Sparky’s Engineer: K.B.1

A Story Book Introduction to Engineering

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>K</th>
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<tbody>
<tr>
<td>Sessions</td>
<td>2-3 (instructors discretion)</td>
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<tr>
<td>Seasonality</td>
<td>Anytime</td>
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<tr>
<td>Instructional Mode(s)</td>
<td>Whole class</td>
</tr>
<tr>
<td>Team Size</td>
<td>N/A</td>
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</tbody>
</table>
| WPS Benchmarks    | 0K.SC.IS.01
                  | 0K.SC.IS.06
                  | 0K.SC.TE.02           |
| MA Frameworks     | K-2.TE.1.2
                  | K-2.TE.2.1            |
| Key Words         | Science, Math, Engineering, Aeronautical Engineer, Biomedical Engineer, Chemical Engineer, Civil Engineer, Electrical Engineer, Fire Protection Engineer, Mechanical Engineer, Software Engineer, Sparky, Design |

Summary

This lesson involves reading and discussing the short book entitled “Sparky’s Engineer” in the classroom. “Sparky’s Engineer” provides an introduction to engineering, defining what an engineer is and describing eight different types of engineering, while telling the story of Sparky, a Dalmatian puppy looking for his owner.

Learning Objectives

2002 Worcester Public Schools (WPS) Benchmarks for Grade K

0K.SC.IS.01: Ask questions about objects, organisms, and events in the environment.

0K.SC.IS.06: Discuss observations with others.

0K.SC.TE.02: Identify tools and simple machines used for a specific purpose, e.g., ramp, wheel, pulley, lever.

2001 Massachusetts Science and Technology/Engineering Curriculum Framework

K-2.TE.1.2: Identify and explain some possible uses for natural materials (e.g., wood, cotton, fur, wool) and human-made materials (e.g., plastic, Styrofoam).

K-2.TE.2.1: Identify tools and simple machines used for a specific purpose, e.g., ramp, wheel, pulley, lever.
Additional Learning Objectives
1. Literature

Required Background Knowledge
1. None

Essential Questions
1. What is an engineer?
2. What kinds of things do engineers do?

Introduction / Motivation
This lesson is meant to precede other engineering lessons (excluding K.A.I – Weather). It should provide a non-intimidating introduction to what an engineer is. Emphasize the variety of things that engineers can do and the variety of people who become engineers.

Spend as much time on the story as your students need and repeat the story later on if so desired. Allow time to discuss terms used in the story and to answer any questions students may have.

Procedure
Part 2-3 – 20-30 minutes
The instructor will:
1. Read Sparky’s Engineer to Students.
2. Take time to explain the terms used in the story and to encourage students to ask questions as you progress through the story.
3. Discuss the wide variety of things that engineers do and the wide variety of people (of all age, race, and gender) who are engineers.

Materials List

<table>
<thead>
<tr>
<th>Materials per class</th>
<th>Amount</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Sparky’s Engineer”</td>
<td>One</td>
<td>Provided with Lesson</td>
</tr>
<tr>
<td>“Sparky’s Engineer”</td>
<td>One</td>
<td>Provided with Lesson</td>
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<tr>
<td>Teacher’s Edition</td>
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### Materials per student

<table>
<thead>
<tr>
<th>Materials per student</th>
<th>Amount</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>N/A</td>
<td>N/A</td>
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### Vocabulary with Definitions

1. **Science** – To look closely at the surroundings to draw conclusions; perform experiments with the scientific method; and study a whole object to identify the parts.
2. **Math** – A science dealing with the logic of quantity, shape, and arrangement.
3. **Engineering** – Using science and math to help people do work faster and better.
4. **Aeronautical Engineer** – An engineer who designs machines that fly such as airplanes and rockets.
5. **Biomedical Engineer** – An engineer who designs medical devices.
6. **Chemical Engineer** – An engineer who uses chemical processes to make chemicals and products such as rocket fuel.
7. **Civil Engineer** – An engineer who designs roads, bridges, and dams using soil, rocks, and concrete.
8. **Electrical Engineer** – An engineer who designs electrical circuits found in radios, televisions, and computers.
9. **Fire Protection Engineer** – An engineer who makes buildings safe if a fire occurs.
10. **Mechanical Engineer** – An engineer who designs machines and devices with moving parts.
11. **Software Engineer** – An engineer who designs and writes programs for computers.
12. **Design** – To make a plan for; to create for a particular purpose.

### Assessment / Evaluation of Students

The instructor may assess the students in any/all of the following manners:

1. Ask students questions about the material that you have read to the class.
2. Utilize Sparky’s Engineer Activity Book as an assessment tool.
Lesson Extensions
Instructor may wish to provide visuals of Sparky and/or engineering tools and products throughout the classroom. Such visuals may be referred to throughout the year to reiterate ideas from “Sparky’s Engineer”.

Attachments
1. None (“Sparky’s Engineer” can be found in a separate document)

Troubleshooting Tips
None

Safety Issues
None

Additional Resources
None

Key Words
Science, Math, Engineering, Aeronautical Engineer, Biomedical Engineer, Chemical Engineer, Civil Engineer, Electrical Engineer, Fire Protection Engineer, Mechanical Engineer, Software Engineer, Sparky, Design