

SCIENCE OLYMPIAD



America's Most Exciting Team Science Competition

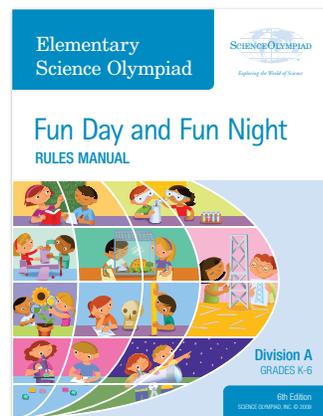
A researcher in the jungles of Panama studies a golden frog and remembers her favorite middle school Science Olympiad event, Amphibians and Reptiles. A high school science teacher prepares his lessons and recalls the singular influence that led him to major in Cellular and Molecular Biology at the University of Michigan and to pursue teaching, the Science Olympiad Designer Genes event. A geotechnical engineer who attended both MIT and UC Berkeley marvels at how learning to classify more than 200 rocks, minerals and fossils when she was 13 years old led her to a career sparked by Science Olympiad.

Science Olympiad was the most thought-provoking, educational and fun experience I ever had. Winning national medals in Compute This, Robot Ramble, Mission Possible and Disease Detectives led me to the field of technology. I strongly encourage anyone interested in science to get involved.

- NICK KURTZMAN, COMPUTER SCIENCE MAJOR, DUKE UNIVERSITY

For more than 25 years, Science Olympiad has led a revolution in science education. In the face of shrinking college enrollment in science majors, falling science test scores and a nationwide shortage of K-12 science teachers, Science Olympiad continues to challenge, inspire and inform the academic and professional careers of students and instructors across America.

Recognized as a model program by the National Governors Association Center for Best Practices in the 2007 report, *Innovation America: Building a Science, Technology, Engineering and Math Agenda*, Science Olympiad is committed to increasing global competitiveness for the next generation of scientists.



ONLINE STORE: Please visit store.soinc.org to order Rules Manuals, CDs, DVDs, Test Packets and other educational materials you can use to prepare for Science Olympiad tournaments and classroom instruction!

SCIENCE OLYMPIAD is a national non-profit organization dedicated to improving the quality of K-12 science education, increasing male, female and minority interest in science, creating a technologically literate workforce and providing recognition for outstanding achievement by both students and teachers. These goals are achieved by participating in Science Olympiad tournaments and non-competitive events, incorporating Science Olympiad into classroom curriculum and attending teacher training institutes.



Exploring the World of Science

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Teamwork Rules!

Fulfilling a desire to bring excitement to science education and competitions, Science Olympiad was founded in 1983 by educators Dr. Gerard Putz and John Cairns. After successful tournaments were held in Michigan and Delaware, the program began to attract interest from school districts all around the country. What began as a grassroots assembly of science educators has now become one of the premier science competitions in the nation. Currently, Science Olympiad holds 240 regional competitions in 47 states, engaging close to 200,000 students on 5,700 secondary school teams. Another 10,000+ schools participate in grades K-6.



At the competitive level, elementary, middle and high school students with a knack for science have a chance to excel inside and outside the classroom. Secondary school teams advancing to state and national tournaments are celebrated at pep rallies, travel to major universities, make new friends and experience what it's like to be a star in the community. One of Science Olympiad's main goals is to bring academic competition to the same level of recognition and praise normally reserved for athletic competitions in this country.

Science Olympiad Urban Schools Initiative

In 2006, the Science Olympiad Executive Board determined that increasing minority participation in Science Olympiad was one of the most important goals of the organization. With generous local grants and a strong consortium of partners, the Urban Schools Initiative was piloted in the Chicago Public Schools in 2007, providing teams with membership, materials and extensive training workshops for each of the school coaches. The program uses a three-year stepping-up progression of events and a protected regional concept to allow teams to advance to the state tournament while giving them the confidence to explore Science Olympiad events at a gradual pace.



Chicago Public School students compete in the Chem Lab at the Wright Community College Science Olympiad Regional Tournament as part of the Urban Schools Initiative.

In 2009, a student development workshop called the "Science Olympiad Build It Learn It Day" brought experts together from leading museums, universities and businesses to give Urban Schools Initiative participants a chance to design and construct bridges and planes, study real reptiles and amphibians up close and solve a crime using forensic techniques. An evaluation report by the University of Illinois I-STEM Department found that an overwhelming majority of students felt that Science Olympiad helped increase their interest in science, increased their interest in STEM courses and also, increased their confidence in their ability to do science.

