

**Professional Development Situation: Training**

**Skill Focus: Making Connections to STEM Careers**

**Time Required: 90-minutes**

## Exploring STEM Career Connections

Participants will brainstorm and research STEM careers and connect them to an activity used in their program.

### Agenda

Welcome – 2 minutes

STEM Career Brainstorming – 20 minutes

Career Research – 40 minutes

Connect Careers to STEM Activities – 20 minutes

Reflection – 8 minutes

### Materials & Supplies

- Computer with Internet connection
  - If you have computers or tablets available to your group, secure one for each participant or group of two
  - If computers or tablets are not available to your group, participants can use their personal devices
- Flip chart
- Markers
- Notebook paper
- Pens/pencils
- Copies of a STEM activity participants will be implementing in their programs or copies of sample STEM activities (enough for each person)



## Before the Session

- **Read this training guide** to become familiar with the content and allow time to personalize the activities to best suit your presentation style. Read informational materials.
  - *Italics indicate text that can be read aloud to participants.*
- Send reminder email about the training (below). Determine if any participants require accommodations (viewing video; hearing; etc.).
  - *The next professional development opportunity to enhance our STEM skills will be on DATE at TIME at LOCATION. Our focus for this session will be “**Making Connections to STEM Careers.**” Let me know if you require any accommodations to participate in the training. I am happy to answer any questions you have and look forward to seeing you at the workshop. I can be reached at CONTACT INFO.*
- Gather all materials needed for the training.
- Develop a list of possible questions participants might have during the training. Create potential responses to be explored through informal conversation. Review any key terms or ideas that may be unclear.

## Training Outline

### Welcome (2 min)

- Greet participants as they arrive. Make sure everyone feels welcome and comfortable in the learning environment.
- Introduce yourself and the focus of the session: making connections to STEM careers.
- Ensure participants are aware of the locations of restrooms facilities, refreshments, etc.

### STEM Career Brainstorming (20 min)

This activity highlights the EXPLORE component of the [4-H Career Readiness Framework](#).

Participants in this activity will brainstorm a list of diverse careers associated with STEM.

- Divide the group into teams of 4-5 individuals; give each team a piece of flip chart paper and several markers
- *There will be three rounds of competition. The team that gets the most points wins. In round one, you will identify job and career titles. In round two, you will connect each of these jobs and careers to a STEM pathway. In step three, you will identify training and educational pathways to these careers.*
- Conduct the three rounds, allowing time for teams to discuss their findings after each round:



### Round 1: Name that Job!

*Your mission as a team is to brainstorm as many jobs and/or careers as possible in 2 minutes. Each team should record these on large poster paper. Brainstorming means that you think quickly and come up with as many ideas as possible. Don't worry about making sense or being silly, just shout out whatever comes into your mind. This is a time to think outside the box! (If adapting this activity for youth you may need someone to help record examples.)*

**Scoring:** Count the number of jobs and record on a score sheet. Numbers are the key here, not the quality of job titles.

### Round 2: Where's the STEM?

*During this round, you have five minutes to categorize the jobs they have identified in Round 1 into one of the STEM areas: Science, Technology, Engineering, and Math. Winning this round means that the team has identified at least one job for each STEM area, receiving one point for each connection. (This is the time to talk about how they have classified the jobs and why they think they should be in one of the STEM areas. What justification do they have for their decisions?)*

**Scoring:** Award participants 1 point for each connection they identified. Record the points for each team.

### Round 3: Path Finder

*In ten minutes, each team should complete the following pathway questions for as many jobs/careers that are on their categorized list and:*

1. *Explain why they think it is classified in one of the STEM areas.*
2. *Describe how one would prepare for the job/career.*
3. *List where they would work if they had this job/career.*

**Scoring:** Award one point for completion of each item above (a, b, c) for a possible total of 3 points per job/career.

- Summarize the game, and emphasize the wide variety of STEM career possibilities. Emphasize how STEM knowledge is important in so many careers, even ones we do not always realize!

### Career Research (40 min)

Participants will [LEARN](#) about the skills and traits a professional needs to be successful in several different career paths.



