

Turtle Bay Curriculum Lending Library

GEMS Kit Name	Grade Level Range	# of Activities	Description
Animal Defenses	Preschool-1	2 Activities	Through the ages, animals have had to protect themselves from the hungry jaws of predators. In the struggle for survival, a fascinating assortment of defense mechanisms, both structural and behavioral, has developed. The activities begin with a look at the defenses of dinosaurs. Later, the focus moves to defensive behaviors, and examples are drawn from familiar animals to today.
Ant Homes Under the Ground (4 Kits)	Preschool-1	5 activities	These delightful science- and math-integrated activities introduce young children to ant behavior using role-play, cooperative exercises, and close observation of live ants. A large poster is assembled in stages to highlight ant tunnels, food, social structure, and life cycle.
Eggs, Eggs Everywhere (4 Kits)	Preschool-1	4 activities	This unit introduces young children to the wonders of eggs of all kinds, developing age-appropriate concepts in biology and life science. Activities combine literature, math, role-playing, drama, and art, and introduce sorting, classifying, and graphing.
Elephants and Their Young (3 Kits)	Preschool-1	4 activities	With art, drama, and role-play, young children learn all about the African elephant's unique body structure and fascinating social behaviors. Math and science concepts include measurement, weight, volume, and comparisons of many kinds.
Hide a Butterfly (2 Kits)	Preschool-1	3 Activities	Hide a Butterfly presents the ideas of color flashing and concealment in a dramatic way. These concepts are reinforced when the children use the animals they've made to enact "The Butterfly Play," as birds try to find hidden butterflies in a meadow of paper flowers.
Ladybugs (2 Kits)	Preschool-1	5 activities	This popular unit uses the charm of ladybugs to present key science and math concepts relating to animal adaptation, ecology, and interdependence. Children learn about ladybug body structure, symmetry, life cycle, defensive behavior, and foods. Use of live ladybugs is optional. Great with Buzzing a Hive and Hide a Butterfly.



Mother Opossum and Her Babies (3 Kits)	Preschool-1	3 activities	Integrating math with life science, these activities for young children use role-play, drama, measurement, and comparison to study opossum adaptations. Students learn about marsupial pouches and the development of baby opossums, and about the famous trick of “playing ‘possum.”
Penguins and Their Young (5 Kits)	Preschool-1	4 activities	This appealing guide addresses important math concepts and skills as children learn about the adaptations and environment of the emperor penguin. With role-play, drama, and multisensory games, children integrate language learning with mathematics and the physical and life sciences.
Tree Homes (4 Kits)	Preschool-1	6 activities	These activities focus on appreciation for trees and the animals that live in them, stimulating children’s interest in the natural world and emphasizing the biological need for warmth and shelter. Students use role-play to understand adaptation and deepen their math learning by sorting, classifying, and measuring.
Sifting Through Science (2 Kits)	K-2	4 activities	This unit’s three free-exploration learning stations integrate math, graphing, and data analysis as children investigate various physical properties of objects. In a culminating whole-class activity, students separate materials using the knowledge, tools, and techniques they’ve learned.
Buzzing a Hive (2 Kits)	K-3	6 activities	This guide explores the complex social behavior, communication, and hive environment of the honeybee through activities that mix art, literature, role-play, and drama. (Live bees are not a part of this unit.) A nice entomological partner to Ant Homes Under the Ground, Hide a Butterfly, and Ladybugs.
Frog Math: Predict, Ponder, Play (2 Kits)	K-3	6 sessions	In an artful interweaving of math and literature, this unit begins with free exploration of buttons and leads to age-appropriate sorting, classifying, and graphing activities. The children develop strategic-thinking skills and are introduced to the concept of probability.

