

## *National Science Bowl<sup>®</sup> Strategies for Success*

Teachers and coaches frequently ask how to best prepare their students for the Science Bowl competition. There are various successful strategies your team can utilize. Here are just a few ideas and guidelines that may help.

### **Forming a Science Bowl Club**

If your school doesn't already have a math and/or science club, start one as soon as possible. You don't have to have 30 students interested in science to make a Science Bowl Club. Getting one started usually takes a little effort, but once you get it going, they usually are very easy to keep going year after year. Also, once you do form one, make sure it is worth the student's time. Historically, the more successful teams at science competitions are made up of very enthusiastic students that come from schools with fun, well-organized Science Bowl Clubs (regardless of size). We are talking about quality not quantity.

### **Team Selection**

Selection for your Science Bowl Team can be difficult. Each student should be knowledgeable in all of the discipline areas. However, the more successful teams have students that are more specialized in different areas. For example: Student "A" might be better at mathematics than the rest of his/her team. Student "B" might be better at physics and astronomy than the rest of his/her team. This will give your team a good balance with an "expert" in each of the disciplines. It is also a good idea to have a few grade levels represented, not just the higher grade levels. By breaking up your team you will still have some veterans this year while giving a few rookies the necessary experience to carry your team next year. Some teachers let the students vote for team members based on knowledge, performance, and attendance. Others hold practice competitions to determine the team. It is ultimately up to you, so choose your team wisely. Most competitions allow non-participants to watch all the matches and to cheer their team's achievements.

### **Make a Schedule**

Make an agenda or study schedule during your first meeting. Your team needs to decide how many hours they will spend per week in the practicing. Initially, practice times may be short, but as the competition nears you may want to schedule more intensive practices. The difficulty of the practice questions is more important than the length of time spent practicing. Brainstorm on what your team thinks are good ideas for review and practice. Decide how long your meetings will last. An hour meeting might be broken up with 30 minutes of review of the subject for the week, and 30 minutes of knowledge games. At least 2 practice competitions are recommended. This will help familiarize the students with the rapid fire, oral presentation for the questions (which is quite different from answering review questions from their text books). Keep the team enthusiastic and focused on the task at hand each week. Bring in science teachers or the school principal to act as practice moderators. Be sure the contest rules are adhered to stringently.

### ***Example Schedule:***

*Week 1:* Get to know you, ice breakers, fun games

*Week 2:* Biology and Chemistry

*Week 3:* Math and Physics

*Week 4:* Earth and Space Science

### **Thanksgiving Break**

*Week 5:* Energy and General Science

*Week 6:* Review rules and strategies

*Week 7:* Practice Competition

### **Christmas Break**

*Week 8:* Biology and Chemistry

*Week 9:* Math and Physics

*Week 10:* Earth and Space Science

*Week 11:* Energy and General Science

*Week 12:* Review rules, strategies, and disciplines

### **Study Wisely**

As mentioned earlier, each student needs to be familiar with all seven subjects. However, students should be concentrating the bulk of their studying/reviewing on their own 2-4 areas of expertise. Students should concentrate their efforts on learning topics from which questions are likely to come. The oral toss-up questions must be answered in less than 5 seconds and the bonus questions must be answered in less than 20 seconds. Do not waste time studying problems that have long, time consuming solutions. Focus more time studying things like definitions, formulas, concepts, and short answer problems. By studying wisely, students will be able to spend more time practicing and learning to solve problems quickly.

### **Know the Rules & Game Playing Strategies**

Make sure each student knows the rules of the competition. This cannot be stressed enough. Every year teams lose points because the students do not know all the rules. Also teach them the strategies of the game for different situations. Believe it or not, this could be your ace in the hole. For example: if your team is in the lead during the second half of the game, recognize that the clock is now your ally. If you are awarded a bonus question, let the students take a few extra seconds to double check with each other to make sure they get the question right. The questions usually get harder as the match progresses. If they are too hasty with their decisions, the lost ten bonus points could come back to haunt them in a close match. Being well versed in the rules and knowing all strategies of the game, your team will have the edge in a close match and may even allow them to triumph over a better team that is not as strategic.

