



## Sample Materials

### 3rd Grade Physical Science

#### Audio Tape/CD

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##### **Sing the Science Standards**

\$30-35

Science Explosion, Inc.

<http://www.scienceexplosion.com>

Join the "Science Explosion" as they sing over 50 songs written to the Science Standards. This is a great way for students in elementary and middle school to review the most important ideas in science. Over 50 songs are included on this double-CD which also includes lyrics and instrumental versions. Bring the Science Standards to life with "Sing the Science Standards with the Science Explosion." Also has another two disc Volume 2 CD. Songbook available for \$27.50.

#### Classroom Books

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##### **101 Science Poems & Songs for Young Learners**

\$10-15

Amazon.com

[http://www.amazon.com/Science-Poems-Songs-Learners-Grades/dp/0590963694/ref=sr\\_1\\_1?s=k](http://www.amazon.com/Science-Poems-Songs-Learners-Grades/dp/0590963694/ref=sr_1_1?s=k)

ISBN: 0590963694

A treasury of easy, kid-pleasing poems and songs that reinforce essential primary science concepts and build literacy. You'll turn to this big collection again and again to teach: light and shadow, plants, endangered animals, butterfly life cycles, machines, weather, hibernation, and everything in between! Includes exciting hands-on activities and simple experiments to extend learning.

##### **A Drop Around the World**

\$7-8

Amazon.com

<http://www.amazon.com>

ISBN: 1883220726

The Teacher's Guide for this book is available for \$7.95. A drop of rain is a drop of life--a drop of eternity. Barbara Shaw McKinney and illustrator Michael Maydak take us on an "out of sight" journey from Maine to Mumbai, with just one raindrop as it touches plant, animal, and human life all around the world. Traveling with Drop, readers will see the world, inside and out, from solid, liquid, and vaporous viewpoint. Full color.

##### **Energy Makes Things Happen**

\$5-6

Amazon.com

[http://www.amazon.com/Energy-Things-Lets-Read---Find-Out-Science/dp/0064452131/ref=sr\\_1\\_1](http://www.amazon.com/Energy-Things-Lets-Read---Find-Out-Science/dp/0064452131/ref=sr_1_1)

ISBN: 0064452131

Alameda County  
Public Libraries:  
J531.6 BRADLEY.

by Kimberly Bradley. Grade 1-3-This worthy title uses familiar examples and a clear focus to introduce basic scientific concepts. An opening scene shows children playing ball, flying kites, and cooking and eating hot dogs, with a rock on a hill in the background. Bradley explains that inherent in the scenarios are different kinds of energy. She then tells how the kite uses the wind, the rock converts stored energy into moving energy, and so on, and discusses how the greatest source of power, the sun, makes food, fossil fuels, light, heat, and wind. The author intentionally makes this a very general introduction; not even moderately difficult words such as "potential" or "kinetic" are used. A simple experiment and a game are appended. While rolling a toy car into a stationary one and observing the result can be easily done

### **Fire into Ice: Adventures in Glass Making (Hardcover)**

\$10-15

Amazon.com

Berkeley Public  
Library

[http://www.amazon.com/Fire-into-Ice-Adventures-Making/dp/0887764592/ref=sr\\_1\\_1?s=books&ie](http://www.amazon.com/Fire-into-Ice-Adventures-Making/dp/0887764592/ref=sr_1_1?s=books&ie)  
ISBN-10: 0887764592 ISBN-13: 978-0887764592

used from Amazon - Grade 3-6-After spending 12 years living with the Inuit and learning how to carve stone and ivory, the author joined the Steuben glass company as a designer of glass sculptures. In this simply told, autobiographical vignette, he expresses his feelings about moving from the Arctic to New York and discusses how he translated his memories, the elegant simplicity of Inuit art, and regional motifs into glass. Houston's respect for the team of artisans who helped him bring his concepts to fruition is clear. Full-page stunning photographs of the glass pieces against black or gray backgrounds and pen-and-ink sketches illustrate this handsome, unique volume.

### **Follow a Raindrop: The Water Cycle**

\$8-9

Amazon.com

<http://www.amazon.com>  
ISBN0439186226

By Ward, Elsie. Sixteen-page books feature fabulous, eye-popping photos, colorful, detailed illustrations, and informative text on favorite science topics. Each set comes packaged in a reusable storage bag that includes 6 copies of the same Super-Science Reader, an 8-page teaching guide filled with rubrics, and reproducible reading/writing activities; plus science background and easy hands-on activities.

### **From Sand to Glass (Start to Finish)**

\$15-20

Amazon.com

[http://www.amazon.com/Glass-Start-Finish-Lerner-Hardcover/dp/0822509458/ref=sr\\_1\\_1?s=book](http://www.amazon.com/Glass-Start-Finish-Lerner-Hardcover/dp/0822509458/ref=sr_1_1?s=book)  
ISBN-10: 0822509458 ISBN-13: 978-0822509455

(Library Binding) By Shannon Zimlicka. Briefly introduces the process by which sand is turned into glass.

### **Full of Energy**

\$6-7

Amazon.com

[http://www.amazon.com/Full-Energy-Science-Sally-Hewitt/dp/0516263919/ref=sr\\_1\\_1?s=books&ie](http://www.amazon.com/Full-Energy-Science-Sally-Hewitt/dp/0516263919/ref=sr_1_1?s=books&ie)  
ISBN: 0516263919

By Sally Hewitt, Helaine Cohen (Editor). Focus on energy having multiple forms and can be changed.

