

## MISSION STATEMENT AND PRIMARY GOALS

The mission of The Ohio Academy of Science and the Invention Convention program is to foster curiosity, discovery and innovation and unite all who value education, science, engineering and technology, or their application, for the benefit of society. Our goals are to enhance student performance in Ohio's Learning Standards in math, science, and language arts through administration of the Invention Convention program and to increase the interest of Ohio's students in STEM (Science, Technology, Engineering and Mathematics) and STEAM (Science, Technology, Engineering, Art and Mathematics) careers.

## OBJECTIVES

Our objectives are to reinforce Ohio's educational standards in math and science through critical thinking and problem-solving activities associated with the Invention Convention curriculum; to reinforce Ohio standards in language arts through communication activities associated with the Invention Convention curriculum; and to expose Ohio children to STEM- and STEAM-related activities through participation in the Invention Convention program.

## VISION/IMPACT STATEMENT

Invention Convention envisions a day when every child in Ohio has the chance to follow their natural curiosity, invent creative solutions to problems, and be inspired to achieve their highest level of personal accomplishment. If the goals of the Invention Convention are met, the ultimate impact will be that school systems involved in the Invention Convention program see a measurable improvement in tests scores and that Ohio's workforce is better prepared for the high-tech jobs of tomorrow.

## VALUES

*Imagination:* We believe in the natural inclination of children to be imaginative.

*Opportunity:* We believe every child should have the opportunity to exercise their imagination and engage in creative problem-solving.

*The Future:* We believe that investing in critical-thinking skills, inventiveness and imagination will build a stronger, more resilient future workforce for our state and our nation.

## PROGRAM DESCRIPTION

The Invention Convention and its associated curriculum teaches creative problem-solving skills, innovative thought-processes and 21<sup>st</sup> century critical-thinking skills to children in grades K-8 all across Ohio for free. Modeled after the US Patent & Trademark Office's Project XL and aligned with national standards, the program is endorsed by educational administrators providing a complete 5-month free curriculum to teachers with full student materials. The program challenges K-8 public, private and home school students, from all-across Ohio to 1) identify a problem; 2) brainstorm solutions; and 3) build and field-test working prototype inventions. The highest-graded inventors move on to their region's finals to compete for continuing-education scholarships.

According to Sarah Luchs of the Ohio Department of Education, "Events like Invention Convention help students see relevance in and make connections between in-and-out of school learning as-well-as school and community learning. We encourage students to engage in opportunities to investigate these areas in applied, integrated, creative real-world ways because it generates greater levels of interest and learning (and will prevent some kids from dropping out or becoming disengaged.). **Our research indicates that when students pursue their interests (and are supported while doing so) their motivation for learning grows. They often develop a richer understanding and it lasts longer."**

## NEEDS STATEMENT

### Ohio's Workforce Crisis

Ohio is facing a workforce crisis in the coming years. According to the Bureau of Labor Statistics, Ohio lost more than 595,200 jobs in the last decade. While 75% of these jobs were lost between 2007 and 2010 during the Great Recession, nearly 300,000 had already been lost in manufacturing prior to that time. As these jobs left the state, Ohio's economy became increasingly reliant on the service sector, a sector that cannot sustain the state's economy long-term. The Ohio Skills Bank has found that Ohio's future economic outlook will only improve if the state increases its job growth in the following areas:

- Advanced Energy and Environmental Technology
- Aerospace, Propulsion & Power
- Food Manufacturing and Agriculture
- Bio-science
- Motor Vehicle and Parts Manufacturing
- Polymer and Advanced Materials

*These jobs require high levels of STEM skills. But where will Ohio find the workers for these high-tech jobs of the future when its current job base works in the service sector? How can we ensure that future workers are ready?*

### **Not Making the Grade in Science and Math Education**

The answer to Ohio's future workforce dilemma is math and science education, but the reality for Ohio's schools is that students can fall far behind in these areas. The state's economic woes have only pushed spending on STEM education lower on the list of priorities. Consider these facts:

- In 2014, 50% of ACT-tested high school graduates failed to meet the College Readiness benchmarks for mathematics and 55% failed to meet them for science. (ACT Ohio College and Workforce Readiness 2014 Report)
- In 2014-2015, between 32% and 36% of all Ohio children in grades 5-8 failed to meet math requirement standards while 38% of all 5<sup>th</sup> graders tested and 40% of all 8<sup>th</sup> graders tested in the category of science failed to meet requirement standards.