Treasure Boxes (2 Kits)	K-3	6 activities	This guide builds on children's fascination with collections of small, everyday objects to introduce discrete mathematics, statistics, numbers, logic, and language in a cooperative learning environment. Graphing, sorting, and classification activities also encourage appreciation for recycling.
Group Solutions: Cooperative Logic Activities	K-4	50 activities	The activities in these popular guides are designed for groups of four. Students receive clues to share with their group, then have to work cooperatively to find the solution. The guides provide help with cooperative learning and logic in the classroom, and include sections on bilingual presentation.
Bubble Festival (2 Kits)	K-6	12 activities	These captivating, bubble-centric tabletop learning stations are packed with math and science content. The unit (a natural lead-in to Bubble-ology) includes detailed teacher assistance with classroom logistics, writing and literature extensions, and tips for setting up an all-school bubble festival.
Build It! Festival	K-6	9 activities	This unit's wealth of learning-station activities help students make real-world connections as they focus on construction, geometric challenges, and spatial visualization. Geometry background is provided. Requires pattern blocks and polyhedra (which are included in the kit), and patterns for shapes and tangrams are provided.
Investigating Artifacts	K-6	6 sessions	This rich unit introduces children to the concepts of inference and evidence with activities relating to anthropology, archaeology, and diverse Native American and world cultures. Students sort and classify natural objects, make masks and create "myths," and excavate a shoe box midden.
Terrarium Habitats	K-6	5 activities	These life science activities bring the natural world into your classroom and deepen children's understanding of and connection to all living things. Students investigate soil, design and populate terrariums, and observe and record changes over time. Schoolyard Ecology makes a great next step.

Involving Dissolving	K-3rd	4 activities	This guide, like Liquid Explorations and Secret Formulas, creates a very positive early experience with chemistry. Here students explore the concepts of dissolving, evaporation, and crystallization. Using familiar substances, they create homemade “gel-o” colorful disks, and crystals that emerge on black paper to make a “starry night.”
Liquid Explorations	K-3rd	5 activities	A great way to introduce young students to the properties of liquids, and (like Involving Dissolving and Secret Formulas) an excellent physical science unit for primary grades. Activities include classification, observation, and experimentation; one activity supports discussion of oil slicks and other environmental issues.
Secret Formulas	K-3rd	9 sessions	In these compelling physical science activities, children investigate the properties of substances as they make their own personal brands of paste, toothpaste, cola, and ice cream. Like Involving Dissolving and Liquid Explorations, the unit provides real-life experiences with chemistry and conveys key science/math skills and concepts, including cause and effect.
Mystery Festival (Mr. Bear Mystery Kit)	1st-3rd	10 sessions	This extremely popular forensic science unit features two imaginative and compelling mysteries, one for younger and one for older children. Students learn to distinguish evidence from inference, and conduct such crime-lab investigations as thread tests, powder tests, DNA comparisons, chromatography, and fingerprinting. Mr. Bear Mystery is aimed toward younger children.
Aquatic Habitats (2 Kits)	2nd-6th	5 activities	These engaging life science activities, in which students set up and observe living “desktop ponds” in the classroom, convey key environmental concepts and illustrate the interactive nature of living ecosystems. An excellent complement to Schoolyard Ecology and Terrarium Habitats.
Mystery Festival (Felix Mystery Kit)	4th-8th	10 sessions	This extremely popular forensic science unit features two imaginative and compelling mysteries, one for younger and one for older children. Students learn to distinguish evidence from inference, and conduct such crime-lab investigations as thread tests, powder tests, DNA comparisons, chromatography, and fingerprinting. Felix Mystery is aimed toward older children.

Electric Circuits	3rd-6th	11 sessions	This flexible unit opens with conductors, insulators, and simple closed circuits; these early sessions can combine to serve as a basic electricity unit. In later, more advanced sessions, students read circuit diagrams, build circuits, and learn about series and parallel circuits.
Schoolyard Ecology	3rd-6th	5 activities	This guide is designed to nurture curiosity about patterns and interactions in nature, beginning with students' immediate environment: the schoolyard and its inhabitants. Students develop sampling, mapping, and related math and environmental-writing skills. A great life science companion to Terrarium Habitats.
Crime Lab Chemistry	4th-8th	5 sessions	Recently updated and expanded, in this forensic science primer student detectives use paper chromatography to investigate solubility, pigments, and separation of mixtures. New activities provide opportunities to explore and understand scientific models. See also Fingerprinting and Mystery Festival.
Hot Water and Warm Homes from Sunlight (2 kits)	4th-8th	5 sessions	Embracing solar power could dramatically slow the exhaustion of our fossil fuels and stem greenhouse effects that compromise our climate. It's probably not a new concept to most students, but the notion of harnessing sunlight can be expanded in exciting ways. In this unit, students actually build and study model houses and home water heaters to understand and appreciate the nature of this powerful source of alternative energy.
Stories in Stone	4th-8th	8 sessions	This earth science unit explores the formation of igneous, sedimentary, and metamorphic rocks. Students distinguish and classify rocks and minerals, observe formation of salt crystals and make model crystal shapes, and use clay-modeling activities to learn about the rock cycle and more. A strong curricular companion to Plate Tectonics.
Color Analyzers	5th-8th	5 sessions	Teasing a rainbow from a lightbulb. Decoding messages from abstract art. Unveiling the answer to why an apple looks red. Through these activities and others in this unit, students are immediately and physically involved in investigations of light, color, and the wonders of how our eyes work. . An updated and enhanced version of the classic GEMS Teacher Guide, this makes a great complement to More than Magnifiers and Microscopic Explorations.

