4th 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:

- 4th Grade Career Development Activity – **Science, Technology, Engineering, and Mathematics Careers: All About Engineers** handout #1
- 4th Grade Career Development Activity – **Science, Technology, Engineering, and Mathematics Careers: Engineer Word Search** handout #2
- 4th Grade Career Development Activity – **Science, Technology, Engineering, and Mathematics Careers: Engineer Word Search** answer sheet
- 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 plan, manage, and provide scientific research and professional and technical services (e.g., physical science, social science, engineering) including laboratory and testing services, and research and development services." *Write this on the board.*
3. "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. Let's look at different types of engineers"
4. *Distribute the* **Science, Technology, Engineering, and Mathematics Careers: All About Engineers** *handout. Go over the occupation to ensure students understand each of the different types of engineers.* "Which one of these engineers sounds most interesting to you?" *Allow the class to discuss the question.*
5. *Distribute the* **Science, Technology, Engineering, and Mathematics Careers: Engineer Word Search** *handout. Explain the directions and ensure that students understand them. Walk around the room to answer questions and offer any help needed. Allow enough time for all students to complete the assignment.*
6. *Once students have completed their assignment, go over the answers and collect their handouts.*

Evaluation:

Students will be evaluated on their handouts.

Handout #1

Science, Technology, Engineering, and Mathematics Careers: All About Engineers
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Aerospace Engineers design, construct, and test aircraft, missiles, and spacecraft.

Agricultural Engineers apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products

Automotive Engineers develop new or improved designs for vehicle structural members, engines, transmissions, or other vehicle systems, using computer-assisted design technology. They direct building, modification, or testing of vehicle or components.

Biomedical Engineers apply knowledge of engineering, biology, and biomechanical principles to the design, development, and evaluation of biological and health systems and products, such as artificial organs, prostheses, instrumentation, medical information systems, and health management and care delivery systems.

Chemical Engineers design chemical plant equipment and devise processes for manufacturing chemicals and products, such as gasoline, synthetic rubber, plastics, detergents, cement, paper, and pulp, by applying principles and technology of chemistry, physics, and engineering.

Civil Engineers plan, design and oversee construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, water and sewage systems, and waste disposal units.

Electrical Engineers design, develop, test, and supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use.

Environmental Engineers design and plan for the prevention, control, and cleanup of environmental health hazards.

Health and Safety Engineers promote worksite or product safety by applying knowledge of industrial processes, mechanics, chemistry, psychology, and industrial health and safety laws.

Logistics Engineers design or analyze operational solutions for projects such as transportation optimization, network modeling, process and methods analysis, cost containment, capacity enhancement, routing and shipment optimization, or information management.

Marine Engineers design, develop, and take responsibility for the installation of ship machinery and related equipment including propulsion machines and power supply systems

Materials Engineers evaluate materials and develop machinery and processes to manufacture materials such as graphite, metal and metal alloys, ceramics and glass, plastics and polymers, and naturally occurring materials for use in products

Mechanical Engineers plan and design tools, engines, machines, and other mechanically functioning equipment.

Nanosystems Engineers design, develop, or supervise the production of materials, devices, or systems of unique molecular or macromolecular composition, applying principles of nanoscale physics and electrical, chemical, or biological engineering.

Petroleum Engineers devise ways to improve oil and gas well production and determine the need for new or modified tool designs.

Product Safety Engineers develop and conduct tests to evaluate product safety levels and recommend measures to reduce or eliminate hazards.

Wind Energy Engineers design underground or overhead wind farm collector systems and prepare and develop site specifications.

Handout #2

Science, Technology, Engineering, and Mathematics Careers: Engineer Word Search
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Directions: Find the different types of engineers listed below. Look across, down, and diagonally for the words. Circle or highlight each word you find.

F O P C H E M I C A L E N T A R
P I N T E A A A L A U E I T O R
E R N T O R R S Y Y Y L P Y U I
T A O E N V I R O N M E N T A L
R N X D N N N A B S T T A C T O
O K E P U E E O U F V R T E A A
L T K K R C I G R J B I S S X E
E E G I B E T A U D I C O R C R
U L B T W L P S L M N A C Z O O
M L C C I V I L A A V L V C L S
Q E W V N D B N R F D S B G L P
D R X S M E O K E E E V N V E A
L M E C H A N I C A L T I L C C
O R E V E N U E A G E N Y S T E
E E M A T E R I A L S E R M O S
N O D P B T C O U G W E L O R R

Find these words

Aerospace	Marine
Chemical	Materials
Civil	Mechanical
Electrical	Petroleum
Environmental	Product Safety

Answer Sheet

Science, Technology, Engineering, and Mathematics Careers: Engineer Word Search
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