

Subject Area: Science
Unit Title: Electricity and Circuitry
Grade Level: 3
Lesson Number: 1 of 10

Duration: 60 minutes
Date: March 10, 2023
Teacher: Ms. Johnson
Room: Science Lab

Curriculum Standards Alignment

Content Standards:

- Understand the basic components of an electric circuit
- Learn how to safely handle electrical materials

Skills Standards:

- Develop problem-solving skills through hands-on activities
- Design and build a basic electric circuit with variable components

Cross-Curricular Links:

- Math: measurement and calculation
- Language Arts: technical writing and communication

Essential Questions & Big Ideas

Essential Questions:

- What are the basic components of an electric circuit?
- How do we safely handle electrical materials?

Enduring Understandings:

- Electric circuits are essential in our daily lives
- Understanding circuitry is crucial for innovation and problem-solving

Student Context Analysis

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Class Profile:

- Total Students: 25
- ELL Students: 5
- IEP/504 Plans: 3
- Gifted: 2

Learning Styles Distribution:

- Visual: 40%
- Auditory: 30%
- Kinesthetic: 30%

Introduction

Welcome to the exciting world of electricity and circuitry! This lesson plan is designed to introduce 8-year-old students to the fundamental concepts of electricity and circuitry, focusing on designing and building a basic electric circuit with variable components.

Lesson Objectives

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- Understand the basic components of an electric circuit
- Learn how to safely handle electrical materials
- Develop problem-solving skills through hands-on activities
- Design and build a basic electric circuit with variable components

Direct Instruction

Provide a brief overview of the basic components of an electric circuit, using visual aids and simple diagrams to explain how each component works.

Safety Rules

Discuss safety rules for working with electricity, emphasizing the importance of handling materials carefully and avoiding short circuits.

Guided Practice

Distribute materials for students to build their own simple circuits, including batteries, wires, bulbs, and buzzers.

Differentiated Activities

For mixed-ability groups, offer differentiated activities, such as:

- For struggling students: Pre-assembled circuits to practice turning on and off, or using larger, easier-to-handle components.
- For advanced students: More complex circuits to build, such as those involving multiple bulbs or devices, or challenging them to design their own circuit with specific requirements.

Independent Practice

Allow students to experiment with their circuits, encouraging them to try different configurations and observe the effects.

Prompts and Challenges

Provide prompts or challenges, such as "Can you make the bulb brighter?" or "How can you make the buzzer sound louder?"

Closure

Gather the class to discuss findings and share observations.

Reflection and Feedback

Ask students to reflect on what they learned and what they would like to learn more about in future lessons.

Assessment and Extension

Distribute a simple quiz to assess understanding of the basic components of an electric circuit and safety procedures.

Extension Activities

For extension, provide additional materials or challenges, such as building a circuit with a switch or creating a series circuit with multiple bulbs.

Differentiated Activities for Mixed-Ability Groups

Learning Centers: Set up different learning centers, each focusing on a specific aspect of circuit building, such as a component identification station, a circuit building station, and a troubleshooting station.

Tiered Assignments

Offer tiered assignments that cater to different learning levels, such as pre-made circuits for struggling students or more complex circuit designs for advanced students.

Safety Considerations

Emphasize safety throughout the lesson, demonstrating safe practices and supervising students closely during activities.

Emergency Procedures

Ensure students understand the risks associated with electricity and know what to do in case of an electrical shock.

Conclusion

In conclusion, designing and building a basic electric circuit with variable components is a fun and educational experience for 8-year-old students.

Next Steps

The learning progression from this lesson can be further developed through follow-up lessons, such as a lesson on series and parallel circuits or an introduction to circuit symbols and diagrams.