*With the economic picture dark and the state of Ohio's schools exposed, what can be done to help close the gap and improve the outlook for Ohio's workforce?*

### **Starting Early**

The National Science Foundation has recommended that in order to address the critical need for STEM education in schools, all stakeholders should promote vertical alignment of STEM education across grade levels—from pre-K through the first years of higher education. In their recommendations to President Obama, the Foundation stated:

“The earlier children are exposed to STEM concepts, the more likely they are to be comfortable with them later in life. STEM core concepts and ideas should be included in Head Start and other early education programs, improving the extent and quality of elementary school STEM education should become a priority and the President should exercise his leadership often and intensely to motivate parents and other members of the community to support these goals.”

Educators and policy makers agree that STEM education must start early and remain a priority throughout the educational process if we are to achieve our goals.

## **A Simple, Low-Cost STEM Intervention**

Invention Convention, is dedicated to inspiring curiosity, confidence, invention and creative problem-solving in our youth, provides a free curriculum based on the U.S. Patent and Trademark Office Inventive Thinking Curriculum Project or Project XL. Any school system, or independent student participant, may utilize the curriculum, which adds enrichment opportunities, critical-thinking problems and additional instruction in math, science and literacy concepts for children beginning in Kindergarten. The program provides a complete, free 5-month or semester-long curriculum aligned with Ohio's Learning Standards to teachers, and an assembly rollout with accompanying student materials. School systems or outsource groups may then conduct local "Invention Conventions" within their districts to display their students' work. The highest-graded inventors, based on a standardized rubric system, have an option to go on to their region's finals where the highest-awarded receive continuing-education scholarships.

## **Why Inventing Makes Sense**

When a student is asked to "invent" a solution to a problem, the student must draw upon previous knowledge, skills, and experience. The student also recognizes areas where new learning must be acquired in order to understand or address the problem. This information must then be applied, analyzed, synthesized, and evaluated. Through critical-thinking and problem-solving processes, ideas become reality as children create inventive solutions, illustrate their ideas, and make models of their inventions. The [Inventive Thinking Curriculum Project](#) provides children with opportunities to develop and practice higher-order thinking skills.

Providing this type of curriculum to school systems directly impacts its ability to improve a student's performance and increases opportunities for challenging math and science education which is critical to the future of our state and our nation.

Unlike other programs which may attempt to keep older students from falling behind in math and science, the Invention Convention reaches children as young as Kindergarten and engages them in scientific processes which will sow the seeds of future interest in STEM and STEAM education.

According to the ACT Educational Planning & Assessment System (ACT EPAS), "students most likely to major in STEM fields in college are those who develop interest in STEM careers through early career planning and take challenging classes that prepare them for college-level science and math coursework."

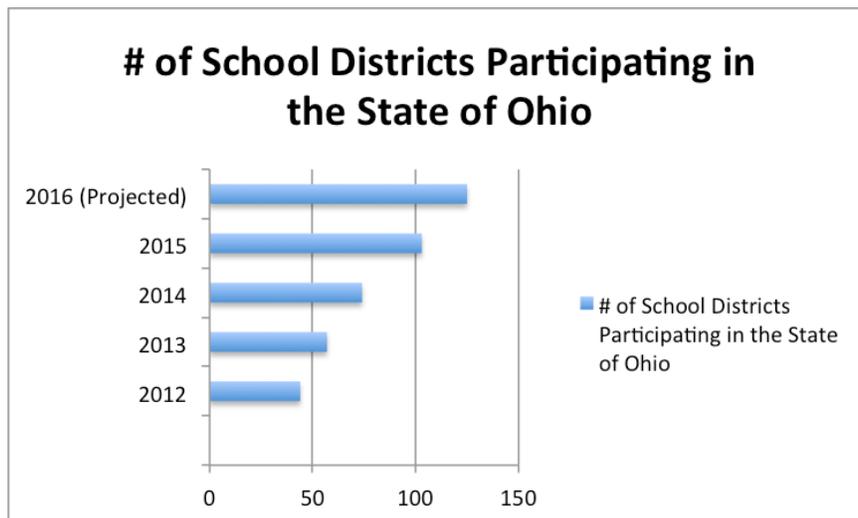
## **What's Needed to Succeed**

Here's the best part about Invention Convention, we are NOT a science fair. We do not want children to hear the word "science" and think, "Oh, science, I'm not good at that." We start by making sure the children understand that Invention Convention is all about problem solving. We all have problems and we can all come up with ideas to solve them!

There are several key factors which impact inventive-thinking curriculum implementation in the schools and the successful staging of Regional Invention Conventions. These are:

- Contacting and communicating with local school districts to introduce the curriculum and provide materials.

