

**TOPIC: Using STEM in Crew Meetings and Events**

Participants will answer the following questions by the end of the session:

- How does STEM fit into Venturing?
- How do the opportunities and outings in Venturing help foster an understanding and appreciation for STEM?
- How can STEM help youth further their understanding of the world around them, both natural and man-made?

**Presentation Method**

In planning the presentation, you should review the latest materials posted at the BSA STEM Nova Websites. The most recent program information is posted there and is ready for your use

- *About the Nova Awards* posted at <https://www.scouting.org/stem-nova-awards/awards/about-nova/>.
- *STEM Nova Awards Unit Support* posted at <https://www.scouting.org/stem-nova-awards/units/>.
- *Venturing STEM Nova Awards* posted at <https://www.scouting.org/stem-nova-awards/awards/venturer/>.

Use the discussion outline below to help you prepare your remarks. PowerPoint presentation slides were not prepared for use during this session. If you wish to use one, the content below will be helpful in constructing your presentation.

**Resources**

STEM Nova Award Facebook Page  
Bryan on Scouting Articles on STEM  
NOVA Unit Guidebooks

**OVERVIEW**            The Venturing program is structured around four areas of program emphasis: Adventure, Leadership, Personal Growth, and Service – ALPS. This session explores the use of STEM as an area that can be explored in weekly unit meetings.

**INTRODUCTION**    STEM has been an integral part of Scouting from the very beginning through activities such as astronomy or archeology, but official recognition didn't occur until 2012 with the creation of the NOVA Awards. STEM and Scouting are natural partners, even when it doesn't seem like STEM is being done, it's always happening. While building a fire Venturers are using chemistry and biology; when putting up a tent physics is all around. Even during a weekly meeting, technology is being used and the human body is constantly going through biological and chemical changes.

**BACKGROUND**        **STEM—Science, Technology, Engineering and Mathematics**

STEM is part of an initiative the Boy Scouts of America has taken on to encourage the natural curiosity of youth members and their sense of wonder about these

fields through existing programs. From archery to welding, Scouts can't help but enjoy the wide range of STEM-related activities. To support this initiative, the BSA developed the Nova Awards program so that youth members have fun and receive recognition for their efforts.

**Why STEM?**

We live in a time of great opportunity. The spirit of innovation can help us overcome challenges and ensure a prosperous and secure future. To seize this opportunity, we must position ourselves at the cutting edge of scientific discovery and technological innovation.

Yet our country is falling behind in science, technology, engineering and mathematics. This is why many professionals and educators in science, technology, engineering, and mathematics believe the United States should do more now than ever to encourage students to enter STEM-related fields. These experts say our young people need strong STEM skills to compete in the world market. We must work together to cultivate the next generation of critical thinkers and innovators.

Ten-year employment projections by the U.S. Department of Labor show that of the 20 fastest-growing occupations projected for 2014, 15 of them require significant mathematics or science preparation.

**STEM Is the Future**

Fostering a strong STEM education is our best opportunity to boost the spirit of innovation. It's what we need to help ensure this country continues on a prosperous and secure journey. STEM literacy is also critical because it has a profound and growing impact on our day-to-day lives. Nature, space exploration, and any STEM-related interest reveals to us the beauty and power of the world we inhabit.

**What Are the Nova Awards?**

The Boy Scouts of America developed the Nova Awards program to excite and expand a sense of wonder in our Scouts. By working with an adult counselor or mentor, the various modules allow them to explore the basic principles of STEM and discover how fun and fascinating STEM can be. The Supernova awards are offered for those who enjoy a super challenge.

**SCIENCE IN  
 VENTURING**

Science is everywhere in Scouting. From building a fire on a campout to the human body itself. Science can be read about, watched about, or even done during weekly unit meetings. One meeting might be spent watching a documentary from Nova, Cosmos, or even a general PBS example. Documentaries can vary from the ecosystem, the stars, or even how guns are made and the history of their production.

Another meeting may be spent conducting an experiment - coming up with individual hypotheses and collecting data once the experiment has been conducted. One example would be having Mentos and soda. Bring different types of soda and Mentos to the meeting; take educated guesses on which

combinations would work the best and why.  
After the reactions are finished, reflect on them and see whose hypothesis was the most correct.

Venturers might also want to take a trip to a local science museum in lieu of a meeting that week. Visiting a science museum can spark interest in areas previously unknown by Venturers.

### **TECHNOLOGY IN VENTURING**

Technology can be found anywhere today. During a meeting, it is easy to talk to Venturers about the technology and work that goes into making their phones, computers, and video games. It also might be interesting to watch videos on YouTube about how these products are made.

During the discussion, you might want to ask Venturers about the materials that go into making technology, and what we will do when many of these resources become scarce.

How can we make our technology more sustainable?

What can we do to assure that our products are not harming the environment once we are through with them?

Asking questions and critical thinking are valuable skills that this conversation can help Venturers achieve.

### **ENGINEERING IN VENTURING**

Engineering is a topic that isn't commonly found at first sight, especially during a weekly meeting. However, upon further inspection one can see that engineering has gone into almost everything around them.

Have the Venturers look around and discuss the different kinds of engineering that went into the building around them, i.e. mechanical engineering, electrical engineering, architectural engineering, etc. After reviewing the different kinds of engineering, there are documentaries on the evolution of engineering on PBS, BBC, and other news outlets. Or, another interesting option would be to watch an episode of "How It's Made". After watching the documentary or episode, talk with the Venturers about the different ways that engineering affects their everyday life that they weren't aware of beforehand.

### **MATHMATICS IN VENTURING**

Mathematics is an area of STEM that most teenagers don't look forward to, however, they do math every day without realizing it. Have your unit watch videos about math in our everyday lives and talk about the various ways they commonly use math.

When planning an event during a meeting, remind the youth that they need to create a budget for the trip and plan out how much everything will cost. From knowing how much food will cost, to knowing how much gasoline it will take to get to the event, they are doing math.

**DISCUSSION  
QUESTIONS**

Use the discussion questions to provide advisors an opportunity to process and analyze the information presented during this session. As a general suggestion, keep the discussion positive and constructive, in keeping with the values of Scouting and of Venturing as a youth development program.

A couple of helpful questions to use to keep the discussion moving in a positive direction might be, "What have you learned from this?" or "What are new areas of STEM that you didn't know about before?"

- How does STEM affect our everyday lives?
- How have our lives changed over the past five, ten, or fifteen years because of STEM development?
- How does STEM help create better or worse societies? Why?
- What area of STEM do you think will change the most in the future? How come?

**CLOSURE**

Wrap up conversation. Close by asking participants how they will use what they learned during this evening's roundtable to support their crew's program.

**ASSESSMENT**

Look for participant answers to the following questions by the end of the session:

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