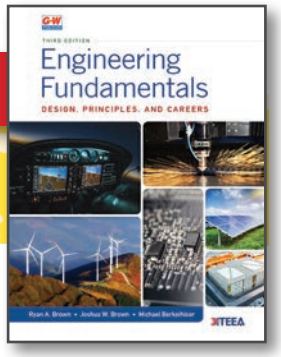
PREVIEW from *Engineering Fundamentals*, 3e



ACTIVITY

1-1

Knowledge within Engineering Disciplines

All engineers use a combination of mathematical, scientific, and technical knowledge. In this activity, you will determine examples of the types of knowledge used in an engineering discipline.

Objective

After completing this activity, you will be able to:

- Describe different examples of mathematical, scientific, and technical knowledge.

Materials

- Pencil
- Blank sheet of paper

Procedure

1. Select an engineering discipline, such as civil engineering, mechanical engineering, computer engineering, or aerospace engineering.
2. Conduct research on the engineering discipline to gain an understanding of it.
3. Create a table on your sheet of blank paper with these column headings: *Mathematical Knowledge*, *Scientific Knowledge*, and *Technical Knowledge*. Generate a list of the types of knowledge that an engineer in each discipline would use or need to understand.
4. Present your findings to the rest of the class.

Reflective Questions

1. How are the three types of knowledge different from one another?
2. How do you believe engineers develop knowledge in each of the three areas?

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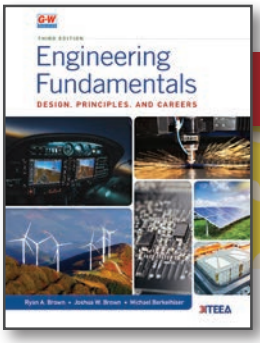

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ACTIVITY 1-2

Engineering Advancements

The history of technology is very closely associated with advancements that have been made in engineering. In this activity, you will select a technological device and trace its history and predict its future.

Objective

After completing this activity, you will be able to:

- Discuss technological and engineering development and change.

Materials

- Books or e-books about technological devices, products, or systems
- Internet access
- Presentation software

Procedure

1. Select a technological device, product, or system, such as an airplane, road, computer, or cell phone.
2. Conduct research on the device, product, or systems you selected. Find answers to the following questions.
   A. When was the device, product, or system first designed/developed?
   B. Who first designed/developed it?
   C. What types of engineers are (or may be) involved in the design and operation of the product?
   D. What products or devices came before it that may have been used in the design/development?
   E. What knowledge and materials had to exist before the product could be designed/developed?
   F. What problem does this product solve?
   G. What new products could this product lead to in the future?
3. Create a presentation using presentation software to present your findings.
4. Present the development of your product to your class.

Reflective Questions

1. What did you learn about the development of technology and the role of engineers?
2. How do you believe the growth of knowledge and understanding of engineering has impacted the products that we have today?

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