

5th Grade Career Development
Activity #15: Science, Technology, Engineering, and Mathematics Careers
Estimated time: 30-45 minutes

National Career Development Guidelines Indicators

ED1 - Attain educational achievement and performance levels needed to reach your personal and career goals

- ED1.K7 - Recognize that your educational achievement and performance can lead to many workplace options
- ED1.K8 - Recognize that the ability to acquire and use information contributes to educational achievement and performance

ED2 - Participate in ongoing, lifelong learning experiences to enhance your ability to function effectively in a diverse and changing economy

- ED2.K3 - Recognize the importance of being an independent learner and taking responsibility for your learning

CM3 - Use accurate, current, and unbiased career information during career planning and management

- CM3.K2 - Recognize that career information includes occupational, education and training, employment, and economic information and that there is a range of career information resources available
- CM3.K4 - Identify several ways to classify occupations

CM4 - Master academic, occupational, and general employability skills in order to obtain, create, maintain, and/or advance your employment

- CM4.K4 - Recognize that many skills are transferable from one occupation to another

Goal:

Students will investigate careers in the **Science, Technology, Engineering, and Mathematics** Career Cluster.

Objectives:

- Understand that a career cluster is a grouping of occupations based on commonalities
- Recognize that the **Science, Technology, Engineering, and Mathematics** Career Cluster includes careers in science, technology, and math to design, build or operate equipment, structures and systems
- Investigate careers in the **Science, Technology, Engineering, and Mathematics** Career Cluster

Materials:

- 5th Grade Career Development Activity – **Science, Technology, Engineering, and Mathematics Careers: Mechanical Engineers** handout #1
- 5th Grade Career Development Activity – **Science, Technology, Engineering, and Mathematics Careers: Building Skills** handout #2
- Writing materials

Activity:

1. “Today we’re going to learn about occupations in the **Science, Technology, Engineering, and Mathematics** Career Cluster. Does everyone remember what a Career Cluster is? **A career cluster is a grouping of occupations based on things they have in common.**”
2. “The **Science, Technology, Engineering, and Mathematics** Career Cluster includes jobs that apply scientific, mathematic, and technologic knowledge to design, build, and operate equipment, structures, and systems.” *Write this on the board.* “There are many occupations that fall under the STEM umbrella, but today we are going to talk about engineers. Engineers are people who apply scientific knowledge to solve practical problems.”
3. “There are many types of engineers, but let’s look at one type: a Mechanical Engineer.” *Distribute the **Science, Technology, Engineering, and Mathematics Careers: Mechanical Engineers** handout.* “Let’s talk about the skills that Mechanical Engineers need to successfully do their jobs.” *Go over the list of skills, allowing time for students to discuss each one. Use examples from school to ensure that students understand each one.*
4. *Once students have completed discussing the skills needed for Mechanical Engineers, ask, “Based on this list, raise your hand if you think you would make a good Mechanical Engineer.” Have those who said yes explain why.*
5. *Then have the class discuss how they can develop these types of skills in school. Certain skills, such as math and science, are easy to associate to classroom learning. But skills such as critical thinking, active listening, and complex problem solving are also skills learned and practiced in school. For the activity, students should use extracurricular and home activities to determine how they can continue to build these skills. (Not everything has to be learned in school.)*
6. *Once students have finished discussing how they can develop these types of skills in school, distribute the **Science, Technology, Engineering, and Mathematics Careers: Building Skills** handout. Explain the directions and ensure students understand the assignment. Allow time for students to complete the assignment. Walk around the room and offer assistance to students.*
7. *Once students have completed their assignments, go over each of the skills and call on students to answer and explain their answers.*

Evaluation:

Students will be evaluated on their participation and on their handouts.

Handout #1

Science, Technology, Engineering, and Mathematics Careers: Mechanical Engineers 5th Grade Career Development

Mechanical Engineers perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. They oversee the installation, operation, maintenance, and repair of equipment such as centralized heat, gas, water, and steam systems.



Skills needed to be a good Mechanical Engineer

Complex Problem Solving — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.

Critical Thinking — Using logic and reasoning to identify the strengths and weaknesses of alternate solutions, conclusions or approaches to problems.

Active Listening — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.

Judgment and Decision Making — Considering the costs and benefits of certain actions and choosing the most appropriate one.

Mathematics — Using mathematics to solve problems.

Reading Comprehension — Understanding written sentences and paragraphs in documents.

Science — Using scientific rules and methods to solve problems.

Operations Analysis — Analyzing needs and product requirements to create a design.

Active Learning — Understanding the importance of new information for both current and future problem-solving and decision-making.

Speaking — Talking to others to convey information effectively.

Handout #2

Science, Technology, Engineering, and Mathematics Careers: Building Skills
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Directions: Next to each skill, check the box under the column that best describes your skill level. Then, even if you're good at a skill (because we can always improve), write how you can build each skill outside of school.

	I'm good at this skill	This skill needs work	Describe what you can do outside of school to build this skill.
Complex Problem Solving			
Critical Thinking			
Active Listening			
Judgment and Decision Making			
Mathematics			
Reading Comprehension			
Science			
Operations Analysis			
Active Learning			
Speaking			