

Zara's Robot Friend - Teacher's Guide

Complete Lesson Plans for Grades K-3

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Overview

This comprehensive teacher's guide accompanies 'Zara's Robot Friend' and provides everything you need to teach robotics and engineering concepts to young learners.

Learning Objectives

- * Understand basic robotics concepts
- * Develop problem-solving skills
- * Learn about engineering design process
- * Build teamwork and collaboration skills
- * Explore STEM careers

Lesson 1: Introduction to Robots

Duration: 45 minutes

Objectives: Students will identify what makes something a robot and explore different types of robots in everyday life.

Materials: Book, chart paper, markers, robot pictures

Procedure:

1. Read Chapter 1 together
2. Discuss: What is a robot?
3. Brainstorm robots we use every day
4. Create a class robot chart
5. Draw their dream robot

Lesson 2: The Engineering Design Process

Duration: 45 minutes

Objectives: Students will learn the steps of the engineering design process through Zara's story.

Steps:

- * Ask: What problem needs solving?
- * Imagine: Think of solutions
- * Plan: Design your solution
- * Create: Build a prototype
- * Test: Does it work?
- * Improve: Make it better

Lesson 3: Building Simple Machines

Duration: 60 minutes

Hands-on activity where students build simple machines using household materials.

Materials: Cardboard, tape, scissors, straws, paper clips

Challenge: Build a robot arm that can pick up a small object

Assessment Rubrics

Use these rubrics to evaluate student understanding:

- * Participation: Engages in discussions and activities
- * Understanding: Demonstrates grasp of robotics concepts
- * Creativity: Shows original thinking in designs
- * Collaboration: Works well with team members
- * Problem-Solving: Applies engineering design process

Extension Activities

- * Visit a robotics lab or factory
- * Invite a robotics engineer to speak
- * Create a class robot using recyclables
- * Research famous robots in history
- * Design robots for specific jobs

Additional Resources

Books:

- * 'Rosie Revere, Engineer' by Andrea Beaty
- * 'The Most Magnificent Thing' by Ashley Spires

Websites:

- * Code.org
- * PBS Kids Engineering Games
- * NASA STEM Resources

For more resources, visit www.dallaswithompson.com