Now, Hawaii, Texas, New York, California, Florida and Washington, DC are utilizing the Science Olympiad Urban Schools Initiative. Regional and state Science Olympiad organizations have applied to local businesses and foundations to seek grants, and for about \$1,000 per team, schools with minority enrollment can experience the joys of academic competition while coaches receive in-depth training in and out of the classroom. In some states, Science Olympiad Rural Schools Initiatives have been developed to serve a similar function and purpose in geographically remote areas.

Science Olympiad Competition

Middle School Division B (Grades 6-9)
and High School Division C (Grades 9-12)



Much like a football or soccer team, competitive Science Olympiad teams prepare throughout the year for tournaments. Each team is allowed to bring 15 students who may participate in a variety of events in their skill set. Practices vary from monthly meetings to weekly study sessions to daily work as tournaments near, supported by an interlocking group of peers, coaches, parents and mentors from the community, academia and industry.



Science Olympiad competitions are like academic track meets, consisting of a series of 23 team events in each division. Every year, a portion of the events are rotated to reflect the ever-changing nature of genetics, earth science, chemistry, anatomy, physics, geology, astronomy, mechanical engineering and technology. By combining events from many disciplines, Science Olympiad encourages a wide cross-section of students to get

involved. Emphasis is placed on active, hands-on, group participation. Through Science Olympiad, students, teachers, coaches, principals, business leaders and parents bond together and work toward a shared goal.

Teamwork is a required skill in most scientific careers today, and Science Olympiad encourages group learning by designing events that forge alliances. In Elevated Bridge, an engineering whiz and a kid from wood shop can become gold medalists. Similarly, a talented builder and a student with a good scientific vocabulary can excel in Write It, Do It. Science Olympiad shatters the isolated scientist stereotype.

The prestige of winning a medal at a Science Olympiad national tournament is often a springboard to success. Individual medals as well as championship trophies for each division are awarded at tournaments.

In addition, cash and tuition scholarships have been given in amounts exceeding \$5 million, with some national tournament host sites offering four-year, full-ride scholarships for gold medal winners in the C division and tuition stipends for gold medalists in the B division. Some events like Chem Lab or Disease Detectives offer prizes at the national level such as Texas Instruments sensors and calculators, trips to the Centers for Disease Control, cash awards and visits to professional conferences.



Where Are They Now?

Following the career trajectory of former Science Olympiad participants is an immensely satisfying experience for all the teachers, coaches, supervisors and directors who nurtured, mentored and shepherded scores of Science Olympians to competition.

After winning more than 45 medals over the course of his Science Olympiad career in Pennsylvania, **Peter J. Lu** went on to study physics as an undergraduate at Princeton and in 2008, received his PhD in physics from Harvard University. "Science Olympiad was the beginning of my interest and expertise in the sciences," said Dr. Lu. "It is not unfair to say that without Science Olympiad, there is a good chance I would not be where I am today." Now, in addition to serving as a member of the Science Olympiad National Advisory Committee, Peter is a sought-after writer and speaker, with recent articles published in the journals *Science* and *Nature*.

Add your story at www.soinc.org to the nearly 90% of Alumni Survey respondents who said that participating in Science Olympiad had a direct impact on their career choice.

Science Olympiad gave me the opportunity to further develop my scientific and engineering mind so when I went to college and eventually on to my military engineer career, I was a better prepared individual.

- LT. PHILLIP HINSON, CIVIL ENGINEER, UNITED STATES AIR FORCE

Science Olympiad opened the door to exploring more than what the ordinary classroom offers. It allowed me to focus my attention on topics that I enjoyed learning the most. It's an excellent tool to help kids be motivated about science, even if they aren't the typical straight-A students.

- JILL FISHER, BIO-ENERGY LAB TECHNICIAN, ICM INC.

In high school, Science Olympiad was an integral part of my growing love of science, engineering, and experimentation. I never stopped enjoying the process of design and creation, both in reality and in the computer.

- DR. BRIAN BREWINGTON, SOFTWARE ENGINEER, GOOGLE



Members of the Pierce Middle School Science Olympiad team at the 1991 Science Olympiad National Tournament in Kansas City, Missouri.



Peter Lu 1991



Dr. Peter Lu 2007



Elementary Science Olympiad

DIVISION A1 (Grades K-3) and DIVISION A2 (Grades 3-6)

Learning happens when students are engaged. Grab a handful of straws, some masking tape and a tennis ball and you've got an easy lesson in structural engineering that leaps off the page. Elementary Science Olympiad (ESO) shows kids that science is fun, accessible and exciting, with more than 10,000 elementary schools in the U.S. using Science Olympiad programs. Some held Fun Days, where every classroom in the school becomes a hands-on science lab, or a Fun Night, where small teams rotate through events staffed by experts and teachers. Some states even host district, regional or state competitions for grades 3-6, offering events like Don't Bug Me, Science Crime Busters, Pasta Bridge and Rock Hound. ESO is a great jumping-off point for Science Olympiad in the upper grades and a perfect way to enhance any school's curriculum.



