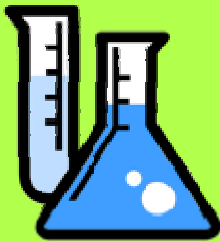


# Elementary Science Olympiad Fun Night



*Exploring the World of Science*

## Summary



**UNIVERSITY OF CENTRAL FLORIDA**  
CRROL & FPCH  
THE COLLEGE OF OPTICS AND PHOTONICS

## BACKGROUND AND PREPARATIONS

The Elementary Science Olympiad Fun Night is designed to promote science and mathematics in a fun, motivating way that includes parents and other family members as part of the experience. Together, the entire family can share in learning and exploring science while students are engaged in learning all about physics, chemistry, biology, earth space science, and engineering.

All events in the Florida Elementary Science Olympiad have been correlated to the Sunshine State Standards. Each correlated benchmark appears on the event page and as a separate page in this manual.

We hope that you will use Science Olympiad both in the classroom and at home as a way to engage students in learning science!

Interested in hosting an ESO Fun Night at your school? Go to our website at [www.floridascienceolympiad.org](http://www.floridascienceolympiad.org) and sign up. We setup the stations, train your volunteers, and provide medals and manual with rules. Only \$350 for a 2-hour event that will engage your students in science! *(Travel charges outside of Orlando area may apply.)*

### Philosophy of Science Olympiad

Unlike other competitions, Science Olympiad engages students in meaningful activities and requires them to test their knowledge in the presence of judges. This authentic assessment takes learning to a new level because students are required to demonstrate their new knowledge in real world applications. They not only study science but they DO science and through this process there is assurance that the students have engaged in the activities while parents take on a supervisory role. It is the goal of Science Olympiad to create events which challenge students while fostering an academic program that encourages problem solving, critical thinking, and student teamwork. We all know of those cases where over-ambitious parents have made the project their own. Science Olympiad encourages and values parental involvement yet, we stress that parental involvement should be confined to guidance and assistance which helps place the onus of learning science on the child.

One guiding principle of Science Olympiad is to improve the quality of science education, and our philosophy can be summed up in one word: FUN! We believe having fun always lowers barriers to learning, yet this does not mean that an academic program must be watered down. In fact, a fun academic program can be of higher caliber because students are more engaged and interested than they otherwise would be.

All the events are selected to maximize student interest, ensure correlation to the state standards, and cover one of three basic areas in the nature of science. The three areas in which Science Olympiad events are categorized are:

- **Engineering-based events** – events in which students build a device and test at the competition:
  - Barge Building
  - Egg Drop
  - Energy Lab
  - Save Our Earth
  - Straw Tower
  
- **Lab-based events** – students perform simple experiments using standard laboratory procedures:
  - Estimania
  - Save Our Earth
  - Science Detectives
  - Will It Float?
  
- **Research-based events** – students bring prepared resources to the event as a way to encourage prior research, selection of resources, and organization of materials:
  - Don't Bug Me
  - Planetary Partners
  - Rock Hound

As schools prepare their students, please note that we encourage students to participate in only 3 or 4 of the events during the evening so that they can learn their events well, rather than going to each station and trying to do everything. In other words, we want them to go deep rather than just skim the surface!



## Checklist of Items Needed at Host School

There are 11 events total. If a school would like to set up a duplicate station for each event to accommodate more attendees, double the items needed on this list.

### **Setup: These are the items that the school will provide at the Fun Night**

- A. \_\_\_\_\_ 1 - 2' x 6' or 2' x 8' table at each station, 2 at Straw Tower (12 total)
- B. \_\_\_\_\_ 2 chairs at each station (22 total)
- C. \_\_\_\_\_ 10 feet of space between each station
- D. \_\_\_\_\_ 1 volunteer for each station (2 preferred)
- E. \_\_\_\_\_ Source of water (*Barge Building, Egg Drop, Save Our Earth*)
- F. \_\_\_\_\_ Paper towels (*Barge Building, Egg Drop, Save Our Earth*)
- G. \_\_\_\_\_ Garbage cans (*Egg Drop*)
- H. \_\_\_\_\_ Egg Drop location
- I. \_\_\_\_\_ Electrical outlets (*Energy Lab*)
- J. \_\_\_\_\_ Display area (*Planetary Partners*)

### **Competition Preparation: These are found in the manual sent to you in advance**

- K. \_\_\_\_\_ 1 Copy of rules sent to each volunteer
- L. \_\_\_\_\_ 1 Copy of score sheet sent to judges/volunteer
- M. \_\_\_\_\_ 1 Copy of rules for students
- N. \_\_\_\_\_ 1 Copy of student worksheet for students
- O. \_\_\_\_\_ 1 Copy of rules and instruction packet to teachers
- P. \_\_\_\_\_ Letters home to parents
- Q. \_\_\_\_\_ Promotional flyers around school
- R. \_\_\_\_\_ Hang signs if events are in classrooms

### **Post Competition: These are found in the manual, but we provide the ribbons!**

- S. \_\_\_\_\_ Award Ribbons to 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> Place winners – FSO provides to school
- T. \_\_\_\_\_ Certificates for all students
- U. \_\_\_\_\_ Send Thank You Letters to volunteers
- V. \_\_\_\_\_ Evaluate our Program

### **Optional:**

- W. \_\_\_\_\_ ESO Shirts/Products (*Shop FSO link at [www.floridascienceolympiad.org](http://www.floridascienceolympiad.org)*)

