

GSK Science in the Summer™ 2023

Be a Physicist! Additional Resources

In this guide, you will find suggestions of books, digital resources like videos and online games, and additional activities that relate to each of the activities included in *Be a Physicist!*

The resources may connect to the featured career, the type of energy explored in the activity, or otherwise relate to the story of each activity.

While these resources are meant to be used by all *GSK Science in Summer™* students, the resources that are better for older students (4th-6th grade) are marked with an asterisk (*).

CORE CONCEPT

Physicists study energy:

- Different **kinds** of energy (heat, light, sound, motion, electric current)
- How energy can be **changed** from one kind to another
- How energy **moves** between objects & through space

CAREERS

- [Accident Investigator](#)
- [Laser Scientist](#)
- [Materials Scientist](#)
- [Power Plant Engineer](#)
- [Sound Engineer](#)

Accident Investigator

Physics concept: When two objects collide, energy (of motion) transfers between them.

Books:

Oscar and the Cricket: A Book About Moving and Rolling (Start with Science) by Geoff Waring

Science Comics: Cars: Engines That Move You by Dan Zettwoch *

Balanced and Unbalanced Forces by Jenna Winterberg

Digital Resources:

VIDEO: [Potential and Kinetic Energy](#)

VIDEO: [Swings, Slides, and Science](#)

VIDEO: [Slipping, Sliding Science!](#)

VIDEO: [Let's Get Rolling!](#)

ONLINE GAMES AND VIDEOS: [Driving with Ruff Ruffman](#)

VIRTUAL LAB: [Collision Lab](#) *

VIRTUAL LAB: [Forces and Motion: Basics](#)

Additional activities:

[Crash Science Demo](#)

[Spinning Tops Challenge](#)

[Chain Reaction](#)

[Can Car](#)

[What is Energy?](#)

[Force and Motion](#) *

[How the Rubber Meets the Road](#) *

[Paper Tape Motion Timer](#) *

[Road Safety Scavenger Hunt!](#)

[Road Smarts for Kids](#)

[Cranky Contraptions](#)

Laser Scientist

Physics concept: Light energy travels in a straight line. It can change direction by reflecting off of a surface.

Books:

Oscar and the Moth: A Book About Light and Dark (Start with Science) by Geoff Waring

Light: Shadows, Mirrors, and Rainbows (Amazing Science) by Natalie Myra Rosinsky

Space Exploration for Kids: A Junior Scientist's Guide to Astronauts, Rockets, and Life in Zero Gravity by Bruce Betts

Digital Resources:

VIDEO: [Experiments with Lasers](#)

VIDEO: [How Do We Communicate with Faraway Spacecraft?](#)

VIDEO: [What is a Satellite?](#) *

ONLINE GAME: [Relay! Laser-Based Space Communications](#)

ONLINE GAME: [Laser Circuits](#)

VIRTUAL LAB: [Molecules and Light](#) *

VIRTUAL LAB: [Lasers](#) *

Additional activities:

[Shadow Tricks](#)

[Laser Jell-o](#)

[Light Maze](#)

[Flashlight Play](#)

[Bent Toward Science](#)

[It's All Done with Mirrors](#)

[Satellite Insight](#)

[Construct it!](#)

Materials Scientist

Physics concept: Heat energy can be absorbed or released by materials. Different materials absorb and release heat energy differently.

Books:

Do You Really Want to Burn Your Toast?: A Book About Heat by Daniel D. Maurer

How Heat Moves by Sharon Coan

A-B-Skis: An Alphabet Book about the Magical World of Skiing by Libby Ludlow

Digital Resources:

VIDEO: [What does a Material Scientist do?](#)

VIDEO: [Discovering Structural Color | Mission: Materials Science](#) *

ONLINE GAME: [Ski Slalom 3D](#)

VIRTUAL LAB: [Energy Forms and Changes](#) *

VIRTUAL LAB: [States of Matter: Basics](#) *

Additional activities:

[When Hot is Not](#)

[The Great Race](#)

[Sunlight Oven](#) *

[Molecule Races](#)

[Milli's Insulation Investigation](#) *

[Melts in Your Bag, Not in Your Hands](#)

[Snake](#)

[Hot Spoons](#)

[Save a Snowman](#)

[Paper Towel Strength](#)

Power Plant Engineer

Physics concept: Electrical energy can travel through wires (or other materials) and be changed into light energy. The amount of light energy produced depends on both the source of the electrical energy and the arrangement of the wires.

Books:

Oscar and the Bird: A Book about Electricity (Start with Science) by Geoff Waring

Science Comics: Electricity: Energy in Action by Andy Hirsch *

How Does My Home Work? by Chris Butterworth

Digital Resources:

VIDEO: [Making Music with Electricity and Tesla Coils](#)

VIDEO: [Spooky Sound - What is a Theremin?](#)

VIDEO: [Life Before Electricity](#)

VIRTUAL LAB: [Circuit Construction Kit](#) *

ONLINE GAME: [Crack the Circuit](#)

ONLINE GAME: [Electrical Circuit Game](#)

Additional activities:

[Dough Creatures](#) *

[Stretch the Chain and See the Light](#)

[How Potato Batteries Work](#) *

[Steady Hand Game](#)

[Homopolar Motor](#) *

[Stripped-Down Motor](#) *

[DIY Coin Battery](#)

[Aluminum Air Battery](#)

[Build and Play the Electrical Circuit Wire Maze](#) *

Sound Engineer

Physics concept: Sound energy comes from vibrating objects. Sounds can be made louder (amplified) by changing how and where the sound waves travel.

Books:

Oscar and the Bat: A Book About Sound (Start with Science) by Geoff Waring

Sounds All Around: The Science of How Sound Works by Susan Hughes

Sound: Loud, Soft, High, and Low (Amazing Science) by Natalie Myra Rosinsky

Digital Resources:

VIDEO: [Change Your Voice with Science](#)

VIDEO: [What is Ultrasound?](#)

VIDEO: [What is Boyle's Law?](#)

VIDEO: [What is Sound?](#)

VIDEO: [The Science of the String Phone!](#)

VIDEO: [Occupational Video - Sound Engineer](#) *

VIRTUAL LAB: [PHet Sound](#)

Additional activities:

[Good Vibrations](#)

[7 Sound Experiments](#)

[Scream Cup](#)

[A Kazoo for YOU!](#) *

[Making Music in Nature](#) *

[Extreme Sounds](#) *

[Sound Waves](#) *