### **Fun With Mixing and Chemistry**

\$2-3

Amazon.com

[http://www.amazon.com/Fun-Mixing-Chemistry-Heidi-Gold-Dworkin/dp/0071348255/ref=sr\\_1\\_1?s=](http://www.amazon.com/Fun-Mixing-Chemistry-Heidi-Gold-Dworkin/dp/0071348255/ref=sr_1_1?s=)  
ISBN: 0071348255

By Heidi Gold-Dworkin, Donna L. Goodman. This text introduces the world of science and helps children to develop specific scientific skills like how to think, observe, classify, hypothesize, and solve problems through science activities. It explores mixing with chemistry, using simple language and presents safe and easy experiments

## **Gorky Rises**

Amazon.com

[http://www.amazon.com/Gorky-Rises-William-Steig/dp/0374427844/ref=sr\\_1\\_1?s=books&ie=UTF8](http://www.amazon.com/Gorky-Rises-William-Steig/dp/0374427844/ref=sr_1_1?s=books&ie=UTF8)  
ISBN: 0374427844

by William Steig. Grades: 2-5. When Gorky's parents leave the house, he sets up a laboratory at the kitchen sink and mixes up a liquid mixture with a few secret ingredients, drops of his mother's perfume, and his father's cognac! The liquid proves to have magical properties that allow him to fly over the world. Although the format is a picture book, the content makes it usable for older students. Nice connection to the attributes and properties of liquids, with a fantasy twist.

\$8-9

Alameda County  
Public Libraries: JPB  
STEIG. Berkeley  
Public Libraries: P  
Steig, W.

## **Looking at Glass Through the Ages**

Amazon.com

[http://www.amazon.com/Looking-at-Glass-Through-Ages/dp/0618507507/ref=sr\\_1\\_4?s=books&ie=UTF8](http://www.amazon.com/Looking-at-Glass-Through-Ages/dp/0618507507/ref=sr_1_4?s=books&ie=UTF8)  
ISBN-10: 0618507507 ISBN-13: 978-0618507504

(Hardcover) - by Bruce Koscielniak - book on the history of glassmaking. Starting with faience, developed in Egypt around 2500 B.C., the author's precisely worded, carefully detailed text and watercolor artwork explain the steps for producing various types of glass and glassware. Coverage is chronological from the origins of glassblowing in Syria in 30 B.C. to production of Roman luxury glass, magnifying lenses, engraved Venetian glass, stained-glass windows, glass mirrors, lead crystal, crown glass, plate glass, molded glass, glass-tube neon lighting, and optical fiber. Much information is compacted into the smoothly written narrative. Captioned illustrations are well matched with the text and extend the information value of the book. The map on the endpapers identifies regions of early glass production.

\$6-7

Berkeley Public  
Library

## **My Life With the Wave**

Amazon.com

[http://www.amazon.com/My-Life-Wave-Catherine-Cowan/dp/0060562005/ref=sr\\_1\\_1?s=books&ie=UTF8](http://www.amazon.com/My-Life-Wave-Catherine-Cowan/dp/0060562005/ref=sr_1_1?s=books&ie=UTF8)  
ISBN: 0060562005

By Cowan, Catherine. A boy befriends a wave and brings it back home where they romp together until the onset of winter storms turns it bleak and angry. The wave is returned to the sea in "frozen form" and the boy dreams of a new predicament. The acrylic and oil illustrations complement the story. Fiction, picture book, read-aloud.

\$7-8

## **Mystery Day**

Amazon.com

<http://www.amazon.com>

ASIN: 0316987697

Out of print. Can buy used on Amazon.com. by Harriet Ziefert; illustrated by Richard Brown. Grades: 1-4. Mystery Day is a school day full of surprises for Mr. Rose's students. They have to guess the identity of five mystery powders. The students test their guesses with simple experiments as they look at the powders, touch them, taste them, and mix them with various liquids to see what happens. Once they are correctly guessed, several powders are mixed together and the investigation process starts all over again.

\$10-15

## **Night of the Twisters**

Amazon.com

<http://www.amazon.com>

ISBN: 0064401766

by Ivy Ruckman, In 1980, a series of devastating tornados stormed through portions of Nebraska. This is the story of a fictional character, Dan Hatch, and his friend who survive the tornados and the aftermath of the storms. This engaging story is a good choice for reluctant readers and for literature circles.

\$6-7

<b>Renewable Energy Energist</b>	\$0-1
National Energy Foundation	
<i>http://www.nef1.org/</i>	
#45RENEW	
This 8-page 11" x 17" two-color newspaper-format publication provides excellent background information on what renewable energy is, including: geothermal energy; OTEC, tidal and ocean waves; biofuels, refuse and wood; wind; hydropower; passive and active solar energy; photovoltaics; and power towers. Each energist has interesting scientific data, student learning activities, and games. Grades K-12.	
<b>Science Arts: Discovering Science through Art Experiences</b>	
\$10-15	
Amazon.com	
<i>http://www.amazon.com/Science-Arts-Discovering-Experiences-Learning/dp/0935607048/ref=sr_1</i>	
ISBN 0935607048	
by Mary Ann f. Kohl and Jean Potter - Each page of this exploration of science through art features a recipe-style science activity, complete with simple instructions and illustrations, that teaches young readers a scientific concept. All ages	
<b>Science Projects in Renewable Energy</b>	
\$10-15	
National Energy Foundation	
<i>http://www.nef1.org/</i>	
#30ASES	
Projects range from simple to complex. Experimental projects use inexpensive materials and simple-to-build models that focus on demonstrating the scientific method and teach renewable energy concepts. Students will learn about solar, wind, biofuels, hydrogen, energy efficiency and the world around them. A reference list is included. 144 pp.	
<b>Sing A Song of Science</b>	
\$15-20	
Amazon.com	
<i>http://www.amazon.com/Sing-Song-Science-Kathleen-Carroll/dp/156976090X/ref=sr_1_2?s=book</i>	
ISBN: 156976090X	
by Kathleen Carroll. Sing A Song Of Science presents sixteen topics showcased in songs, raps, stories, and visualizations in the format of a 64-page activity manual and a 35-minute audiotape designed for use with elementary school grades K-6. Important subjects as matter and energy, weather, how the human body works, the story of George Washington Carver, tropical rain forests, etc. are presented with an easy-to-read overviews and combines an innovative approach with traditional methods of teaching to reinforce fundamental science facts. Each topic includes two sets of activities enabling students to construct their own understanding with hands-on kinesthetic discover activities. The students further expand their learning with activities to reinforce the vocabulary and concepts learned in the songs.	
<b>Solar Power (Energy for Today)</b>	
\$9-10	
Amazon.com	
<i>http://www.amazon.com/Solar-Power-Energy-Today-Benduhn/dp/083689362X/ref=sr_1_1?s=book</i>	
ISBN-10: 083689362X	

