

# *Sci-Tech Connections*

---

*Scope and Sequence*

*Grade 2*

## Sci Tech Connections Scope and Sequence - Grade 2

<b>Name of Module</b>	<b>Lesson</b>	<b>Name of Activity</b>	<b>Main Concepts</b>	<b>Specific Expectations</b>	<b>Materials Required</b>	<b>Pacing *</b>
<i>On the Water</i>	1	The Unsinkable Floaters	Explores different materials to demonstrate an understanding of sinking and floating.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• identify characteristics of objects that sink and float</li> <li>• record the work and share it with others</li> <li>• explore different objects and materials to find out what makes some things float and other things sink</li> <li>• investigate a variety of ways to alter materials to change their function</li> </ul>	<ul style="list-style-type: none"> <li>• basin or plastic container of water</li> <li>• paper towel or cloth</li> <li>• baggie of objects</li> <li>• paper and pencil</li> </ul>	2 – 40 min. periods
<i>On the Water</i>	2	Ship Shape	Investigates whether the shape of a boat changes its buoyancy.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• make at least three different shaped models</li> <li>• record the work and share it with others</li> <li>• make a conclusion about which shape holds the greatest load and give reasons</li> </ul>	<ul style="list-style-type: none"> <li>• basin or plastic container of water</li> <li>• paper towel or cloth</li> <li>• modeling clay</li> <li>• pennies, blocks, marbles</li> <li>• paper and pencil</li> </ul>	2 – 40 min. periods
<i>On the Water</i>	3	Higher and Higher	Investigates whether the height of the sides of a boat have an effect on its buoyancy.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• create three or four boats to test</li> <li>• record the work and communicate with the class</li> <li>• arrive at a conclusion and give reasons for the conclusion</li> </ul>	<ul style="list-style-type: none"> <li>• basin or plastic container of water</li> <li>• paper towel or cloth</li> <li>• foil wrap</li> <li>• ruler</li> <li>• scissors</li> <li>• blocks, marbles</li> <li>• paper and pencil</li> </ul>	2 – 40 min. periods

<b>Name of Module</b>	<b>Lesson</b>	<b>Name of Activity</b>	<b>Main Concepts</b>	<b>Specific Expectations</b>	<b>Materials Required</b>	<b>Pacing *</b>
<i>On the Water</i>	4	Shaping the Hull	Creates different hull shapes for boats and observes the movement of each through water.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• design and create at least three boat forms with sails</li> <li>• test which form flows through water the best</li> <li>• investigate different sail shapes</li> <li>• record your findings, giving reasons for your choices</li> </ul>	<ul style="list-style-type: none"> <li>• styrofoam</li> <li>• paper and cardboard</li> <li>• wooden BBQ sticks</li> <li>• scissors</li> <li>• basin of water</li> <li>• magazine or cardboard fan (for wind power)</li> </ul>	2 – 40 min. periods
<i>On the Water</i>	5	Powering Along the Water	Explores elastic power and wind power as possible energy sources to make a boat move.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• build two models with the group</li> <li>• record the work and share it with others</li> <li>• identify which model provides the best power and be able to tell why</li> </ul>	<ul style="list-style-type: none"> <li>• water table</li> <li>• paper towel or cloth</li> <li>• styrofoam trays</li> <li>• scissors</li> <li>• ruler</li> <li>• elastic bands</li> <li>• blocks of wood</li> <li>• popsicle sticks</li> <li>• glue gun</li> <li>• safety gloves</li> <li>• straws</li> <li>• balloons</li> <li>• plastic soda bottles</li> <li>• resource books</li> </ul>	1 – 60 min. period
<i>On the Water</i>	6	Our Harbor with Boats Afloat	Designs and creates a boat using the information from the previous investigations.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• design and create a boat that floats, carries a load, and is powered</li> <li>• keep a log of your work (materials, plan)</li> <li>• make a blueprint of your boat (top view, side view)</li> </ul>	As required by the group	2 – 60 min. periods

