

# ***IT'S LIKE BUILDING A BETTER MOUSE TRAP***

An Introduction to Adaptive Designs

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# Tennessee 4-H Youth Development

## *It's Like Building a Better Mousetrap*

*An Introduction to Adaptive Designs*

### **Skill Level**

Intermediate

### **Learner Outcomes**

*The learner will be able to:*

- Define alternative design
- Create an alternative design for an everyday product

### **Educational Standard(s) Supported**

6.ETS1.1: Evaluate design constraints on solutions for maintaining ecosystems and biodiversity.

### **Success Indicator**

*Learners will be successful if they:*

- Establish a working definition of adaptive design
- Develop an alternative design for an everyday object

### **Time Needed**

45 Minutes

### **Materials List**

Student handout- one per group  
One pair of sunglasses per group  
One eyeglass repair kit per group

### **Introduction to Content**

This lesson introduces students to the concept of adaptive designs. Adaptive designs are used to aid people and often take a “not normal” approach to the way items are used. In this lesson, students create an adaptive design for a pair of glasses, as well as establish a working definition of adaptive design.

### **Introduction to Methodology**

Students will identify adaptive designs that they see often. They will disassemble and reassemble a pair of glasses to generate ideas on how to improve them. They then create their own design of the glasses and establish a definition of adaptive design.

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## Terms and Concepts Introduction

Adaptive Design- A design for an object that uses a different approach than the “normal” or widely accepted design in order to aid someone.

## Setting the Stage and Opening Questions

Ask the students, **“Have you ever heard the phrase ‘That person is trying to design a better mousetrap’? What do you think that phrase means?”**

Allow the students to offer their ideas on what the phrase means. **“That phrase simply means that person is trying to improve something that hasn’t had improvements made to it in a long time. They are trying to improve the device in some way. Today, we are going to be looking at adaptive designs. By the end of the class, you should be able to define adaptive design, give examples and be able to create an adaptive design of your own for a common object.”**

## Experience

Begin by passing out the handout to the students and working as a class to complete the first side of the handout. This side examines different everyday objects that are considered adaptive designed objects.

After completing the handout, separate the students into groups and pass out a pair of sunglasses and an eye glass repair kit to each group. Say, **“Today, you are going to be playing the part of an engineer. In just a few minutes, you will have time to take the pair of glasses apart and look at the individual pieces. Pay attention to how the pieces fit together and work together to make the glasses. After you have looked at all the pieces, reassemble the glasses and discuss among the group how the design could be improved.”**

Allow the groups to take apart and observe the glasses. Rotate around the classroom to observe the students and draw their attention to different aspects of the glasses.

## Tips for Engagement

As students are disassembling and reassembling the eye glasses, rotate around the room and ask students to explain the function of each piece and how they think it fits in with the design of the pair of glasses.

## Share

After all groups have reassembled the glasses, ask the students **“What are some ways that your group found that they could improve the glasses? What are some things that your group liked about the design of the glasses?”**

## Process

Say to the students, **“In your group, take the next 10 minutes to redesign a pair of glasses. Your goal should be to improve upon the current design, while still keeping the main functions of the glasses.”**

Allow students to work on their designs and then have each group share their new design with the class.

## Generalize

After the students have completed their new designs and shared them with the class, instruct the students to complete the Frayer Model on the back of their handout. In this, students will list examples and non-examples, a drawing, and the definition of an adaptive design.

Have the students share their completed Frayer Models with the class.

## Apply

Say to the students, **“You all came up with some great adaptive designs for glasses in today’s class. What are some other everyday objects that you can think of that you could redesign to be more functional? What would those designs look like?”**

### Life Skill(s) from TIPP(s) for 4-H

6<sup>th</sup> Grade

Identify the parts, steps, and necessary sequence or order to achieve a goal. (Head Managing)

## *Supplemental Information*

### *Educational Standards Met*

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6.ETS1.1: Evaluate design constraints on solutions for maintaining ecosystems and biodiversity.

Programs in agriculture and natural resources, 4-H youth development, family and consumer sciences, and resource development. University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating. UT Extension provides equal opportunities in programs and employment.



# Tennessee 4-H Youth Development



Product	Adaptive?	Why or Why Not?	What was the goal of the design?
A set of headphones			
A cast for a broken bone			
A walking stick			
A baby stroller			

# Adaptive Designs

Drawing		Definition	
Non-Examples		Examples	