Acknowledgments

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Funding: National 4-H Curriculum

Source Citations: The following sources were helpful in developing the Electric Excitement Series:

For more on Electricity, look for these other guides in this set.

Magic of Electricity
Chapter 1 Getting Started
Activity 1 Plugging In
Activity 2 Getting It Together
Activity 3 Getting Light T
Activity 4 Control of the Flow
Activity 5 Conducting Things
Activity 6 Circuit Sense
Activity 7 No Flow or Not to Flow

Chapter 2 Electricity in Action
Activity 8 Switching Circuits
Activity 9 Deducing Circuits
Activity 10 Dividing Circuits
Activity 11 Case of the Missing Circuit
Activity 12 Case of the Normal Circuit

Chapter 3 Understanding Circuits
Activity 13 Circuit Sense
Activity 14 Dividing Circuits
Activity 15 Case of the Missing Circuit

Chapter 4 Electricity at Work
Activity 16 Strangers in the Current Flow
Activity 17 Stop the Crime

Investigating Electricity
Chapter 1 Let's Get Started
Activity 1 Tools Are Important
Activity 2 The Cocktail Salts
Activity 3 The Most Important Tool
Activity 4 Investigating Ores
Activity 5 How Much Electricity Are You Using?

Chapter 2 Understanding Circuits
Activity 6 Deducing Circuits
Activity 7 Dividing Circuits
Activity 8 Circuit Sense
Activity 9 Case of the Missing Circuit
Activity 10 Case of the Normal Circuit

Chapter 3 Understanding Electricity
Activity 11 How Much Is Too Much?
Activity 12 Is It Inside or Outside?
Activity 13 How Much Is Too Much?
Activity 14 Are You Outside the Ground?

Chapter 4 Fusing It Together
Activity 15 The Amazing Journey
Activity 16 Tools
Activity 17 Tools
Activity 18 Tools

Wired for Power
Chapter 1 Let's Get Started
Activity 1 Tools Are Important
Activity 2 The Cocktail Salts
Activity 3 The Most Important Tool
Activity 4 Investigating Ores
Activity 5 How Much Electricity Are You Using?

Chapter 2 Looking for Electricity
Activity 6 Deducing Circuits
Activity 7 Dividing Circuits
Activity 8 Circuit Sense
Activity 9 Case of the Missing Circuit
Activity 10 Case of the Normal Circuit

Chapter 3 Understanding Electricity
Activity 11 How Much Is Too Much?
Activity 12 Is It Inside or Outside?
Activity 13 How Much Is Too Much?
Activity 14 Are You Outside the Ground?

Chapter 4 Fusing It Together
Activity 15 The Amazing Journey
Activity 16 Tools
Activity 17 Tools
Activity 18 Tools

Electric Helper's Guide
The Experimental Learning Process: Developing Life Skills
Youth Learning Characteristics
Chapter 1 Electric Explorations
Activity 1 Generating Electric Current
Activity 2 Conducting an Electric Circuit
Activity 3 Measuring Current
Activity 4 Measuring Resistance
Activity 5 Measuring Voltage

Chapter 2 Electric Circuits
Activity 6 Electric Lad's Play
Activity 7 Electric Lad's Play
Activity 8 Electric Lad's Play
Activity 9 Electric Lad's Play
Activity 10 Electric Lad's Play
Activity 11 Electric Lad's Play

Chapter 3 Talking About Electricity
Activity 12 Electric Lad's Play
Activity 13 Electric Lad's Play
Activity 14 Electric Lad's Play
Activity 15 Electric Lad's Play
Activity 16 Electric Lad's Play
Activity 17 Electric Lad's Play
Activity 18 Electric Lad's Play
Activity 19 Electric Lad's Play
Activity 20 Electric Lad's Play

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Magic of Electricity

Contents

Note to the Electric Project Helper .................................................. 2
Magic of Electricity ........................................................................ 3
Magic of Electricity Planning Guide ................................................. 4
Magic of Electricity Achievement Program ...................................... 5

Chapter 1: Getting Started
Activity 1 Plugging in ................................................................. 6
Activity 2 Getting It Together ....................................................... 8
Activity 3 Bright Lights .............................................................. 10