By Tea Benduhn

Packaged in a small, square format, this title presents a surprising amount of information about solar power in brief sentences that are calibrated to newly confident readers' abilities. The short chapters start with essential definitions of terms such as solar system before moving into topics such as renewable energy and greenhouse gases. The selection of well-chosen color photos, which are crisply reproduced on each page, is particularly strong in final chapters about solar technology, and the close-up images of a solar-powered car and tent will attract young browsers. Readers will likely need help with advanced concepts, for example, global warming, which is illustrated with a helpful diagram, but the language is direct, clear, and enlightening. A short glossary, resource list, and index close this strong title in the Energy for Today series. This will partner well with Helen Orme's Energy for the Future, also reviewed in this issue, in elementary units on the environment. Grades 2-4

### **Solids, Liquids and Gases (Starting With Science)**

\$8-9

Amazon.com

[http://www.amazon.com/Solids-Liquids-Gases-Starting-Science/dp/1550744011/ref=sr\\_1\\_1?ie=UTF8](http://www.amazon.com/Solids-Liquids-Gases-Starting-Science/dp/1550744011/ref=sr_1_1?ie=UTF8)

ISBN 1550744011

Solids, Liquids and Gases has 13 experiments carefully chosen by the Ontario Science Centre. With minimal supervision, children can explore the three states of matter, what makes each state unique and how matter changes from a solid to a liquid to a gas through evaporation, condensation, melting and freezing. Filled with bright photographs, the Starting with Science series provides valuable lessons about basic science for five to eight year olds.

### **Sunflower/Girasol: Multicultural Bilingual Story**

\$6-7

Intercultural Center for Research in Education

<http://www.incre.org>

Teacher Guide sold separately. The Sunflower/Girasol story books are based on the multicultural children characters featured in the science inquiry curriculum and promote the integration of the development of literacy skills with science, art, drama, social studies and music. Each story is narrated by a character from a different Latin American country. As they read, students learn about the culture of the country, and engage in a variety of activities that promote reading comprehension, writing skills, and discussion of ethical and emotional issues of importance to children. Each book comes with a Teacher's Guide that suggests a variety of interdisciplinary learning activities. The books are written at a 2nd and 3rd grade reading level and are available in Spanish and English. Each book is a story all its own. The content is linked to one of the characters in the Sunflower/Girasol Science units.

### **Sunshine Makes the Season**

\$6-7

Amazon.com

<http://www.amazon.com/Sunshine-Seasons-reillustrated-Lets-Read---Find-Out/dp/0060592052/ref>

ISBN: 0064450198

By F. Branley, G. Maestro (Illustrator). The completely rewritten text is better organized with less repetition. It includes less descriptive information about the four seasons and places more emphasis on the causes of seasonal changes. A simply stated and carefully illustrated experiment using an orange, a pencil and a flashlight to help children actually see the differences on earth caused by the tilt of the earth as it rotates on its axis and revolves around the sun is particularly useful.

### **The Dead Sea: The Saltiest Sea**

\$15-20

Amazon.com

[http://www.amazon.com/Dead-Sea-Saltiest-Record-Breakers/dp/0823956377/ref=sr\\_1\\_1?s=books](http://www.amazon.com/Dead-Sea-Saltiest-Record-Breakers/dp/0823956377/ref=sr_1_1?s=books)

ISBN: 0823956377

by Aileen Weintraub. Discusses the Dead Sea, describing the features that make it unique as well as the scrolls that were discovered in nearby caves.

## **The Magic School Bus at the Waterworks**

\$4-5

Amazon.com

<http://www.amazon.com>

ISBN: 0590403605

by Joanna Cole; illustrated by Bruce Degen. Grades: K-6. Ms. Frizzle, the "strangest teacher in school," takes her class on a field trip to the waterworks. First, they journey to the clouds where the class rains, each kid inside his own raindrop. Then they end up experiencing the water purification system from the inside, traveling through the mixing basin, settling basin, filter, and through the pipes to emerge from a faucet. Evaporation, the water cycle, and filtration are just a few of the concepts explored.

Berkeley Public  
Libraries: 628 C675m.  
Alameda County  
Public Libraries:  
J628.16 COLE.

## **The Magic School Bus Gets Baked in a Cake: A Book About Kitchen Chemistry**

\$3-4

Amazon.com

[http://www.amazon.com/Magic-School-Gets-Baked-Cake/dp/0590222953/ref=sr\\_1\\_1?s=books&ie](http://www.amazon.com/Magic-School-Gets-Baked-Cake/dp/0590222953/ref=sr_1_1?s=books&ie)

ISBN: 978-0590222952

When the class tries to bake a cake for Ms. Frizzle's birthday, they wind up inside it and have some delicious fun learning all about mixtures and reactions that occur when ingredients are combined.

## **The Magic School Bus in the Arctic**

\$3-4

Amazon.com

<http://www.amazon.com>

ISBN: 0590187244

by Joanna Cole. A book about heat. There's nothing Arnold loves more than a steaming mug of hot cocoa - unless of course it's become cold cocoa. "Where did the hot go?" moans Arnold. Ms. Frizzle knows a way to find out. It's time for another ride on the Magic School Bus. Come along with Ms. Frizzle and the gang to the Arctic Circle as they learn it's not just about getting warm, but finding a way to keep the heat you have.

Alameda County  
Public Libraries: J536  
SCHOLASTIC'S.  
Spanish version at  
Dublin Branch: Sp  
J536 SCHREIBER.

