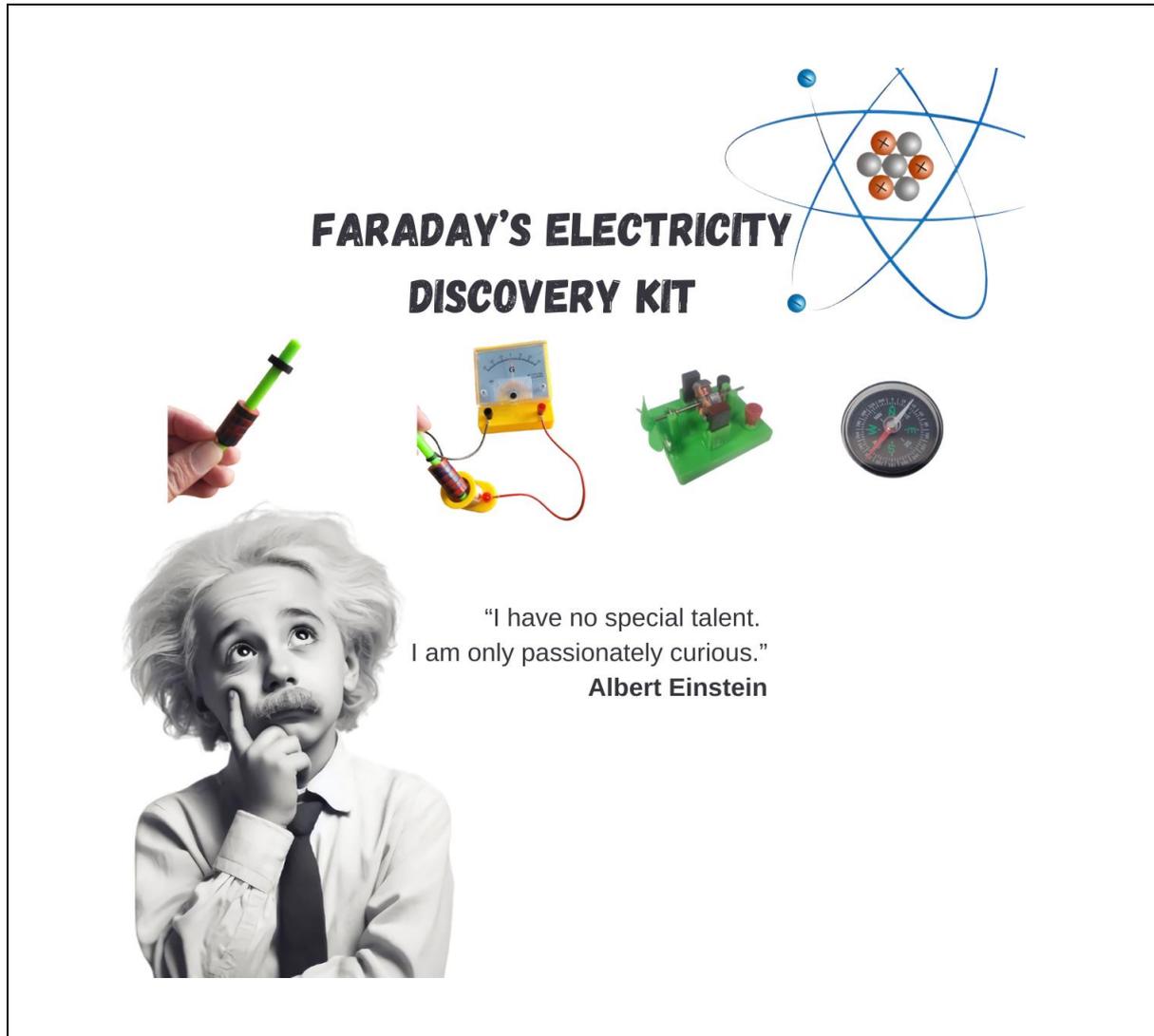
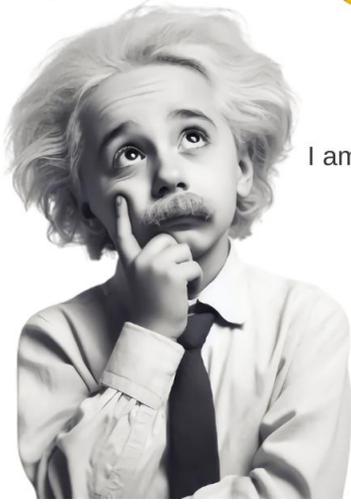
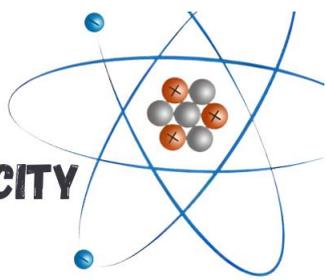

Faraday Electricity Discovery Kit – Teacher’s Guide

Recreating Michael Faraday’s 1831 Electromagnetic Induction Experiment



**FARADAY'S ELECTRICITY
DISCOVERY KIT**



“I have no special talent.
I am only passionately curious.”
Albert Einstein

Introduction

This guide supports teachers in delivering the Faraday Electricity Discovery Kit activities with scientific accuracy and clarity. It aligns with the updated pupil worksheet and provides background, teaching tips, and answers.

Learning Objectives

- Understand the concept of electromagnetic induction.
 - Observe how moving magnets induce electric current in a coil.
 - Connect the experiment to real-world electricity generation.
 - Use scientific vocabulary: magnetic field, current, electrons, energy conversion.
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Background Information

Michael Faraday discovered in 1831 that moving a magnet through a coil of wire creates an electric current. This process is called electromagnetic induction. It is the principle behind generators in power stations.

Electricity is generated by changing magnetic fields pushing electrons through wires. Only electrons move; protons and neutrons remain in the atomic nucleus.

Energy is conserved by converting mechanical movement energy into electrical energy.

Preparing the Classroom

- Ensure all kit components are available and functional.
 - Demonstrate safe handling of magnets and electrical equipment.
 - Arrange seating so all pupils can see the galvanometer needle clearly.
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Teaching Tips

- Begin with the starter activity to explore magnetic attraction and repulsion.
- Encourage pupils to make predictions before each test.

- Emphasize the importance of movement speed and direction on the galvanometer reading.
 - Use questioning to guide pupils to understand that a changing magnetic field induces current.
 - Clarify that energy conversion is taking place: mechanical to electrical.
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Suggested Lesson Flow

1. **Starter Activity:** Explore magnetic forces with the levitation pole.
 2. **Main Investigation:** Pupils move magnets through the coil at different speeds and directions.
 3. **Observation:** Record galvanometer needle movements.
 4. **Discussion:** Analyse results and answer thinking questions.
 5. **Key Idea:** Reinforce the concept of electromagnetic induction.
 6. **Challenge:** Connect the experiment to power station generators.
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Answers to Pupil Questions

- The galvanometer needle moves most when the magnet moves fastest because the magnetic field changes more rapidly.
 - The needle moves in different directions depending on the magnet's movement direction.
 - Electricity is made when the magnetic field around the coil changes.
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Extension Ideas

- Investigate how the number of coil turns affects the current.
 - Explore different magnet strengths.
 - Discuss historical context: Faraday's impact on modern electricity.
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Safety Notes

- Handle magnets carefully to avoid pinching fingers.

- Do not connect the galvanometer to high voltage sources.

This guide ensures teachers can confidently deliver the Faraday Electricity Discovery Kit lessons with clear scientific explanations and engaging activities.

Feel free to copy this updated guide into your earlier version or wherever you need it. If you want me to help with any other content or formatting, just say the word!