Elementary Science Olympiad events like Straw Towers are ideal for public outreach events like this "Science in the City" Neighborhood Science Carnival hosted by the City of Chicago. On four successive Saturdays, kids and families were challenged to build the tallest tower capable of holding a tennis ball for three seconds. Simple science + engineering = fun for all ages!

Career Builder



Relationships between Science Olympiad and partners like Lockheed Martin, DuPont, The College Board, Discovery Education, Texas Instruments, and Society for Neuroscience expose students and teachers to practicing scientists and cutting-edge research and technology.

To strengthen real-world application of skills and invent new ways to test the acumen of competitors, Science Olympiad invites partners from industry, trade groups and associations to design, guide and supervise events. Since 1996, the Centers for Disease Control has sponsored Disease Detectives for both divisions, running the event at regional, state and national competitions, maintaining a dynamic web site on epidemiology and presenting at Science Olympiad professional development workshops across the U.S.

These partners and others act as STEM role models and provide volunteers and invaluable expertise to teams, state Science Olympiad organizations and regional competitions. Corporations find that Science Olympiad is an excellent source of students vitally interested in a specific sub-field, such as molecular genetics, robotics or chemical engineering, and can offer career guidance to a targeted audience.

Aligned to Curriculum

Science Olympiad events meet National Science Standards set by the National Research Council. Teachers searching for curriculum resources that illustrate standards in action have found success with Science Olympiad, because it emphasizes the close relationship between teaching and assessment. Science Olympiad highlights many of the elements of the Teaching Standards, Assessment Standards, Program Standards and Science Education System Standards.



Teachers from across the nation attend annual Science Olympiad Summer Institutes and numerous regional and state workshops to refresh their skills and learn about new events and science content standards.



The teamwork required in many Science Olympiad events parallels the collaborative group dynamic of scientists in real-world settings.

Events Include:

DIVISION B EVENTS FOR 2010

Life, Personal & Social Science

Anatomy (Skeletal, Muscular)
Bio-Process Lab
Disease Detectives (Population Growth)
Ecology (Grasslands, Taiga)
Ornithology

Earth & Space Science

Dynamic Planet (Earthquakes/Volcanoes)
Fossils
Meteorology (Everyday Weather)
Road Scholar
Solar System

Physical Science & Chemistry

Physical Science Lab (Wind Power)
Shock Value
Trajectory
Can't Judge A Powder
Science Crime Busters

Technology & Engineering

Battery Buggy
Elevated Bridge
Junkyard Challenge
Wright Stuff

Inquiry & Nature of Science

Compute This
Experimental Design
Pentathlon
Write It Do It

DIVISION C EVENTS FOR 2010

Life, Personal & Social Science

Anatomy & Physiology (Skeletal, Muscular, Endocrine)
Cell Biology
Disease Detectives (Population Growth)
Ecology (Grasslands, Taiga)
Ornithology

Earth & Space Science

Astronomy
Dynamic Planet (Earthquakes/Volcanoes)
Fossils
Remote Sensing (Human Impact on Earth)

Physical Science & Chemistry

It's About Time
Physics Lab (Wind Power)
Trajectory
Chem Lab
Environmental Chemistry
Forensics

Technology & Engineering

Egg-O-Naut
Elevated Bridge
Mission Possible
Mousetrap Vehicle

Inquiry & Nature of Science

Experimental Design
Picture This
Technical Problem Solving
Write It Do It

Science Olympiad National Tournament

Since the first National Tournament was held at Michigan State University in 1985, Science Olympiad has grown to include a field of more than 5,700 teams at the secondary level. Today, hosts like The Ohio State University, the University of Arizona and North Carolina State University provide state-of-the-art facilities, superb faculty and a wealth of scholarship opportunities at the Science Olympiad National Tournament, hoping to attract the next wave of engineers, doctors, researchers and technicians to the US workforce.



Photo credits: Jessica McConnell, The George Washington University & Jerry Kopach, Science Olympiad

UPCOMING NATIONAL TOURNAMENT SITES:

- 2010 **University of Illinois**
- 2011 **University of Wisconsin, Madison**
- 2012 **University of Central Florida**



Members of the Troy High School Science Olympiad team celebrate their first place win at the 2008 Science Olympiad National Tournament at The George Washington University in Washington, DC.

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MEMBERSHIP For a complete listing of events, state websites and tournament information, or to learn more about becoming a registered member team, please visit our website or contact us at: www.soinc.org