## **The River that Gave Gifts: An Afro-American Story**

\$4-5

Amazon.com

[http://www.amazon.com/River-Gifts-Fifth-World-Tales/dp/0892390271/ref=sr\\_1\\_1?s=books&ie=U](http://www.amazon.com/River-Gifts-Fifth-World-Tales/dp/0892390271/ref=sr_1_1?s=books&ie=U)

ISBN 0892390271

by Margo Humphrey. Four Children in an African village make gifts for wise old Neema while she still has partial vision. Yanava, who is not good at making things, does not know what to give and seeks inspiration from the river. As she washes her hands in the river, rays of light fly off her fingers, changing into colors and forming a rainbow. After all the other gifts are presented, she rubs her hands in the jar of river water she has brought and thus gives a rainbow of light and the gift of sight to Neema. In addition to the themes of respect for elders and the validity of different kinds of achievement, the river is portrayed as a primeval source of power. A suggested reading for the GEMS River Cutters unit.

Alameda Co. Library  
Call # J Fiction  
HUMPHREY Berkeley  
Public Library Call #  
Fiction Humphrey, J  
Oakland Public  
Library Call # 813  
Humphrey

## **The Science Book of Light**

\$8-9

Amazon.com

[http://www.amazon.com/Science-Book-Light-Harcourt-Brace/dp/0152005773/ref=sr\\_1\\_1?s=books](http://www.amazon.com/Science-Book-Light-Harcourt-Brace/dp/0152005773/ref=sr_1_1?s=books)

ISBN: 0152005773

By Neil Ardley. Fun-packed science projects and experiments introduce readers to basic science principles. Full-color photographs and easy-to-follow text guide children through creative experiments using common materials, while practical examples relate each experiment to the world around us. Can be purchased used by Amazon Marketplace for \$1.28.

## The Sun

\$6-7

Amazon.com

[http://www.amazon.com/Sun-Paulette-Bourgeois/dp/0613164334/ref=sr\\_1\\_1?s=books&ie=UTF8&ISBN:1550743309](http://www.amazon.com/Sun-Paulette-Bourgeois/dp/0613164334/ref=sr_1_1?s=books&ie=UTF8&ISBN:1550743309)

By C. Pratt-Nicolson, P. Bourgeois. B. Slavin (Illustrator). Simon continues his series begun with *Earth and The Moon* (both *Four Winds*, 1984) and including *Jupiter and Saturn* (both *Morrow*, 1985) with the same format and level of success in this pair on the stars and the sun. The brief text and dazzling illustrations serve as a sort of picture glossary introducing the terminology of stellar objects. *Stars* presents constellations; the distance to, size, and temperature of the stars; the nuclear power source of stellar energy; binary systems, clusters, galaxies, and quasars; the possibility of other solar systems; and stellar evolution, novae, black holes, neutron stars, and pulsars.

## Titanic : a nonfiction companion to Tonight on the Titanic

FREE

Alameda County Public Libraries

Can borrow from the Fremont library:  
J910.91634  
OSBORNE.

<http://alam1.aclibrary.org/search~S30?/aosborne%2C+will/aosborne+will/1%2C2%2C14%2CB/fraISBN:0375813578>

by Will Osborne and Mary Pope Osborne. Explores the history of the steamship *Titanic*, from Thomas Andrews' plans for "the safest ship on the ocean" to the lingering questions concerning its disastrous maiden voyage in 1912. 144 pages

## Two Bad Ants

\$10-15

Amazon.com

Berkeley Public Libraries: P Van Allsburg, C. Alameda County Public Libraries: J Fiction VAN.

[http://www.amazon.com/Two-Bad-Ants-Chris-Allsburg/dp/0395486688/ref=sr\\_1\\_1?s=books&ie=UTF8&ISBN:0395486688](http://www.amazon.com/Two-Bad-Ants-Chris-Allsburg/dp/0395486688/ref=sr_1_1?s=books&ie=UTF8&ISBN:0395486688)

by Chris Van Allsburg. Grades preschool-4. This beautifully illustrated abook about two ants in search of sugar provides opportunities to further discuss a liquid as something that flows, and to see that some substances, such as sugar, which also flow or pour, are in fact made up of tiny crystal solids. In this brief tale of the adventures of two runaway ants, Van Allsburg once again gives children a visual puzzle to solve in this case identifying common household appliances from an ant's point of view. When a troop of ants are sent to retrieve sugar crystals from a kitchen, two ants stay behind to feast and go to sleep in the sugar bowl. When morning comes they are successively stirred into a cup of coffee, almost swallowed, toasted with an english muffin, whirled through a garbage disposal, and stunned senseless in an electrical outlet. While some children will enjoy identifying the highly magnified objects, others will wonder how the ants have managed to survive any one of these disasters. The truants return home in one piece, and the last few lines supply a pallid and oddly moralistic conclusion to the story.

## Very Last First Time

\$10-15

Amazon.com

AC Libraries: JPB ANDREWS. Berkeley Public Library: P Andrews, J.

[http://www.amazon.com/Very-Last-First-Time-Andrews/dp/0021794960/ref=sr\\_1\\_1?s=books&ie=UTF8&ISBN:088899043X](http://www.amazon.com/Very-Last-First-Time-Andrews/dp/0021794960/ref=sr_1_1?s=books&ie=UTF8&ISBN:088899043X)

by Jan Andrews; illustrated by Ian Wallace. Grades: 2-4. This entrancing book tells the story of the Inuit girl Eva who walks for the first time in a sea-floor cavern under the frozen ocean ice. When the tide is out she and her mother come to gather mussels and Eva goes below the ice. When she stumbles, her candle goes out and the tide starts to come in, roaring louder, while the ice shrieks and creaks. Terrified at first, Eva recovers, and eventually finds her way to the surface and her waiting mother and the moonlight. Although the book does not scientifically explain the freezing of the top of the sea or the action of the tides, you and your class may want to discuss these questions: Why does only the top part of the water freeze? "Why does the ice stay intact even when the water underneath it goes out with the tide?" The images of Eva on the sea floor beneath the ice are unique and fascinating

## **You Are Stardust**

\$10-15

Owlkids Books

<http://www.owlkidsbooks.com/YouAreStardust.aspx>

Website has an app for ipad and lesson plans. You Are Stardust begins by introducing the idea that every tiny atom in our bodies came from a star that exploded long before we were born. From its opening pages, the book suggests that we are intimately connected to the natural world; it compares the way we learn to speak to the way baby birds learn to sing, and the growth of human bodies to the growth of forests. Award-winning author Elin Kelsey — along with a number of concerned parents and educators around the world — believes children are losing touch with nature.