- Hosting “Lunch & Learns” for educators to keep them up-to-date on changes, answer questions and share different methods of presenting the curriculum to the classroom.
- Hosting in-school and community assemblies to introduce the program and explain the process.
- Identifying a key contact within each system to ensure that the curriculum is being adhered to.
- Providing informational support and offering video encouragement throughout the process.
- Assisting with teacher support to ensure that all students have the opportunity to showcase their inventions.
- Providing assistance with the judging process.
- Working with sponsors on providing advanced experiences for inventors through on-going “Inventor Experiences.”
- Staging Regional Invention Conventions including: finding operational locations for events, finding judges and volunteers, locating audio and visual support systems, securing scholarship funding, ordering and supplying participation awards, testing judging technology processes, finding educational expo participants, creating programs and sponsorship signage, collecting items for participating inventors, hosting awards ceremony.



Support is needed to defray the cost of staff and materials. The program implementation requires continued-community support. Without the support necessary to provide staff and materials, the Invention Convention would not exist. With educational budget cuts impacting our schools at both the state and local levels, the Invention Convention offers a free alternative for math and science enrichment. Failure to provide this program could worsen the current state of some schools’ math and science curriculums, and its absence means that our current students have even less opportunity to gain the skills they need for the high-tech jobs of tomorrow.

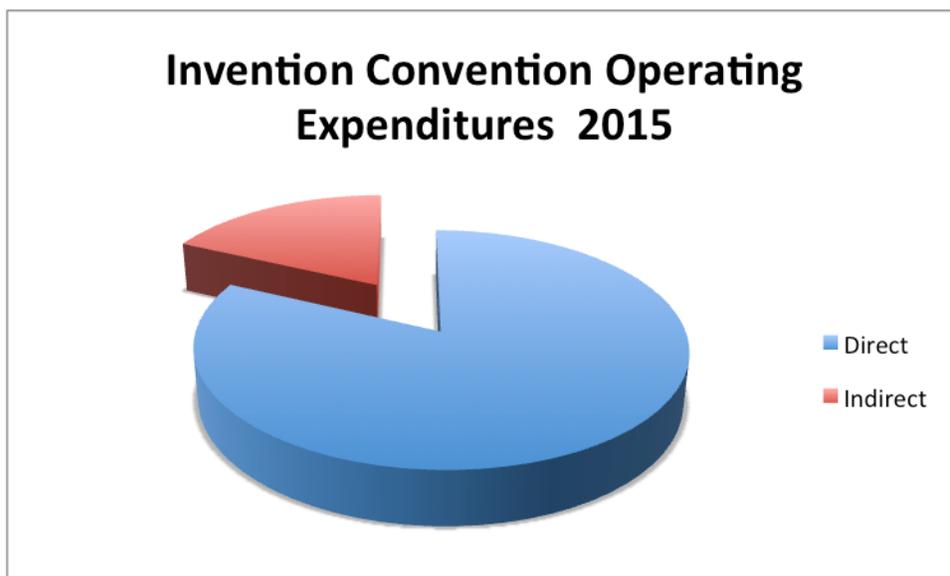
## OUTCOMES AND EVALUATION MEASURES

The outcomes of the Invention Convention program and the evaluation tools used to measure them are as follows:

- 100% of students completing the curriculum will utilize critical-thinking and problem-solving skills through participation in the activities associated with the curriculum. This will be measured by 1) Invention Convention journal completion (see attached); 2) documented evidence of oral presentation that communicates the problem chosen; and 3) documented evidence of building and field-testing prototype invention.
- 90% of students completing the curriculum will self-report an improvement in their oral communication skills as a result of participation in the activities associated with the curriculum. Evaluation tool: student survey.
- 65% of students who complete the program will report an increased interest in STEAM- and STEM-related careers.

## FINANCIAL INFORMATION

98% of the income for Invention Convention comes from corporate support. In 2014 and 2015 the Invention Convention operated on an average of \$250,000 per year, an increase of 15% in operating expenses vs. prior years'. Program growth and participation grew 180% within that same time period. Of the \$250,000 operating expenditures, \$45,000 is used annually to secure funding and ensure donor and sponsor execution is done effectively. In addition, this indirect funding is also used for the implementation and growth of our new Alumni program. A total of 18% of overall expenses is spent on indirect program costs.



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### ***Executive Director***

Veronica Lynagh

After volunteering as a fill-in judge, Veronica Lynagh took on the role of Director of Development of the Invention Convention in 2012 when she saw the impact the Invention Convention had on our youth. She now serves as the Executive Director of the program. Veronica leads the Invention Convention team of 12 contractors and 300+ volunteers by providing direction and vision for the 22 year-old Invention Convention program.

Veronica worked with the Dispatch Media Group from 2007-2012 as the Director of Sales for the Dispatch Shows Group, Dispatch Digital Sales Manager, and Niche Media Sales Manager. She continues to consult with select companies as an Integrated Marketing & Branding Consultant with Remerge Media.

Veronica earned her BA degree from Miami University in 2005 and is currently working towards her Juris Doctorate at Cleveland Marshall College of Law.

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