

Tips for Guiding Youth in the STEM Awards



Basic Do's and Don't's

1. **Do insist on a buddy.** Always ensure that a Scout has a buddy present at all meetings. Working on awards is especially enjoyable when Scouts work together, and the BSA encourages this by making the buddy system a part of the advancement program. Together the two meet with adult leaders, plan projects, and keep their enthusiasm high. The Scout's buddy could be another Scout, a parent or guardian, brother or sister, relative, or friend. The Scout should bring a buddy to all his meetings with you. In addition to creating a good learning environment for the scout, it satisfies a critical component of Youth Protection.
2. **Do not modify the award requirements.** This standard ensures that the advancement requirements are fair and uniform for all Scouts. Remember that the requirements must be completed exactly as presented—do not add or remove any parts of any requirement. Substitute only where it is explicitly granted. However, the Scout may choose to explore some topics more deeply. You can encourage explorations or offer ideas for deeper study, but this should not change or increase the award requirements.
3. **Do make sure each Scout understands the requirements.** Spend some time helping the Scout learn the requirements. Most requirements begin with a verb that indicates the nature of the requirement. Make sure the requirements are completely understood, whether "show," "demonstrate," "make," "list," "discuss," or "collect, identify, and label."
4. **Do ensure each Scout completes each requirement.** You may be in a group environment with several Scouts, but each must demonstrate completion of each requirement. If necessary, you may need to have follow-up meetings with each Scout individually to assess his completion of each requirement, following youth protection guidelines.
5. **Do the testing and reviewing in a friendly way.** The Scout might be apprehensive about the review process, given his school experiences. This is not a school examination. Encourage the Scout to practice for his review session and to reflect on his accomplishments. You can help by talking to him rather than grilling or examining him—there's a big difference, yet it still will be evident what he knows. During the review session, you may find that the Scout needs help learning a particular area. You may either teach the needed skill or help the Scout find the information through research (Internet, asking experts, and so on), and then retest to ensure he has accomplished the requirements.

General Tips¹

6. **Anticipate differences in backgrounds.** Remember that youth have widely varying backgrounds, knowledge, and abilities. They might be coming from an entirely different background or community than you are. Their aspirations, expectations, preparation, and learning styles may be different from yours and from each other's. Keep these differences in mind as you express opportunities and expectations, and adapt your approach as necessary.
7. **Establish a positive environment.** The most productive environment for the Scout will be one in which he feels welcome and relaxed. Create an atmosphere that encourages the Scout to ask questions and to ask for help when needed. Take a genuine interest in his projects, and express honest enthusiasm for the things he has done, and this will give the Scout confidence.
8. **Emphasize listening over talking to your youth.** Listen carefully to your youth. What are their

¹ Remaining tips partially drawn from *Toolkit: Becoming a Science, Technology, Engineering, and Math (STEM) Mentor* by the Corporation for National Community Service available at http://www.serve.gov/toolkits/pdf/STEM_mentoring_toolkit.pdf.

interests? What are their needs? What do they already know about the subject? What resources do they have available? Ask questions. Sometimes youth just need to talk through their ideas. Other times they need advice on how to handle a challenge. In some cases, they may want you to take action. Asking questions can be as important as making recommendations. When you understand what your youth are trying to figure out, and what outcome they are seeking, it will be easier to adjust your suggestions so that you help them towards the best possible outcome, without insulting those who already know quite a lot or overwhelming those who know very little.

9. **Emphasize options rather than commands.** Youth like to have options and feel more commitment to an activity that they choose, rather than one that has been forced upon them. As an adult, you have a much greater awareness of the variety of approaches to learning and doing things than your youth have. The more often you can offer options for completing a particular task, the more your youth will realize that there isn't one right way to do everything and that different perspectives and approaches can be very valuable.
10. **Balance honesty with support.** Not every youth is going to grow up to be a STEM professional, but it is important to reserve judgment about their initial abilities. Maintain an open mind and keep supporting your youth until they succeed or come to their own conclusions about pursuing a different path.

Tips Unique to STEM

11. **Become a STEM resource specialist.** It is often difficult for youth to find the right supplies for an experiment or find an appropriate STEM destination to visit or find a STEM professional to interview or shadow for a day. Using your own network of STEM connections, any resources gathered by your council, and your own research, figure out ways to help your youth obtain the resources he or she needs to complete the requirements. You might have your youth do some of the legwork on this, but often they need suggestions for where to start, so they don't spin their wheels fruitlessly for days and weeks.
12. **Emphasize active engagement over passive listening.** As much as possible, engage your youth in hands-on projects, real research opportunities, or real independent discoveries of known research. It could be a formal research experience or a fun investigation or an engineering design challenge or a field trip to a STEM destination or event. These activities leave a far greater impression on youth than any amount of listening to STEM experts expound on their chosen specific field or research.
13. **Help your youth interpret and grow from failure.** Some of the best discoveries and inventions in STEM fields grew from a failure or unexpected result. Help your youth interpret feedback or failure when an experiment or project doesn't go as planned, so that they build the internal resilience to try again and not let this derail them. Point out that early failures are not predictors of their ability to become a scientist or engineer, and emphasize that knowledge is developed by repeatedly exercising the brain and learning about a concept through different approaches. Acknowledge the difficulty of certain concepts and work with your youth to identify their best path forward. Allow failures – some of the best learning comes from understanding why something failed, and subsequent successes are sweeter!
14. **Keep sight of the underlying STEM principles.** The STEM program is meant to fit with Scouting's ideal of "fun with a purpose", but be careful to ensure that the "with a purpose" part is given due diligence. It's quite possible for youth to engage in hands-on STEM activities and never really understand the STEM principles that are being illustrated or investigated. At the conclusion of a STEM activity, make sure you circle back around to the underlying STEM principles and discuss how these principles played out in the activity, how they would work in a slightly different activity, and what they suggest about the broader enterprise of STEM activities.
15. **Become a STEM myth buster.** Part of your role is to be a guardian of STEM "truth". There is actually quite a lot of bad information out there, especially on the Internet, which has extensive content that has not been vetted by experts. As your youth progress through the tasks for the STEM awards, be on the lookout for the appearance of STEM myths, and enlist your youth in becoming STEM myth busters themselves.