## **Computer Software**

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### **Sidewalk Science: Wheels**

\$35-40

Tom Snyder Productions

<http://www.tomsnyder.com>

Wheels: Explorations in Physical Science features six neighborhood kids -- Ben, Kevin, Kate, Lee, Nora, and Susan -- and their pets. The action in Wheels centers around an upcoming parade, for which Ben and Lee, especially, have big plans. Ben is a mechanical wizard -- the inventor of the Thinkamajig who's also into computers and music. In the video stories, Ben subtly draws his fellow "sidewalk scientists" into following his parade plan. The final entries not only reflect each person's interests -- they're

## **Kits & Modules**

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### **Alternative Energy and Environmental Science Power House Green Essentialia**

\$70-80

Amazon.com

<http://www.amazon.com/Thames-Kosmos-Alternative-Environmental-Essentials/dp/B001R4RAKG>

Power House: Green Essentials Edition. To live sustainably, we must use Earth's resources at a rate at which they can be replenished, and thus provide for future generations to live as we have. In this kit, you can learn about alternative energy and sustainable living by conducting experiments and building energy-related models. Thirty of the best experiments and the ten most important building projects from the original Power House kit are presented in their Green Essentials Edition. The ten building projects include: the power house itself, a greenhouse, a solar cell array, a passive solar collector, a solar oven, an air conditioner, a refrigerator, a hydrometer, a lemon battery, and a wind power generator. Experiment with the heating, cooling, and insulation of the house and greenhouse. Test passive solar collection methods with a solar collector. Assemble a solar power array to explore active solar power with photovoltaic's. Build a model refrigerator and air conditioner to learn about heat transfer. Experiment with a lemon battery to learn about power storage. Set up a wind turbine to generate electricity from the wind. As you perform the experiments, you will read the diary entries of a group of young explorers who are learning to live a sustainable existence on an island. To survive, they must implement real-world versions of the projects you are doing in the kit.

### **Fruit Clock**

\$10-15

American Science & Surplus

<http://www.sciplus.com/>  
91735

Resist the urge to just plug the electrodes into a nectarine and tell people what a sweet little clock you have. Read the few enclosed pages of background material and the explanation of the electrochemical reaction in an organic battery, and stagger your fans with your brilliance. Schylling's Fruit-Powered Clock kit also includes a 2-1/4" x 1-1/4" LCD clock/calendar, leads, a jumper wire, a stand, and complete instructions. You supply the fresh fruit. (It also works with a potato. Ain't science wonderful?)

### **Physics Solar Workshop Discovery Kit**

\$60-70

Acorn Naturalists

<http://www.acornnaturalists.com/store/PHYSICS-SOLAR-WORKSHOP-DISCOVERY-KIT-P4864C-KIT-14719>

The energy we use originates as energy from the Sun. This kit explores the topic of solar energy, focusing on energy capture using photovoltaic cells. By building 12 models and conducting 30 experiments, students will learn how solar cells transform light into electrical energy, and how motors and mechanical devices optimize the work done by this energy. Build different vehicles and machines to demonstrate how gears can convert and transform power for different needs. Includes 320 parts and a 64-page manual. Engaging, hands-on learning for students ages 8 and up. #KIT-14719.

### **Power House Kit, Sustainable Living for the 21st Century**

\$90-100

Acorn Naturalists

<http://www.acornnaturalists.com/store/POWER-HOUSE-KIT-Sustainable-Living-for-the-21st-Century-KIT-20259>

POWER HOUSE KIT, Sustainable Living for the 21st Century. Power House provides a fascinating introduction to regenerative energy sources and teaches basic physical science concepts and principles. The kit focuses on heat and light energy from the Sun, energy from the wind, as well as electrochemical and green plant energy. Build a model house complete with solar panels, windmill, greenhouse, and desalination system. You can also build and operate an electric train, windmill, solar cooker, solar hot water tank, hygrometer, electric motor, power hoist, sail car, and more! Learn how plants convert sunlight into energy and how the process of evaporation provides cooling. Includes materials for 20 projects plus a 96-page instructional manual with diagrams and suggestions for additional projects. Ages 12 and up.

### **Radiometer**

\$10-15

Carolina Biological

<http://www.carolina.com>  
747130

Demonstration radiometer spins up to 2,900 rpm from heat of the sun or a lightbulb.

### **Solar Car Kit**

\$45-50

Delta Education

<http://www.delta-education.com/>  
WW-110-1638

Rear wheel drive solar car includes one 0.5-1200 mAh solar panel, solar motor, steerable front axle with three gear ratios and complete assembly instructions. 10"x4" assembled.

### **Solar Energy Beads pk/1000**

\$25-30

Carolina Biological

<http://www.carolina.com>  
956209

Not all light is made up of the same energy. Using Solar Energy Beads, students can uncover an invisible form of light energy called ultraviolet (UV) light. The beads change color in direct sunlight (which contains UV light) and then change back to white when removed from sunlight. The pack of 1,000 beads is perfect for classroom or school projects.

## **Solar Energy Demonstration Kit**

\$10-15

Carolina Biological

<http://www.carolina.com>

747026

Harness the power of the sun! A powerful solar cell and motor convert solar energy into electrical energy, then into mechanical energy. Place the solar cell in direct sunlight and immediately the motor spindle turns. Attach the propeller to create a solar fan; use the colorful disc to make a fun visual effect.