- Have each team divide into smaller groups of 2-3. Each smaller group will need a computer with internet access or a device capable of accessing the internet, a page from the flip-chart, and markers.
- Instruct each smaller group to choose three separate careers from the STEM Careers Brainstorming activity or handout the activity you brought to share with participants. Participants can use this activity to think of careers that are related to the learning experience. They should choose one career they think falls under each of the three categories below (this can be just a guess, if they find out they are wrong later, that is okay):
  - High School or GED
  - 2-Year/Associates Degree OR specialized training
  - 4- Year/Bachelor's Degree OR advanced graduate degree
- Instruct participants to divide their paper into three sections, with the lowest education level at the top, and the highest education at the bottom. On their paper, write the job title, with room to write additional facts about their career underneath.
- Groups should begin researching the careers they've written on their flip chart paper at any of the websites listed below:
  - O\*Net: [www.onetonline.org](http://www.onetonline.org)
  - BLS Career Exploration: <https://www.bls.gov/k12/content/students/careers/career-exploration.htm>
  - Nebraska 4-H Career Explorer App: <http://4h.unl.edu/career-explorer>
  - Big Future College Board: <https://bigfuture.collegeboard.org/explore-careers>
- Participants should find the following information, and write it on their paper, for each of their chosen careers:
  - Job description/tasks
  - Skills/abilities
  - Education/experience required
  - Wages-national or state
  - Projected growth-national or state
- Ask participants to share their career findings; ask the following questions:
  - *For which education level was it the most difficult to find a career?*
  - *Which of your three careers had the most projected growth?*
  - *Which of the three careers would be more likely to appeal to youth in your programs?*
  - *Was there anything that surprised you as you looked at this research?*



### Connect Careers to STEM Activities (20 minutes)

Participants will identify ways to help youth [PRACTICE](#) the skills needed for careers that may be of interest to them, using lessons and activities that are already used in their program.

- Have participants get into pairs and use the activity you've brought to identify the skills and practices within the activity. Then participants will connect those skills and practices to STEM careers that use these skills and practices.
- Ask participants to think of ways that they can reinforce the skills and practices taught in this lesson are used in real life STEM careers. For example:
  - *Asking youth: What did you like about this activity? And being prepared to connect the skills, practices, and concepts to related careers.*
  - *Asking youth: How could you use this skill/what you've learned to change the world? Be prepared to follow-up with information about possible careers and their pathways.*
  - *Asking youth: Today, we used our design thinking skills to build towers out of toothpicks and marshmallows. What careers might use the same type of process we followed today – define, develop solutions, and optimize?*
- Ask participants to think of ways to emphasize local careers. Often, businesses are able to establish partnerships with out-of-school time (OST) programs, and this is a great way for youth to build relationships that can lead to internships and part-time work.
  - *What partners in your community might connect to this activity?*
- Give participants about 10 minutes to make notes in the activity and plan how they will emphasize the skills and practices to potential STEM careers.
- Ask for participants to share their findings.

### Reflection (8 minutes)

Participants will reflect on how to guide youth through the *Explore, Learn, Practice, and Experience* framework of the [4-H Career Readiness Framework](#).

- Facilitate a discussion with participants to gain feedback and ensure their ability to reflect on the process of discovering career opportunities with youth.
  - *How do you help youth identify careers they want to learn more about?*
  - *Why is it important to discuss the connections between STEM skills and practices and future STEM careers with youth?*
  - *What resources do you have locally to help youth experience careers that interest them?*
  - *What other questions can you anticipate from your youth as they explore career opportunities that interest them?*



- Thank participants for attending the session. Encourage them to use their lesson plans and the variety of careers they researched today to make career connections with youth.

## After the Session

- Within 2-3 weeks of the training, send an email to all participants.
  - *Thank you for your participation in the recent “Making Connections to STEM Careers” training. I hope you found it useful. Remember that youth need exposure to different types of careers connected to the STEM activities you facilitate with them. These careers should have differing education and experience levels and be realistic for the youth that you serve. I look forward to continuing our learning at the next session on SKILL/FOCUS on DATE at TIME at LOCATION. Please let me know if you have any questions. I can be reached at CONTACT INFO.*



## Background Information for the Trainer

The need for youth to pursue careers in STEM fields is imperative. The United States is not currently producing enough STEM professionals to meet the needs of industry, academia and government agencies. The need for qualified workers will continue to grow. To meet this need, frontline participants and participants in out-of-school programs need to help youth connect the activities they do on a daily basis to real-life careers.