## NEW Sunshine State Standards Correlations and Event Descriptions

Event and Description	Correlating State Benchmark in Science The student...
BARGE BUILDING – Students will construct a barge using aluminum foil that can support the greatest cargo	<ul style="list-style-type: none"> <li>■ <b>SC.5.P.13.1</b> Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects.</li> </ul>
DON'T BUG ME – Students will identify insects and the various stages of insect development.	<ul style="list-style-type: none"> <li>■ <b>SC.3.L.15.1</b> Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.</li> </ul>
EGG DROP – Students will construct a package to protect an egg from breaking that will be dropped free fall.	<ul style="list-style-type: none"> <li>■ <b>SC.5.P.13.1</b> Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects..</li> <li>■ <b>SC.5.P.13.3</b> Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion.</li> </ul>
ENERGY LAB - Students will build a device that most efficiently uses the energy supplied to a light bulb.	<ul style="list-style-type: none"> <li>■ <b>SC.3.P.10.3</b> Demonstrate that light travels in a straight line until it strikes an object or travels from one medium to another.</li> <li>■ <b>SC.3.P.10.4</b> Demonstrate that light can be reflected, refracted, and absorbed.</li> <li>■ <b>SC.3.P.11.1</b> Investigate, observe, and explain that things that give off light often also give off heat.</li> <li>■ <b>SC.4.E.6.3</b> Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.</li> </ul>
ESTIMANIA - Students will be asked to estimate the number of objects in containers containing between 10 and 1,000,000 objects.	<ul style="list-style-type: none"> <li>■ <b>SC.3.P.8.2</b> Measure and compare the mass and volume of solids and liquids.</li> </ul>
PLANETARY PARTNERS – Teams will draw an alien capable of living on a planet in the Solar System and will explain the alien's survival adaptations.	<ul style="list-style-type: none"> <li>■ <b>SC.5.E.5.2</b> Recognize the major common characteristics of all planets and compare/contrast the properties of inner and outer planets.</li> <li>■ <b>SC.5.E.5.3</b> Distinguish among the following objects of the Solar System -- Sun, planets, moons, asteroids, comets -- and identify Earth's position in it.</li> </ul>
ROCK HOUND - Students will prepare charts, identify various rocks and minerals and describe their characteristics.	<ul style="list-style-type: none"> <li>■ <b>SC.4.E.6.2</b> Identify the physical properties of common earth-forming minerals, including hardness, color, luster, cleavage, and streak color, and recognize the role of minerals in the formation of rocks.</li> </ul>
SAVE OUR EARTH - Students will build a water filtration device that can remove impurities from water and return the pH of the water to 7.	<ul style="list-style-type: none"> <li>■ <b>SC.5.E.7.1</b> Create a model to explain the parts of the water cycle. Water can be a gas, a liquid, or a solid and can go back and forth from one state to another.</li> </ul>

<b>SCIENCE DETECTIVES</b> - Students will locate items fitting a specified list of properties.	<ul style="list-style-type: none"> <li>■ <b>SC.2.P.8.1</b> Observe and measure objects in terms of their properties, including size, shape, color, temperature, weight, texture, sinking or floating in water, and attraction and repulsion of magnets.</li> </ul>
<b>STRAW TOWER</b> – Students will build the strongest tower using straws, paper clips, tape and pipe cleaners.	<ul style="list-style-type: none"> <li>■ <b>SC.5.P.13.3</b> Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion.</li> </ul>
<b>WILL IT FLOAT</b> – Participants will predict if common objects are more or less dense than water and then the objects will be placed into water after predictions are made.	<ul style="list-style-type: none"> <li>■ <b>SC.1.P.8.1</b> Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light), texture, and whether objects sink or float.</li> </ul>

**Applies to all events:**

- **SC.K.N.1.1** Collaborate with a partner to collect information.
- **SC.K.N.1.2** Make observations of the natural world and know that they are descriptors collected using the five senses.
- **SC.K.N.1.5** Recognize that learning can come from careful observation.
- **SC.1.N.1.2** Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color, and motion, and compare their observations with others.
- **SC.1.N.1.3** Keep records as appropriate - such as pictorial and written records - of investigations conducted.
- **SC.2.N.1.1** Raise questions about the natural world, investigate them in teams through free exploration and systematic observations, and generate appropriate explanations based on those explorations.
- **SC.2.N.1.5** Distinguish between empirical observation (what you see, hear, feel, smell, or taste) and ideas or inferences (what you think).
- **SC.3.N.1.6** Infer based on observation.
- **SC.3.N.1.7** Explain that empirical evidence is information, such as observations or measurements, that is used to help validate explanations of natural phenomena.
- **SC.4.N.1.4** Attempt reasonable answers to scientific questions and cite evidence in support.
- **SC.4.N.1.6** Keep records that describe observations made, carefully distinguishing actual observations from ideas and inferences about the observations.
- **SC.4.N.1.8** Recognize that science involves creativity in designing experiments.
- **SC.5.N.1.3** Recognize and explain the need for repeated experimental trials.
- **SC.5.N.1.4** Identify a control group and explain its importance in an experiment.
- **SC.5.N.1.6** Recognize and explain the difference between personal opinion/interpretation and verified observation.

Some information in this document has been excerpted or adapted from the Elementary Science Olympiad, or is available on the Science Olympiad web site at [www.soinc.org](http://www.soinc.org). Any information found in the Elementary Science Olympiad manual and/or on web site that is in this manual is copyrighted to Science Olympiad, Inc. All other information is copyrighted to the Florida Science Olympiad, an official state chapter of the Science Olympiad, Inc. Florida Science Olympiad is directed by Mike McKee and can be reached at [www.floridascienceolympiad.org](http://www.floridascienceolympiad.org).