The sensitive solar cell lets students study the variables that affect power output, such as light intensity, light angle, and cell surface area.

Includes a propeller, reflective disc, spiral disc, and 24-page booklet of information and activities.

## **Super Sunprint Kit**

\$15-20

Acorn Naturalists

<http://www.acornnaturalists.com/store/SUPER-SUNPRINT-KIT-P882C0.aspx>

KIT-9439

Utilizes sun-sensitive paper that after exposure develops in tap water. Natural objects such as ferns, feathers, flowers or leaves are placed under a transparent cover (provided) and exposed to the sun for from 1-5 minutes. Each kit contains fifteen 7-3/4" x 11-3/4" sheets of Sunprint paper and one clear acrylic sheet (same size).

## Posters/Pictures/Slides

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### **Electromagnetic Spectrom poster**

FREE

Wright Center for Science Education, Dept. W, Rm. 267 C

[http://www.tufts.edu/as/wright\\_center/](http://www.tufts.edu/as/wright_center/)

Visible light is only one kind of electromagnetic radiation--the kind to which human eyes are sensitive. There is also invisible radiation, to which our eyes are completely insensitive. This poster sketches the entire range of electromagnetic radiation. The whole spectrum includes: radio radiation, including radar, microwaves, and the familiar AM, FM, and TV communications bands; infrared radiation, which we sense as heat; visible light, displaying its familiar color band--red, orange, yellow, green, blue, violet--within a narrow domain near the center of the electromagnetic spectrum; ultraviolet radiation, lying just short of visible light, and largely responsible for suntans and sunburns; x-ray radiation, perhaps best known for its ability to penetrate human tissue and reveal the state of our bones; gamma rays, often associated with radioactivity and invariably damaging to living cells.

## Stickers/Games

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### **Energy Ball**

\$3-4

Arbor Scientific

[www.arborsci.com](http://www.arborsci.com)

Demonstrate a closed circuit with this cool 1.5 inch ball with two small metal electrodes that, when touched simultaneously, make the ball flash and emit a strange tone.

## Teacher Guide/Reference/Curriculum

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## **Catch the Wind, Harness the Sun**

\$15-20

Acorn Naturalists

<http://www.acornnaturalists.com/store/CATCH-THE-WIND-HARNESS-THE-SUN-22-Super-Charged-EE-19204>

CATCH THE WIND, HARNESS THE SUN, 22 Super-Charged Science Projects for Kids. Caduto. What is particularly inspiring about the activities in this book is their connection to personal steps children can take today to curb their carbon appetite. Showcasing case studies of young "Green Giants" who have done exactly that, Catch the Wind challenges the reader to experiment with electricity, wind energy, solar energy, and global warming through unique activities, thought-provoking readings, and challenges (such as not using electricity for a day). An informative video featuring projects in Catch the Wind can be viewed here.

## **Construct-a-Greenhouse**

\$15-20

National Science Teachers Association

[http://www.nsta.org/store/product\\_detail.aspx?id=10.2505/9780873551793](http://www.nsta.org/store/product_detail.aspx?id=10.2505/9780873551793)

Shed some light on the physics supporting plant growth in a controlled environment. Greenhouses provide the differential energy needs of plants during their growth cycle. Students design structures that convert light to heat during germination and reconfigure those structures to promote photosynthesis. By comparing the effects of design characteristics on plant growth, students observe the connections between plant biology and thermodynamics and energy transfer.

## **Exploring Matter with Toys**

\$20-25

Amazon.com

[http://www.amazon.com/Exploring-Matter-TOYS-Understanding-Senses/dp/1883822327/ref=sr\\_1\\_1](http://www.amazon.com/Exploring-Matter-TOYS-Understanding-Senses/dp/1883822327/ref=sr_1_1)  
ISBN: 978-1883822323

Good for learning that solids, liquids and gases have different properties. This teacher resource for primary grades teaches students how to use their five senses to explore the particle nature of matter through recording, classifying, presenting and explaining, their observations. Tested in hundreds of classrooms through the National Science Foundation--funded Teaching with TOYS program--and meeting the requirements of the new national science education standards--this innovative resource includes over 20 activities, such as Feely Balloons for the sense of touch; M&M Classification for sight; Big Ben for hearing; Scratch-and-Sniff Challenge for smell; Jumbled-up Jell-O for taste, and I Can "Sense" You Like Popcorn for combining the senses. Three sections covering pedagogy, content, and activities feature dozens of reproducible work sheets, handouts, and suggestions for incorporating toy-based activities into lessons. Each activity includes grade level, key science topics, and science process skills, a materials list, and more.

## **GEMS Involving Dissolving**

\$10-15

Lawrence Hall of Science

[lawrencehallofscience.org](http://lawrencehallofscience.org)  
0-912511-50-8

By Leigh Agler. Young children have their own ideas about the "disappearance" of solid into liquid (say, sugar into tea) that's just magic, right? Make it reappear, and that's BIG magic. But dissolving isn't really disappearing--and that may be the best magic of all. Young students learn to look beyond the obvious in this series of highly involving activities on dissolving, evaporation, and crystallization. Using familiar substances, students create homemade "Gel-o," colorful disks, and crystals that emerge