### **Practice, Practice, Practice**

There is no substitute for hard work and this means self-discipline and practice. Make an effort to duplicate an actual competition as much as possible. Also it is a good idea to rotate the person asking the questions each game. This will allow them to get experience hearing the questions come from different tones of voice, accents, and dialects. Do not wait until the month before the

Regional Science Bowl to practice for the competition. Use old test questions from your previous exams or even Trivial Pursuit and Jeopardy games if you have to. Just get them familiar answering the questions orally and waiting to be recognized before answering.

### **Keeping It Fun**

Do not lose sight of the overall focus of getting your students interested in science and math. Finding the right combination of fun games and interesting study tools could take a little work. There are many new and interesting ideas out there. The internet is an excellent place to get some great knowledge games and interactive study tools. Just remember, the more students enjoy it, the more they will want to do it, and the more successful they will become. Given the proper motivation, preparation, and encouragement, your team will have a successful, and rewarding science bowl experience. You can then channel your Science Bowl Club's enthusiasm and momentum to do other fun things throughout the year. For example: the National Science Olympiad program, Math Counts, or the National Ocean Science Bowl.

### **Establish Team Goals**

There can be only one winner of the National competition, but participation itself is important. Involve the students in the establishment of realistic goals for the team in this competition year. Celebrate and document these goals in posters and team practice sessions. Many National champions build on the success of each year until the championship is won.

Set goals that will challenge the team. Schools competing for the first time win many regional competitions. **Do not** be intimidated because your school has not participated in the past.

### **Miscellaneous**

- Make sure the principal, teachers and administrative staff at your school know that the Science Bowl Club is an active program and that you are the person in charge.
- Find out about your school's policy regarding use of the school facilities and equipment. Do they allow use of shop facilities, computer lab, etc.?
- The lock-out buzzer system used in the National Science Bowl is from Novel Electronic Designs. The systems can be found online at [BuzzerSystems.com/](http://BuzzerSystems.com/).

BuzzerSystems.com  
email: [orders@buzzersystems.com](mailto:orders@buzzersystems.com)  
Phone: 309-224-9945

If your school has similar programs such as quiz bowl, their clubs may use comparable buzzer systems and they may be willing to lend you their system, if you ask nicely!

Students can also practice with eight different pieces of fluorescent paper. The students can be acknowledged according to color.

- Official clocks to time the rounds of competition and the questions can be purchased from local sporting goods store or you may want to utilize the clock in the room. We recommend stopwatches to time questions.
- When practicing, set up the room the same as an actual competition room (See page 8)
- Get your students familiar with the roles of the officials.

### **Resources and Suggestions**

- Inform your science club of current events in the subject areas used in competition, as well as energy related events.
- Some of the best resources are the Glossaries in the back of books.
- National Science Bowl<sup>®</sup> resources website: <http://science.energy.gov/nsb/high-school/high-school-regionals/hs-rules-forms-resources/>
- Publisher contacts:

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|--------------------------------|--------------|--|
| McGraw Hill                    | 877-833-5524 | <a href="http://www.mcgraw-hill.com">www.mcgraw-hill.com</a> |
| Pearson Education              | 800-848-9500 | <a href="http://www.pearsoned.com">www.pearsoned.com</a>     |
| Franklin, Beedle, & Associates | 800-322-2665 | <a href="http://www.fbeedle.com">www.fbeedle.com</a>         |
| Jones and Bartlett Learning    | 800-832-0034 | <a href="http://www.jblearning.com">www.jblearning.com</a>   |
| Houghton Mifflin Harcourt      | 800-462-6595 | <a href="http://www.hmhco.com">www.hmhco.com</a>             |

### **Reference Material:**

#### *General*

Online:

<http://academicearth.org/> -- Courses in a variety of subjects from the world's top scholars

<http://www.khanacademy.org/> -- videos about everything.