Earth, Moon and Stars (2 Kits)	5th-8th	6 activities	Students learn a great deal about the Earth and astronomy with modeling and observation activities that focus on gravity, the shape of our planet, moon phases and eclipses, and the stars. A questionnaire on the Earth's shape and gravity makes an excellent pre- and post-assessment tool. See also Messages from Space and Moons of Jupiter.
Math Around the World	5th-8th	8 Games	This stimulating unit uses games and puzzles from many continents to explore mathematics in a multicultural, international context. Each game can be presented as a two- or three-session activity or at a stand-alone learning station. Maps and historical connections provide a social studies element.
Messages From Space	5th-8th	6 activities	This exciting unit opens with a binary-coded message "from space" and takes the class on a journey through our solar system and beyond. Students model size and distance, explore how systems may have formed, ponder stellar "life zones," and design space travel brochures. See other GEMS guides: Earth, Moon, and Stars and Moons of Jupiter.
Chemical Reactions	6th-8th	2 sessions	An ordinary zip-locking bag becomes a safe and spectacular laboratory as students mix chemicals that bubble, change color, and produce gas, heat, and odor. Chemical Reactions explores chemical change, demonstrates endothermic and exothermic reactions, and develops skills in observation, experimentation, and inference. A terrific introduction to chemistry, this guide is often adapted for lower grade levels.
Discovering Density (2 Kits)	6th-8th	5 sessions	Why does ice cream float in root beer? Exploring real-life connections, students delve into the concept of density with secret formula sheets, a number of Puzzling Scenarios, and a liquid-layering activity. The mathematical equation for density is also introduced.
Dry Ice Investigations (2 Kits)	6th-8th	11 sessions	This groundbreaking unit harnesses the vaporous, real-life properties of this substance to help students develop inquiry abilities that research shows are very difficult to teach. Students learn that science is about wondering why, asking questions, observing, coming up with possible explanations, and then designing investigations to test those explanations.

More Than Magnifiers (2 Kits)	6th-8th	4 activities	In this ingenious unit on physics, optics, and light, students use two lenses in different ways to create optical instruments and learn how the measurable properties of lenses are used in magnifiers, simple cameras, telescopes, and slide projectors. A great partner to Color Analyzers and Microscopic Explorations.
Plate Tectonics: The Way the Earth Works	6th-8th	8 sessions	These groundbreaking earth science activities—including models of erupting volcanoes, strike-slip faults, and sea-floor spreading—reveal the dynamic nature of the Earth's crust. Like real earth scientists, students conduct "research" at key geological sites around the world and record observations, calculations, and conclusions in a geological field notebook. An expansive complement to Stories in Stone.
The Real Reason for the Seasons	6th-8th	8 activities	This guide is aimed at helping students arrive at a clear understanding of seasons as they investigate the connections between the Sun and Earth. Along the way, students take a "Trip to the Sun," determine the real shape of the Earth's orbit, evaluate actual data on world temperature and hours of sunlight in different locations, and model how the angle at which sunlight hits the Earth affects its concentration. This guide was developed in partnership with the NASA Office of Space Science Sun-Earth Connection Education Forum (SECEF).
River Cutters	6th-8th	7 sessions	This popular unit explores the concepts of erosion, pollution, toxic waste, and human manipulation of rivers. Students create river models, acquire geological terminology, and begin to understand geologic time.
Convection: A Current Event	6th-9th	3 Sessions	Students investigate this important physical science process by charting the convection currents in a liquid. They learn that convection affects the Earth's dynamic crust, the weather, and wind.
Parent Partners (Handbook for Educators)	Parents		Parent Partners is especially designed for educators and activists parents who wish to increase parental involvement in children's education. The many tools in this book educate parents about current approaches in science and mathematics education, and about the enormous positive educational impact parents can make.

