TECHNOLOGY in Practice
Applications and Innovations

Chapter Overview, Concepts, and Goals
Chapter 4, Masters of Design

Chapter Overview

Chapter 4, "Masters of Design," is the capstone for this module, *Technology and the Diversity of Limits,* as students will complete an entire cycle of the process of technology design, as shown in figure 1. They will use the information they have learned in Chapters 1–3 to design a product for a person with a disability. Each activity is dedicated to completing one or two stages of the process of technology design. Students will work in the same teams of three throughout the chapter.

In the **Engage** activity, *What's the Problem?,* students will identify the problem for which they will design a solution. This is the first stage in the process of technology design. They will use a checklist of some Americans with Disabilities Act (ADA) guidelines to help them consider difficulties people with disabilities might face when completing everyday tasks. Students then will choose a disability to focus on and a problem they would like to solve.

In the **Explore** activity, *Brainstorming,* students will spend time thinking of as many ideas to solve the problem as they can. This represents the second stage in the process.

During the **Explain** activity, *Designing the Solution,* students will work out a detailed design for a product. This represents the third stage of the process—designing a solution. They will create a rubric to evaluate the product and design tests to run on the product.

The **Elaborate** activity, *Will It Work?,* allows students to create the product. This is the fourth stage of the process of technology design—carrying out the solution.

In the **Evaluate** activity, *Let Me Tell You About …,* students will complete the last two stages of the process by evaluating the solution and sharing the results with the class. They will think about the strengths and weaknesses of the product and present their work from the chapter to the rest of the class.

Chapter Organizer

Engage—What's the Problem?

Key idea:
Identifying a problem can be the first step in designing a solution to help others.
Activity:
Students use an ADA checklist to consider the difficulties that a person with a disability might face when have completing everyday tasks. Students then choose a problem to solve.
Linking question:
Once a person has identified a problem, what happens next?

Explore—Brainstorming

Key idea:
Criteria and constraints are important to consider when coming up with ideas to solve a problem.
Activity:
Students brainstorm as many ideas to solve the problem as they can generate.
Linking question:
How do people use their ideas to design a solution?

Explain—Designing the Solution

Key idea:
Human factors and safety are important constraints when designing a solution.
Activity:
Students create a detailed plan for a product, including a rubric and test procedures.
Linking question:
What helps designers determine if their solutions might work?

Elaborate—Will It Work?

Key idea:
Designers test their ideas as they carry out their solutions.
Activity:
Students build the product and conduct tests to make sure it is a successful solution.
Linking question:
What do designers do once they have a product?

Evaluate—Let Me Tell You About …

Key idea:
It is important to evaluate solutions and share results in order to benefit other designers.
Activity:
Students evaluate the strengths and weaknesses of the product, and then present their work.

Major Concepts

- Some solutions work to help a particular group of people.
- Criteria and constraints, such as human factors, are part of the process of technology design.
- Testing is part of the process of technology design.
- The process of technology design is not complete until the solution has been evaluated and the results have been shared.

Goals for the Chapter

By the end of this chapter, students will

- complete the entire process of technology design
- understand how criteria and constraints affected the design
- describe the human factors that played a role in the design
- present the design to others
- appreciate how technology can help people with disabilities.