<http://new.hippocampus.org/> -- videos about everything.

<http://www.larrygonick.com/html/pub/pub.html> -- Cartoon Guide series

<http://quizlet.com/subject/science-bowl/> -- Flash cards

<http://www.sciencegems.com/> -- Frank Potter's science gems is a huge resource categorized by content area and grade level: K – 16.

Texts:

The American Heritage Student Science Dictionary

A Dictionary of Science (Oxford Paperback Reference) (HS)

*The Handy Science Answer Book*, a compilation by the Carnegie Library of Pittsburgh

#### *Math*

Online:

<http://www.mathwords.com/> -- Math Vocabulary

<http://mathworld.wolfram.com/>

Texts:

Beyond Numeracy by John Allen Paulos  
Mathematics: A Human Endeavor by Harold Jacobs  
The Joy of Mathematics by Theoni Pappas  
More Joy of Mathematics by Theoni Pappas  
The Harper Collins Dictionary of Mathematics (HS)  
The Penguin Dictionary of Mathematics

### Energy

Online:

<http://www.energy4me.org/energy-facts/>  
[www.need.org](http://www.need.org)  
[www.eia.gov/kids](http://www.eia.gov/kids)

Texts:

Energy For Keeps, Nemzer et al - MS & HS  
The NEED Energy Info books - MS & HS - available free at [www.need.org](http://www.need.org)

### Biology

Online:

<http://www.biology-questions-and-answers.com/index.html>  
<http://www.biology4kids.com/>

Texts:

Campbell Biology 9/E – AP edition  
Biology 8th edition by Solomon Berg and Martin  
Biology by Raven, Johnson, Losos and Singer

### Physics

Online:

[www.physicsclassroom.com](http://www.physicsclassroom.com)  
<http://www.physics4kids.com/>

Texts:

Conceptual Physics by Hewitt  
Conceptual Physical Science by Hewitt, Suchocki, Hewitt  
Fundamentals of Physics by Halliday, Resnick and Walker. 8<sup>th</sup> Edition. (HS)  
Universe by Freedman and Kaufman (HS)

## Chemistry

Online:

[www.chem4kids.com](http://www.chem4kids.com)

<http://chemed.chem.purdue.edu/genchem/topicreview/index.php> college chemistry review from purdue

<http://www.meta-synthesis.com/webbook.html> -- chemogenesis is a novel approach to understanding chemical reactivity.

[http://en.wikibooks.org/wiki/General\\_Chemistry](http://en.wikibooks.org/wiki/General_Chemistry) -- Wiki books provides a general rundown of chemistry basics

<http://antoine.frostburg.edu/chem/senese/101/glossary.shtml> -- a good and complete glossary of chemistry terms

Texts:

Conceptual Physical Science by Hewitt, Suchocki, Hewitt

Chemistry: The Central Science with MasteringChemistry® (12th Edition) – older editions are great and much less expensive to purchase.

## Earth Science

Online:

<http://www.geography4kids.com/>

<http://www.learnearthscience.com/> (good glossary of earth science terms and interactive quizzes)

<http://sciencepage.org/earth.htm> (this is a very general site with excellent selected resources – some guidance required for students)

Texts:

Earth Science (With CD-ROM) by Edward J. Tarbuck, Frederick K. Lutgens, Dennis Tasa, Publisher: Prentice Hall

Earth Science and the Environment (with EarthScienceNow and InfoTrac) by Graham R. Thompson, Jon Turk, Publisher: Brooks Cole

Sample Room Set-up

# THE COMPANION ROOM SET-UP (Audience can see students faces)



Standing



Sitting

## Front of Room

### Participants



Rules Judge



Scorekeeper

Timekeeper



Science Judge



Moderator

There is only one  
 position, see next  
 page for another  
 common set-up.

## Audience