Chapter 2: Electricity on the Move
Activity 4 Control the Flow ....................................................... 12
Activity 5 Conducting Things .................................................... 14
Activity 6 Circuit Sense ............................................................. 16
Activity 7 Is There a Fork in the Road? ...................................... 18

Chapter 3: Magnets in Motion
Activity 8 May the Force Be with You ......................................... 20
Activity 9 A Passing Force ....................................................... 22
Activity 10 Attract or Repel? .................................................... 24
Activity 11 Earth Attractions ..................................................... 26

Chapter 4: Current Attractions
Activity 12 Electric Attractions ................................................. 28
Activity 13 Sense the Current .................................................... 30
Activity 14 Make it Spin ........................................................... 32

Answers .................................................................................. 34
High Voltage Glossary .............................................................. 35
Electric Resources .................................................................... 36
Welcome to Electric Excitement! You will enjoy helping youth demystify the “magic” of electric circuits, magnetism, motors and electronics. From building burglar alarms to learning how to select stereo equipment, this curriculum contains dozens of hands-on, useful and fun projects. These activities can be used in a variety of settings such as in the classroom, with youth groups or community clubs, or one-on-one.

You will be a key individual with whom young people can share the experiences outlined in this activity guide. You will provide encouragement and recognition, as they develop technical and scientific electrical literacy. In addition, these young people will learn important life skills such as creative thinking, decision making, problem solving and participating as members of a team.

Your Role
• Review this guide and the Electric Group Activity Guide
• Support the youth in his or her efforts to set goals and complete the Planning Guide and Electric Achievement Program
• Help select electric projects to construct, give assistance in doing the activities and answer questions
• Help the young person to think about why something happened the way it did
• Serve as a resource person to help connect the young person with the community, resource materials and others knowledgeable about electricity

The Electric Excitement Series
This is the first of four Electric Excitement Series activity guides.

Activity Guide Level Age Grade
Magic of Electricity 1 9–11 4–5
Investigating Electricity 2 11–13 6–7
Wired for Power 3 13–16 8–9
Electronics 4 16–18 10–12

These activity guides may be used by youth at any grade-level based on their electric skills, knowledge and expertise. A fifth activity guide, the Electric Group Activity Guide, provides additional group activities that can be adapted to the family, classroom or youth group. These activities strengthen understanding of electrical concepts and reinforce electrical skills.

The Experiential Learning Model
The experiential learning model is used in each activity as a means to help the young person gain the most from the experience.

1. Experience the activity perform. out
2. Share the results and observations publicly
3. Process by discussing, looking at the experiences, analyze, reflect
4. Generate to connect the experience to other examples
5. Apply what was learned to a new or different situation practice
Youth describes the experience and their reaction.

The five steps in this learning model encourage the young person to try to do the activity before being told or shown how. The activity is the experience part of the cycle. Use the questions listed in the Making Connections section of each activity to encourage the young person to think about what he or she has learned from the experience. The reflect and application questions ask the youth to share what they did; process what was most important about the experience; generalize the life skill and electric skill practiced to their own lives; and think through how they could apply the life skill or science process skill to a new situation.

To fulfill the experiential learning process, you must complete all the steps, including the review questions in Making Connections. The experiential model enhances learning and adjusts to a wide variety of learning styles.

Evaluating the Experience
1. By asking the questions under Making Connections you can evaluate your youth’s understanding of the key concepts and life skills practiced in each activity. Listening to and encouraging consideration of each question resulting in conclusions and opportunities for further application. In addition, the Success Indicator shown in the introduction of each activity will help you evaluate the experience.

2. You will find a leader assessment sheet Evaluating the Impact in the Electric Group Activity Guide. Use this sheet to help you evaluate your youth’s understanding of magnetism and electricity as he or she completes these activities.

3. Youth and volunteer helper assessments of the Electric Excitement series can be found on page 35, Electric Group Activity Guide.
How This Book Works

The Magic Starts Here!

Are you ready to experience the magic of electricity? Let's get started! Each activity in The Magic of Electricity is designed to help you learn something new about electricity. Invite a family member or a friend to work with you on these activities and projects. These projects can be done with your classmates or in a special interest club, after school group or community club. Sometimes it is more fun and interesting to explore new things together.

