

## Science speakers

## Civil Engineering

***Purpose of the program***

The purpose of this program is to help children connect their science curriculum to interests and careers and to stimulate their curiosity. We wish to awaken children to the wide variety of jobs that people do and help them understand the necessity of a good education to getting the jobs. By illustrating how basic science concepts are used in their work, speakers show how science is fundamental to daily life.

Civil Engineering intersects with the first grade, second grade, third grade, fourth grade, and fifth grade science curriculum. Below are content points and a general outline to help you structure your talk.

***Reminders***

Plan your presentation to run about 20 minutes. Then give the children 5-10 minutes for questions.

Children love to see examples; it helps them remember and understand. Any items you can show them and demonstrate will impress and delight them.

Please arrive at the school office at least 10 minutes before you are scheduled to speak.

Call **Mary Goljenboom** at United Way of Lake County with questions: **847 775 1058**.

***What the children are learning***

**First graders** (age 6) study solids and liquids. They learn to recognize differences between solids and liquids. The science content includes the following points:

- Liquids pour and flow.
- Solid materials come in all sizes and shapes.
- Pieces of solid materials (like gravel or mulch) can pour like liquids, but maintain their shape.
- Some solids (like road salt) dissolve in water.

***What you could say***

Define your job. For example, *A civil engineer uses science and math to plan, design, build or take care of projects such as roads, airports, bridges* [please also add the projects you build].

Explain to the children how the science they are learning is used in your job. For example, *Roads, airports, bridges are all solids. A civil engineer makes sure that water (from rain or melting snow) does not sit on roads or on airport runways. The civil engineer makes sure water flows into the ground.*

Please tell the children about the duties and responsibilities of your job. Please also tell them some of the things that you enjoy about it. As you explain and/or demonstrate, please remind the children of some of the science points above. You do **not** need to refer to all of them.

Please tell the children what kind of education is needed to do the job and how you got interested in this work.

***What the children are learning***

**Second graders** (age 7) study air and weather. They learn that weather changes in the course of a year. The science content includes the following points:

- Each season has a typical weather pattern that can be observed, compared, and predicted.
- Temperature and precipitation are components of the weather that can be described.

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Define your job. For example, *A civil engineer uses science and math to plan, design, and build projects such as roads, airports, bridges. Civil engineer also makes sure they are kept in good condition* [please also include the projects you build and/or maintain].

Explain to the children how the science they are learning is used in your job. For example, *The* [things you build and maintain] *must be strong enough to survive tornadoes, floods, and snow & ice storms. We use materials that stand up to extreme heat and cold of our region.*

Please tell the children about the duties and responsibilities of your job. Please also tell them some of the things that you enjoy about it. As you explain and/or demonstrate, please remind the children of some of the science points above. You do **not** need to refer to all of them.

Please tell the children what kind of education is needed to do the job and how you got interested in this work.

*What the children are learning*

**Third graders** (age 8) study measurement. They learn to measure temperature, mass (weight), and volume (fluid measurement). The children are also learning the metric system but **speakers do not need to use metric.**

The science content includes the following points:

- Length is how far it is from one point to another.
- Temperature is a measure of how hot or cold something is.
- Volume is the three-dimensional space occupied by something.
- Capacity is the maximum amount (or volume) of fluid a container can hold.
- Mass is the amount of matter in an object. It is measured by its weight.
- Standard units of measure allow people to make measurements that have definite meaning to others.

*What you could say*

Define your job. For example, *A civil engineer uses science and math to plan, design, build and maintain projects such as roads, airports, bridges* [please also include the projects you build and/or maintain].

Explain to the children how the science they are learning is used in your job. For example, *The* [things you build and maintain] *require correct measurement to be the correct size and to work properly.*

Please tell the children about the duties and responsibilities of your job. Please also tell them some of the things that you enjoy about it. As you explain and/or demonstrate, please remind the children of some of the science points above. You do **not** need to refer to all of them.

Please tell the children what kind of education is needed to do the job and how you got interested in this work.

*What the children are learning*

**Fourth graders** (age 9) study earth materials. They learn that earth materials provide many of the resources that humans use. The science content includes the following points:

- Solid rocks are earth materials and they have different physical and chemical properties.

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- Physical and chemical properties make earth materials useful in different ways, for example, as building materials.

*What you could say*

Define your job. For example, *A civil engineer uses science and math to plan, design, build and maintain projects such as roads, airports, bridges* [please also include the projects you build and/or maintain].

Explain to the children how the science they are learning is used in your job. For example, *A civil engineer has to understand the properties of the earth materials at the construction site to properly build or maintain structures.*

Please tell the children about the duties and responsibilities of your job. Please also tell them some of the things that you enjoy about it. As you explain and/or demonstrate, please remind the children of some of the science points above. You do **not** need to refer to all of them.

Please tell the children what kind of education is needed to do the job and how you got interested in this work.

*What the children are learning*

**Fifth graders** (age 10) study models and designs. They learn to design and construct conceptual and physical models. The science content includes:

- Models are developed to explain how systems work.
- A model is a representation or explanation of a system or interaction that cannot be observed directly.
- Conceptual models can be communicated through words and drawings.
- Physical models are constructed to demonstrate how something works or how it is constructed.

*What you could say*

Define your job. For example *A civil engineer uses science and math to plan, design, build and maintain projects such as roads, airports, bridges* [please also include the projects you build and/or maintain].

Explain to the children how the science they are learning is used in your job. For example, *A civil engineer makes drawings, computer models and physical models to show how projects will look and work when completed.*

Please tell the children about the duties and responsibilities of your job. Please also tell them some of the things that you enjoy about it. As you explain and/or demonstrate, please remind the children of some of the science points above. You do **not** need to refer to all of them.

Please tell the children what kind of education is needed to do the job and how you got interested in this work.