<b>GEMS Liquid Explorations</b>	\$10-15
Lawrence Hall of Science	
<i>lawrencehallofscience.org</i>	
0-912511-51-6	
By Leigh Agler. This unit introduces younger students to the properties of matter. Young students explore the ubiquity and properties of liquids using introductory language and simple concepts. They play a classification game, observe how food coloring moves through different liquids, and create secret salad-dressing recipes and an "Ocean in a Bottle." The Raindrops and Oil Drops activity can prompt discussion of environmental issues such as oil slicks, and was used in many Alaska schools to educate student	
<b>Inside-Out: Environmental Science in the Classroom and the Field</b>	\$15-20
National Science Teachers Association	
<i>http://www.nsta.org/store/product_detail.aspx?id=10.2505/9780873551793</i>	
Teachers seeking new ways to integrate Earth science, chemistry, physical geography, and life science into a study of the environment should just step outside! So say the authors of Inside-Out: Environmental Science in the Classroom and the Field, Grades 3–8, who provide thought-provoking, interesting activities to help teachers and students leave the classroom and learn outside. Inside-Out covers topics such as using topographic maps to better understand landforms, exploring the physical landscape of a local area, how water sustains biological organisms, and the relationship between soil conditions and local flora—using both field- and classroom-based lessons to convey important environmental science concepts. Each chapter includes an introduction to the material covered, followed by activities that allow students to use direct observation and inquiry to learn various concepts in environmental science. The authors also provide many web resources that will point teachers in the right direction for gaining even more information about these subjects.	
<b>Integrating Mathematics, Science, and Language (Paso Partners): B</b>	\$25-30
SEDL	
<i>http://www.sedl.org</i>	
TRNG-11	
Authors: B. J. Mace Matluck, Norma G. Hernandez. Paso Partners applies the best emerging strategies and materials for teaching and integrating mathematics, science and language development. Volume 2 Topics: Oceans, Weather, Sun and Stars, Matter, Sound, Simple Machines. Lessons in English and Spanish available to download online at <a href="http://www.sedl.org/scimath/pasopartners">http://www.sedl.org/scimath/pasopartners</a>	
<b>Primarily Physics</b>	\$20-25
AIMS Education Foundation	
<i>http://www.aimsedu.org/item/p-1104/primarily-physics-k-2/1.html</i>	
1104	
30 activities—180 pages	
Learning about sound, light, and heat energy was never so interesting! Students make musical instruments, explore how sound travels through different mediums, and use prisms and mirrors to learn about light. They will explore how heat is related to friction and color, and how heat moves.	
<b>Sing the Science Standards Songbook</b>	\$25-30
Science Explosion, Inc.	
<i>http://www.scienceexplosion.com</i>	
Join the "Science Explosion" as they sing over 50 songs written to the Science Standards. This is a great way for students in elementary and middle school to review the most important ideas in science. Songbook includes lyrics for the over 50 songs on the double-CD. Bring the Science Standards to life with "Sing the Science Standards with the Science Explosion."	

<b>Sunflower/Girasol Bilingual Science Discovery Kits</b>	\$70-80
Intercultural Center for Research in Education	
<i>http://www.incre.org</i>	
Classroom set of 30 + Teacher Guide. Student Activity Books and Bilingual Memory Game sold separately. Sunflower/Girasol is a fully bilingual Spanish/English curriculum designed to encourage students to develop language skills and at the same time to turn their interest to the world of scientific discovery. The full-color format of Sunflower/Girasol invites children in grades 2-6 to engage in science and environmental education activities and to carry out investigations in their schools, homes and communities. Each thematic unit of Sunflower/Girasol is presented in a full-color magazine format activity book in either Spanish or English, with an accompanying teacher's guide. The first six units of Sunflower/Girasol are Plants, Water, Human Body, Air, Trash and Sound.	
<b>Teaching Physical Science Through Children's Lit.</b>	\$15-20
Amazon.com	
<i>http://www.amazon.com/Teaching-Physical-Science-Childrens-Literature/dp/1883822343/ref=sr_1</i>	
ISBN: 978-1883822347	
Teaching Physical Science Through Children's Literature: 20 Complete Lessons for Elementary Grades. Activities like "Glitter Fish," etc.	
<b>The Science Explorer</b>	\$10-15
Exploratorium	
<i>http://www.exploratorium.edu</i>	
Item #: 11761	
By Pat Murphy, Ellen Klages, Linda Shore, and the Exploratorium. The Exploratorium's first collection of family-oriented experiments, this book delivers fun activities that kids and grown-ups can enjoy together using stuff that's easily found at a grocery store. Background sections that help adults explain underlying scientific concepts accompany each activity. Chapters focus on bubbles, colors, light, static, sounds, and mixtures. For ages 6-9. Sample activities from this book are available online at <a href="http://www.exploratorium.edu/science_explorer/">http://www.exploratorium.edu/science_explorer/</a>	
<b>The Science Explorer Out and About</b>	\$10-15
Amazon.com	
<i>http://www.amazon.com/Science-Explorer-Out-about-Experiments/dp/0805045376/ref=sr_1_1?s=</i>	
ISBN: 978-0805045376	
By Pat Murphy, Ellen Klages, Linda Shore, and the Exploratorium. You'll find more science fun and exploration for families in this second science-at-home book, but this time each chapter includes ideas for family field trips so you can see science outside. Entertaining activities that use simple ingredients are accompanied by helpful information for explaining underlying scientific concepts. Great for scout troops and other informal learning environments.	
<b>Using Energy</b>	\$8-9
Acorn Naturalists	
<i>http://www.acornnaturalists.com/store/USING-ENERGY-Green-Team-Series-P6465C0.aspx</i>	
B-18167	
USING ENERGY (Green Team Series). Encourages children in grades 3-4 to take basic steps to protect their environment and work toward a sustainable future. Teaches students the basics of energy generation and conservation, including all of the latest emerging green technologies.	

**Woods, Stones, and other Solids** \$15-20  
Amazon.com  
[http://www.amazon.com/DISCOVERY-SCIENCE-STONES-OTHER-SOLIDS/dp/0201496682/ref=sr\\_1\\_1?ie=UTF8&qid=1442111111&sr=8-1](http://www.amazon.com/DISCOVERY-SCIENCE-STONES-OTHER-SOLIDS/dp/0201496682/ref=sr_1_1?ie=UTF8&qid=1442111111&sr=8-1)  
ISBN: 978-0201496680  
by Robert A. Williams (Editor), David A. Winnett. Engage students in classification and experimentation activities, which include making solids and finding density. This guide was made for Grade 2 but is appropriate for grades pre-K to grade 2.