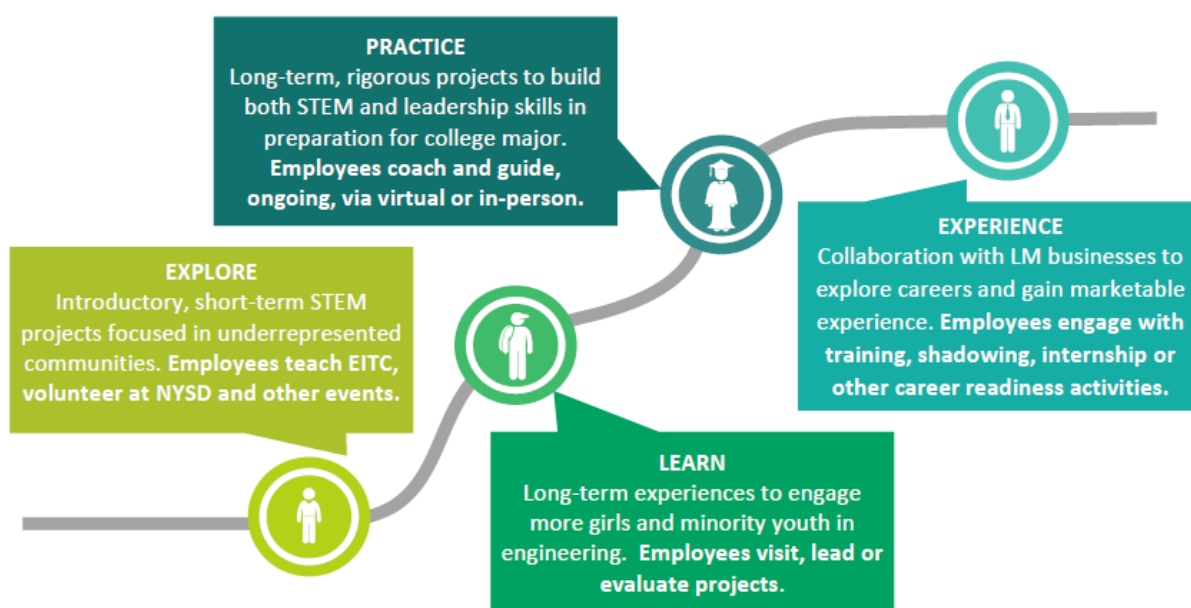
Connecting youth to careers in STEM includes four important pieces:

- Youth need **STEM career role models**. Through posters in the learning space, video clips shared in activities, guest speakers/experts brought in from the community and hosts of field trip experiences, youth need to see diverse individuals (younger and older; highly educated and vocational school grads; men and women; diverse races and ethnicities; and people that work in offices, laboratories and out in the field). Through these characteristics, individual youth are more likely to see themselves in those STEM roles.
- **Identify STEM career opportunities** connected to activities being led with youth. As frontline participants members are preparing to lead STEM activities with youth, one preparation piece should include career-focused information related to the activity. The tasks completed and knowledge applied in hands-on learning experiences are often similar to tasks completed by STEM professionals every day. An activity in which youth design water filters relates to environmental engineers. Activities in which youth observe, classify or manipulate animal behavior relate to animal scientists, veterinarians, zoologists and others. If youth are asked to study soils or rocks, they are doing similar tasks to those required of a geologist, soil scientist or farmer. STEM professions are broad and, in some cases, somewhat obscure. Helping youth see real-world choices related to activities they enjoy doing can help them see themselves in those careers.
- Youth need exposure to and assistance with **career pathways**. Youth may identify with a career choice but have no idea how to get from where they are to where they want to be. Choices along a career pathway include classes to take in middle and senior high school; technical school or college; specialized training; extracurricular experiences; and part-time employment, job shadow or internship opportunities. When interacting with youth, frontline participants can integrate career pathways into conversation and activities. In doing so, it is important to include careers that require differing levels of education.
- Not all STEM careers require advanced college degrees. It is important to **include examples of STEM careers on all levels of the education spectrum**. Not all youth are



able to pursue a career as a veterinarian for academic, financial or other reasons; however, a youth interested in helping animals may be interested in a career as a vet tech or animal handler or feedlot worker or humane society caretaker, etc. These career choices may require only a high school diploma, a vocational or community college certificate or degree, or a bachelor's degree.

## 4-H Career Readiness Framework



This 4-H Career Readiness Framework centers on a four-step pathway to career readiness: from **exploring to learning to practicing to experiencing**, and ultimately, to a clear career goal and **career success**. This framework allows for youth to move throughout the stages fluidly to:

- Explore and discover potential career paths
- Learn the skills and concepts associated with careers
- Practice through engaging, hands-on projects
- Experience the career through real-world professionals and immersion activities.

Most of the professional development experiences included in this training focus on **explore** and **learn** stages, but the final segment of the training includes time to reflect on how to engage youth in the **practice** and **experience** stages. Each segment in the training addresses how the professional development activity will support adults in engaging youth in the stages. Participants who attend this training will:



- Discover the many STEM careers available to youth
- Identify the skills and abilities needed to pursue those careers
- Develop strategies to connect them to the activities that you are using in the program
- Brainstorm strategies to provide youth with opportunities to practice and experience the careers that interest them.