AfterSchool KidzScience Kits	Grade Level Range	# of Activities	Description
Physical Science: Oobleck	3rd-5th	4 activities	Children act like scientists as they investigate the properties of the strange goopy material called Oobleck. They act like engineers as they design, build, and test spaceships to land on Oobleck.
Physical Science: Magnets	3rd-5th	4 activities	Children learn about magnetism by exploring magnets and creating magnet tricks and inventions.
Physical Science: Flying and Falling (2 kits)	3rd-5th	4 activities	Children investigate air resistance as they design, build, and test parachutes and air-powered rockets.
Physical Science: Bubbles	3rd-5th	4 activities	Children gain an understanding of surface tension as they investigate how soap changes water, and then deepen their understanding by blowing and measuring soap bubbles.
Green Science: Waste Not	3rd-5th	4 activities	Children learn about where our trash goes, how it decomposes, and how the choices they make can affect Earth.
Green Science: Fresh Water	3rd-5th	4 activities	Children explore the ways we use water in our everyday lives and how they can conserve this limited resource.

Green Science: Food and Plants	3rd-5th	4 activities	Children learn about the different parts of plants and think about what plants and plant parts our food comes from. They learn about how to plan gardens of their own and how they can turn plants into delicious food.
Nano Kits: Exploring Nano Science	Grade Level Range	# of Activities	Description
Kit A: Exploring Size and Measurement	K-12	7 activities	This kit provides seven hands-on activities that introduce students to the concept of how small the nanoscale is in comparison to the size of our regular human scale. These activities utilize a variety of sensory comparisons, as well as opportunities to make comparisons of objects from the macro to the nanoscale.
Kit B: Exploring Materials and Products	K-12	5 activities	This kit provides five hands-on activities that introduce students to a variety of current products on the market that use nanotechnology: ferrofluid, thin films, nano fabric, nano sand, and sunblock
Kit C: Exploring Forces and Properties	K-12	6 activities	This kit provides six hands-on activities that introduce students to the concept that size can affect the way materials behave. These activities demonstrate how properties and forces can act differently at the nano scale and are introduced to some of the tools
Project Learning Tree (3 kits each)	Grade Level Range	# of Activities	Description
Session One - Exploring nature with five senses.	Preschool-K	4 activities	Nature and natural objects stimulate eyes, noses, ears, tongues, and fingers to facilitate meaningful learning.

Session Two - Experiencing trees through the seasons	Preschool-K	4 activities	Children play, discover, and observe as trees change throughout the year.
Session Three - Meeting neighborhood trees.	Preschool-K	3 activities	Familiar trees provide a window for children to explore tree parts, products, and benefits.
Growing Up WILD (No Guide)	Grade Level Range	# of Activities	Description
Spider Web Wonders	Preschool-2		Children learn about spiders and spider webs by going outdoors, art projects and music and movement.
Deep Blue Sea	Preschool-2		Children develop an awareness of oceans and ocean life.
Tracks	Preschool-2		Children explore animal tracks and make and compare tracks of their own.
Fishing Fun	Preschool-2		Children engage in a dramatic play fishing game and learn about fish.

Bird Beak Buffet	Preschool-2		Children learn about the special functions of bird beaks.
Hiding in Plain Sight	Preschool-2		Children play a game of hide and seek to learn about important adaptations in many wild animals.
Other Kits	Grade Level Range	# of Activities	Description
Wild About Wetlands	4th-6th	15 activities	Wild About Wetlands resource kits provide 4th to 6th grade students and their teachers with easy-to-use activities, background information, and all the materials needed for teaching about wetlands ecosystems. The kits offer 15 activities in three sections: wetlands, animal life, and restoring wetlands. See http://www.calwaterfowl.org/web2/departments/education/resourcekits.htm for more info.
Physical Science: Ramps (2 kits)	Preschool-4		Discovery Ramps are an open ended and engaging way to introduce the fundamentals of Engineering and loose parts play to children. Explore STEM concepts such as force and motion with this beautiful wooden ramp set.
Physical Science: Balance (3 kits)	Preschool-4		This beautiful wooden balance provides an unmatched STEM learning activity by providing an immediate visual confirmation of the child's actions. A simple way to way explore complex topics!
Physical Science: Magna Tiles	Preschool-4		Magna-Tiles Set is a great starter set for any young Magna-Tech! Each shape measures 3 inches per base side - sized just right for little hands! Each tile is brightly colored and translucent - think stained glass! Try building near a window allowing sunlight to shine through or making a Magna-Tiles Mosaic on the light table! Ages: 4 and up

