ELEMENTS OF STEM™

A Lilly and JA STEM learning experience

Teacher's Guide

Junior Achievement™ of Central Indiana

Lilly | ELI LILLY AND COMPANY FOUNDATION, INC.

Acknowledgments

Junior Achievement of Central Indiana (JACI) gratefully acknowledges Eli Lilly for its dedication to the development and implementation of Elements of STEM.

JACI appreciates its partnership with Eli Lilly to help provide middle school students with practical information about STEM (Science, Technology, Engineering, and Mathematics) careers and ways students can prepare for these careers while still in school.

Objective

This STEM program will increase student awareness in the breadth of STEM careers within Lilly, the associated career pathways, and the necessary employability skills needed.

Overview

Elements of STEM™, a Lilly and JA STEM learning experience, provides middle school students the opportunity to see the application of science, technology, engineering, and math in the real world, and introduces them to high-growth, high-demand STEM career path options with Eli Lilly and beyond.

Students will participate in classroom lessons prior to and after engaging in an interactive simulation to learn how STEM careers play an important role intheir education, employment and future.

Standards

- 6-8.SE.4
- 6-8.WE.5, 6-8.WE.7, 6-8.WE.8
- 6-8.M.1
- 6-8.LS.4, 6-8.LS.5, 6-8.LS.6, 6-8.LS.9, 6-8.LS.10

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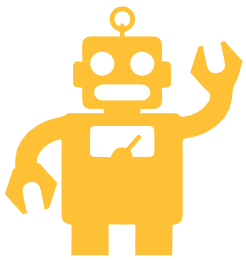
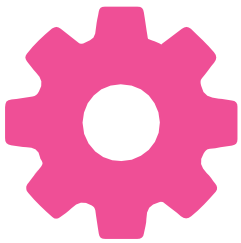




Lesson 1: EXPLORING STEM

(Recommended Time 30 minutes)

Overview

Students explore the meaning of STEM and high-growth careers. A self- assessment will be completed to see what STEM careers most closely match their skills and interests.

Objectives

Students will:

- Increase their awareness of careers in science, technology, engineering, and mathematics (STEM).
- Make the initial connection between what interests them, what they are studying in school, and the opportunities available in high-demand careers.
- Complete a STEM self-assessment to see what STEM careers are best suited for them.

KEY WORDS & CONCEPTS:

High-Growth Careers: Occupations predicted to have more positions available than qualified applicants over the next 10 years.

Tell the students that many high-demand, high-growth careers can be found in the disciplines of science, technology, engineering, and mathematics (STEM). Explain that STEM careers are in demand in today's workforce at Lilly and around the world. They are predicted to remain so over the next 10 years. Encourage the students to think about how the STEM disciplines might help them achieve their goals.

Some STEM careers do not require a college degree and offer students exciting, high-paying opportunities. More information about STEM (Science, Technology, Engineering, and Mathematics) careers as well as statistics and resources are provided in the virtual STEM Experience.

Lesson 1: cont.

Ask students to think about their skills, interests, and desired work environment. Define and give examples if needed.

KEY WORDS & CONCEPTS:

Skills: A person's preferred activities or hobbies.

Interests: A person's talents or abilities.

Work Environment: The surroundings in a place of work, including physical and social conditions and other factors, that affect the quality of the job experience.

Ask the students to do STEM STUDY Quiz: stemstudy.com/stem-program-quiz

Students will then analyze their results and record their top 3 areas of interest. On the Stem Study site, students can explore STEM careers and gather information. Information can be recorded on the **STEM Career Exploration Student Guide**.

Do a 2-3 Minute "Turn and Talk" About Your Findings

Use the talking points below to discuss as a class.

Talking Points for Class:

What STEM careers do you see that interest you?
What are skills needed in STEM careers?
What type of further education or training will you need to meet your career goals?
Do you think that you will use elements of STEM in your career paths?

Lesson 2: EXPLORING LILLY

(Recommended Time 30 minutes)

Overview

Students explore Lilly and learn about multiple careers that represent STEM and prepare for the Elements of STEM™ day.

Objectives

Students will:

- Gain an understanding of Lilly
- Explore career pathways at Lilly

Give students 2-3 minutes to complete a **K-W-L about Eli Lilly**: Know, Want to Know, Learn (will be completed after intro video or researching).

Complete question 1 and 2 of K-W-L:

- What do you know about Eli Lilly and Company?
- What do you want to know?

Click to Play Lilly Introduction Video

Review or Distribute the Lilly Career Pathways

Introducing students to the 13 career pathways that will be on the platform.
JA EOS STEM Career Pathways

Activity

Students pair up with a partner to discuss what they learned about Lilly and STEM careers at Lilly and complete the K-W-L. Which of the career pathways are you most interested in learning more about?

Complete question 3 of the K-W-L:

- What did you learn about Lilly?

Lesson 2: cont.

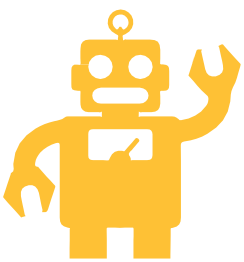
Review Student Expectations for the Day

Watch the **DEMO video** on the STEM site to prepare for the STEM experience.

Optional Extended Activity

Students work in groups to identify the various advancements made possible through STEM disciplines.

- Separate students into four groups.
- Assign each group a discipline (science, technology, engineering, or mathematics).
- On big chart paper, write the area of STEM focus for your group (ie. S = Science). Have each group identify and write out as many important advancements associated with the assigned discipline as possible.
- Groups also need to provide the reasons why these advancements are important. You may use all resources that have been given to you or the internet for your research.
- As a class, discuss the advancements in each area and why they are important.
- In your group, take 5 additional minutes to research on the internet what advancements (in your specific STEM area) Lilly has made and why they are important.
- Discuss as a whole class these advancements from Lilly found in STEM.



Lesson 3: Elements of STEM™ Experience

(Recommended Time 60-90 minutes)

Overview

The Stem experience will provide students with experiences and exploration into high-demand careers in STEM.

Objectives

Students will:

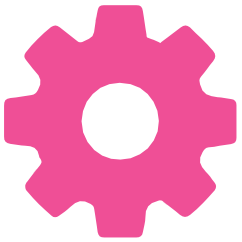
- Explore opportunities in various STEM fields
- Experience skills needed in a STEM career
- Learn from STEM professionals

Introduce the students to the platform and remind them to explore the rooms entirely and thoroughly. Please review the demo video from Lesson 2 if needed.

Before the event, print or post the Elements of STEM Platform Scavenger Hunt. This will guide students to different rooms to answer questions and complete prompts about what they learned.

Things to Remember

- **Students should complete the virtual event on their devices and in the classroom (1:1).**
- Students should try to explore all STEM rooms on the site. It will be noted on the platform once a student visits a room so they can keep track of their progress.
- Each student should participate in a minimum of two "live" sessions to hear from a STEM professional
- Review **Student Expectations Guide** with students



Lesson 4: Reflection

(Recommended Time 10 minutes)

Overview

Students will complete the exit ticket/survey, have the opportunity to reflect on their experiences with STEM and consider career planning for their future.

Objectives

Students will:

- Complete the **Student Exit Ticket/ Survey**
- Fill out a **Career Planning Guide** (optional)
- Reflect and share their takeaways from the STEM experience.