## Tools/Equipment

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**Equal Arm Balance** \$8-9  
Delta Education  
<http://www.delta-education.com/>  
WW-020-0529  
Affordably priced for your budget, the rugged plastic , parts of this colorful balance stand-up well over time. Can be used to learn the characteristics and properties of matter.

**Safety Goggles Rainbow Pack - Set of 6** \$15-20  
Lakeshore Learning Store  
<http://www.lakeshorelearning.com>  
FS383  
These flexible plastic goggles are perfect for kids with ventilation holes on top and bottom, plus a stretchy strap in back that adjusts for a perfect fit. You get 6 pairs in 3 colors; each is 6".  
FS383

**Student Safety Goggles - set of 12** \$25-30  
Lakeshore Learning Store  
<http://www.lakeshorelearning.com>  
LA216  
Our flexible plastic goggles adjust to give students a perfect fit.

## Video

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**Backyard Safari: Water** \$35-40  
GPN Educational Media  
<http://shopgpn.com/>  
686.012  
30 min. Why is water so important to life? After this video your students will understand: How animals and plants obtain and use water. How water is made and the different forms of water. What types of animals live in water. Backyard Safari is an engaging series of 13 half-hour programs that introduce four-to seven-year olds to topics in science and natural history. The primary goal of the series is to excite children, particularly those in under-served audiences, such as girls and children of color, to investigate the natural world and develop positive connections with scientific practice. A complementary goal is to help empower all children to see themselves as "scientists" who can turn off the television, step outside, and learn directly from the world around them.

**Bill Nte: Fluids**

\$35-40

Disney Education Products

<http://www.edustation.disney.com>

68E38VL00

What do syrup, milkshakes, and air all have in common? They're all fluids, or stuff that can bend, squish, flow, move, dodge, or mosey out of the way without breaking or separating.

Can borrow from the Alameda County Office of Education, some titles available at public libraries. Berkeley school teachers can borrow from the Central Media

**Bill Nye: Buoyancy DVD**

\$45-50

Disney Education Products

<http://www.edustation.disney.com>

77A06VL00

In "Buoyancy," Bill takes to the sky in a hot-air balloon, and goes scuba diving in the Seattle Aquarium to explain why things like boats, helium, and balloons are buoyant.

Some titles available at public libraries. Berkeley school teachers can borrow from the Central Media

In addition to the complete 26-minute episode of "Buoyancy," this disk is loaded with incredible DVD features like:

- \*Fully indexed "chapters" correlated to National Science Standards.
- \*Interactive glossaries and quizzes.
- \*Bonus footage of never-before-seen segments, interviews, and demos.
- \*Spanish translation and closed-captioning

**Bill Nye: Chemical Reactions**

\$35-40

Disney Education Products

<http://www.edustation.disney.com>

68A83VL00

26 minutes. Have a blast watching the explosive examples Bill Nye uses to explain that everything is made of chemicals. Guest star Candace Cameron ("Full House") shares the lab with Bill and shows that fire is actually a chemical reaction. Together, they extinguish a "tornado of fire."

Some titles available at public libraries. Berkeley school teachers can borrow from the Central Media

**Bill Nye: Chemical Reactions DVD**

\$45-50

Disney Education Products

<http://www.edustation.disney.com>

77A07VL00

You'll have a blast watching the explosive examples Bill Nye uses to explain that everything is made of chemicals. Guest star Candace Cameron shares the lab with Bill and shows that fire is actually a chemical reaction. In addition to the complete 26-minute episode of "Chemical Reactions," this disk is loaded with incredible DVD features like:

- \*Fully indexed "chapters" correlated to National Science Standards.
- \*Interactive glossaries and quizzes.
- \*Bonus footage of never-before-seen segments, interviews, a

Some titles available at public libraries. Berkeley school teachers can borrow from the Central Media

**Bill Nye: Digestion DVD**

\$45-50

Disney Education Products

<http://www.edustation.disney.com>

77A08VL00

Bill Nye explains how the body's digestive system is like a fine-tuned machine that turns food into energy. Bill demonstrates the process with a steam engine that runs on corn flakes. In addition to the complete 26-minute episode of "Digestion," this disk is loaded with incredible DVD features like:

- \*Fully indexed "chapters" correlated to National Science Standards.
- \*Interactive glossaries and quizzes.
- \*Bonus footage of never-before-seen segments, interviews, and demos.
- \*Spanish translation and closed-c

### **Bill Nye: Energy**

Disney Education Products

<http://www.edustation.disney.com>  
68A72VL00

This spirited episode is sure to rev things up when it covers water, muscles, heat, light, sound, and other types of energy that make things go, run, or happen.

\$35-40

Some titles available at public libraries. Berkeley school teachers can borrow from the Central Media Library at Berkeley High School.

### **Bill Nye: Friction**

Disney Education Products

<http://www.edustation.disney.com>  
68A81VL00

Illustrate how various types of transportation utilize friction: trains, and the "roll" of ball bearings in skateboards, to automobiles.

\$35-40

Some titles available at public libraries. Berkeley school teachers can borrow from the Central Media

### **Bill Nye: Light and Color**

Disney Education Products

<http://www.edustation.disney.com>  
68C01VL00

Go somewhere over the rainbow for an enlightening show and reflect upon light and color.

\$35-40

Some titles available at public libraries. Berkeley school teachers can borrow from the Central Media

### **Bill Nye: Light Optics**

Disney Education Products

<http://www.edustation.disney.com>  
68A86VL00

You won't believe your eyes when Bill Nye reflects, refracts, bends, bounces, absorbs, and pulls light waves to show how things can be seen in different ways.

\$35-40

Some titles available at public libraries. Berkeley school teachers can borrow from the Central Media

### **Bill Nye: Phases of Matter**

Disney Education Products

<http://www.edustation.disney.com>  
68A84VL00

Help demonstrate that matter exists in three phases -- solids, liquids, and gases.

\$35-40

Some titles available at public libraries. Berkeley school teachers can borrow from the Central Media