Imagination Playground Blocks	Preschool-4		These ultra-portable blocks transform any surface of any size into a play area that feels so much bigger than it really is. Small Blue Blocks are for instant tabletop creative play anywhere kids go.
Backpack Investigations (2 kits)	Preschool-4		20 backpacks and 1 teacher backpack. Take a walk and enhance the children's observation skills as you teach about wildlife. The backpack has scientific tools to excite the children as well as help them understand the world around them.
Container of Lego bricks (2 kits)	All ages		LEGO Education bricks set. Includes bricks in many colors and designed to build objects, buildings and figures, using imagination and creativity.
Container of Keva Planks (wooden planks) (5 kits)	All ages		From the United States of America to Canada and Kuala Lumpur, KEVA planks are changing the lives of children and adults all over the world. Children discover the joy of creating original works of art or cleverly designed contraptions. Creativity brings joy into the lives of humans which is why the arts are so important. At the same time, future architects and engineers are discovering their aptitude for building at an early age. Young KEVA builders today will be building our world in a few years.
Wind Tunnel	All ages		Wind Tunnel is an engaging tool for learning about one of Mother Nature's most interesting forces! Its unique design lets adults pivot the tube vertically, horizontally, or on an angle - perfect for comparing the results of wind and its relationship with direction. Children of all ages love it!
Box 'O Bones: Fossils	Preschool-8	2 Kits	Can be used for young children to bury in sandbox and pretend to be paleontologists or real bone investigations for older students.

Toddler Lego Kit	Preschool	1 Kit	
The Way Things Move – <i>New kit added 2019!</i>	Preschool		This kit allows young children to explore the way different objects move. Many activities are inspired from <i>Peep and the Big Wide World</i> . Activities are quick and easy and allow for hands-on exploration through play and open-ended questions.

My Sky Tonight – New Kits Added 2019!	Grade Level Range	# of Activities	Description
Kit A	Preschool–1	2 Activities	My Sky Tonight is a curriculum developed by the Astronomical Society of the Pacific that brings hands-on and developmentally-age appropriate astronomy activities to young children. Activities in this kit include Hide & Seek Moon and Moon Phases.
Kit B	Preschool–1	2 Activities	My Sky Tonight is a curriculum developed by the Astronomical Society of the Pacific that brings hands-on and developmentally-age appropriate astronomy activities to young children. Activities in this kit include Creating Craters and Lunar Landscapes
Kit C	Preschool–1	3 Activities	My Sky Tonight is a curriculum developed by the Astronomical Society of the Pacific that brings hands-on and developmentally-age appropriate astronomy activities to young children. Activities in this kit include Day & Night, Sun’s Energy, and Bear’s Shadow.
Kit D	Preschool–1	2 Activities	My Sky Tonight is a curriculum developed by the Astronomical Society of the Pacific that brings hands-on and developmentally-age appropriate astronomy activities to young children. Activities in this kit include Exploring New Worlds and Build a Space Explorer.

Books	Author	Description
<i>Big Ideas of Early Mathematics: What Teachers of Young Children Need to Know</i>	Erikson Institute	Early childhood teachers can become inspired math teachers – seeing math in children’s literature and everyday routines, communicating their own excitement, and making significant improvements in children’s math learning by understanding the Big Ideas. Companion DVD included.
<i>Science is Simple: Over 250 Activities for Preschoolers</i>	Peggy Ashbrook	Like learning to count or read, understanding the fascinating world of science is an essential skill. This innovative book encourages three to six year olds to predict outcomes, ask questions, and investigate answers. Watch preschoolers develop essential observational and analytical skills as they eagerly jump into the hands-on, interactive process that is science.
<i>Science Play! Beginning Discoveries for 2-6 year olds.</i>	Jill Frankel Hauser	Slosh, stir, stand on one foot, or just quietly observe. Whatever their learning style, kids will have fun with these creative activities – all created to build science readiness. Over 65 safe, age appropriate activities encourage kids to discover, sort, observe, predict, and think creatively! Have fun predicting your own roller derby winners, concocting amazing Goobleck, creating a Purple Cow solution milkshake, and making adobe bring building blocks.
<i>What is a Scientist?</i>	Barbara Lehn	What is a scientist? Scientists are people who notice details. They measure, test predictions, and keep on trying. The kids in this book do the same things. In fact, they use exactly the same scientific principles that grown up scientists use. All the kids in this book are scientists! Are you?
<i>What is Science?</i>	Rebecca Kai Dotlich	What exactly is science? Stars and planets, rocks and soil, hurricanes and airplanes – science is all these things and so much more. It’s also about curiosity: asking questions and exploring possible answers. This engaging poetic picture book introduces young children to the exciting and ever changing world of science.