The Activities
Each activity in the Electric Excitement series is designed to help you learn something new about electricity. These activities also provide opportunities to practice a life skill that you can use every day. Here is a quick look at the various sections of each activity.

Skills
Each activity lists electric skills, science process skills, and life skills that you will learn and use. You will practice these types of skills when you answer the questions and discuss each activity with your electric helper.

Success Indicators
Can you do what these say, and can you do it more than once? If so, you have mastered this skill. If you have trouble with this skill, just keep practicing until you can.

Tools
These are the materials you'll need to complete the activity. By organizing and planning for each activity you'll be practicing an important skill.

Power Up
This is the "do" part of the activity. You will usually get to share part of what you do with others.

Closing the Circuit
Here is an extra activity which will help you understand or practice what you have learned in each activity.

Making Connections
This is where you and your helper get together to see what you have learned about electricity. You will use these questions to help you discuss what you learned, what you did, what was important about what you did, what it meant to you and how you could use what you learned in the future. The Making Connection questions are found at the end of each chapter. Check the box after talking over each question with your helper or recording in your journal.

Light Bulb Icon
Here you will find tips to help you complete the activity or general information about electricity.

Brain Boosters
These are more challenging activities for you to do. They will help you expand your knowledge and skills to other areas. Each time you successfully complete one of these, record it on your achievement program page and have your helper initial and date it.

Safety Icon
These are helpful hints to keep you safe when working with electricity. The activities in this guide are designed to be safe, but remember you are dealing with electricity, which can be dangerous.

Kite Icon
Check the kite for interesting facts and trivia about the magic world of electricity.

Glossary Words
All definitions for the words listed here are found in the glossary on page 35.

Journal
Use a journal to record your answers to Making Connections found at the end of each chapter.

Your Project Helper
Your electric project helper is an important part of your overall experience in the electric project. The choice of a helper is yours. This person may be your project leader or advisor, troop leader, teacher, family member, neighbor, friend or anyone who has the interest to work with you to complete the electric achievement program for this guide. Involve your helper as you set your goals, discuss the questions following each activity and sometimes work together on an activity.

My Project Helper
Phone #
E-mail address
# Magic of Electricity Planning Guide

## My Plans
- Select an electric project helper
- Complete all four steps of the Magic of Electricity Planning Guide
- Do at least seven activities each year
- Take part in at least two leadership experiences each year

My Name ______________________________

My Project Helper ______________________

Helper's Phone Number __________________

E-mail Address __________________________

## My Electric Project Goals
I plan to complete my Magic of Electricity activity book by __________________________.

## Leadership Experiences
Participate in at least two of these experiences each year. Put a check mark by the ones you plan to do.

<table>
<thead>
<tr>
<th>Experience</th>
<th>Plan To Do</th>
<th>Date Completed</th>
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<tbody>
<tr>
<td>Give an electric demonstration</td>
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<tr>
<td>Teach someone something about electricity</td>
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<td>Encourage a friend to be a part of the electric project</td>
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<tr>
<td>Exhibit an electric project</td>
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</tbody>
</table>

My own activity: ______________________

## Electric Project Highlights
List and record the date every time you do and learn something exciting in Magic of Electricity.

Date

## Electric Project Review
Once you have completed what you planned, arrange to talk with your helper about what you have learned. You will want to have your planning guide, achievement program and the Making Connections section of this guide up-to-date.
**Guidelines**
- Do at least three main Activities and four Brain Boosters Activities this year and check them off.
- Have your electric helper date and initial this log as you complete the activities.

<table>
<thead>
<tr>
<th>Required Activities</th>
<th>Date Completed</th>
<th>Helper’s Initials</th>
<th>Optional Activities (Brain Boosters)</th>
<th>Page/No.</th>
<th>Date Completed</th>
<th>Helper’s Initials</th>
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**Magic of Electricity**

**Achievement Program Certificate**

I certify that ________________________________ has successfully completed the requirements of Electric Excitement: *Magic of Electricity*.

Helper’s Signature: ________________________________

Date: ________________________________