Name of Module	Lesson	Name of Activity	Main Concepts	Specific Expectations	Materials Required	Pacing *
<i>We Are on Our Way</i>	7	Mapping the Journey	Explores maps and creates a map for the boat trip.	<ul style="list-style-type: none"> <li>• work with a partner and your group, respect other people, work safely, and keep a clean work space</li> <li>• create a map for your boat trip</li> <li>• create a folder to fit in your backpack in which all work for the unit will be stored</li> <li>• record your work and communicate with your group</li> </ul>	<ul style="list-style-type: none"> <li>• samples of maps</li> <li>• newsprint or recycled paper</li> <li>• chart paper</li> <li>• markers</li> <li>• tagboard</li> <li>• scissors</li> <li>• tape or glue</li> </ul>	3 – 40 min. periods
<i>We Are on Our Way</i>	8	Getting Packed	Investigates the conditions that affect dry clothes.	<ul style="list-style-type: none"> <li>• works in a group, respects other people, works safely, and keeps a clean work space</li> <li>• explores what happens when water drops are placed on different materials</li> <li>• records the work and communicates with the class</li> <li>• uses the vocabulary <i>absorbency</i> and <i>repel</i></li> <li>• makes a recommendation about which materials are waterproof and what clothes he/she should take on the trip</li> </ul>	<ul style="list-style-type: none"> <li>• water</li> <li>• variety of pieces of material</li> <li>• eyedroppers</li> <li>• plastic containers</li> <li>• elastic bands</li> </ul>	2 – 40 min. periods
<i>We Are on Our Way</i>	9	Ice Keepers	Explores and investigates ways to keep an ice cube from melting.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• find a way to keep ice from melting</li> <li>• record the work and share with others</li> <li>• make a conclusion about a way to store ice to keep it from melting</li> </ul>	<ul style="list-style-type: none"> <li>• ice cubes</li> <li>• plastic tubs or tin cans</li> <li>• various kinds of fabrics</li> <li>• aluminum foil</li> <li>• Styrofoam packing</li> <li>• tissue paper</li> <li>• plastic wrapping</li> <li>• sand</li> <li>• beans</li> </ul>	2 – 60 min. periods

<b>Name of Module</b>	<b>Lesson</b>	<b>Name of Activity</b>	<b>Main Concepts</b>	<b>Specific Expectations</b>	<b>Materials Required</b>	<b>Pacing *</b>
<i>We Are on Our Way</i>	10	It's All in the Container	Investigates that liquids take the shape of their containers.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• discuss the shape that water takes in a container</li> <li>• investigate, predict, and test ideas</li> <li>• record findings</li> </ul>	<ul style="list-style-type: none"> <li>• empty transparent jars with lids</li> <li>• It's All in the Container page 31</li> <li>• cloth to cover the jars completely</li> <li>• jug of water</li> <li>• pencil</li> </ul>	1 – 40 min. period
<i>We Are on Our Way</i>	11	Let It Blow!	Observes changes in air conditions and their effects on the environment.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• make observations and record your findings in a chart</li> <li>• share and compare your findings with the class</li> <li>• design and create a wind instrument to measure wind strength</li> <li>• present your model to the class</li> </ul>	<ul style="list-style-type: none"> <li>• Beaufort Wind Chart (page 37)</li> <li>• pencil</li> <li>• journal</li> <li>• material</li> <li>• construction paper</li> <li>• straw or dowels</li> <li>• fabric pieces</li> <li>• string</li> <li>• wire or hangers</li> </ul>	5 – 10 min. periods 1 – 40 min. period
<i>We Are on Our Way</i>	12	Where Does It All Go?	Identifies and explores how water evaporates.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• create an investigation to find out what happens to puddles of water</li> <li>• record work</li> <li>• use vocabulary liquid, vapor, and evaporate</li> <li>• present the learning in a group</li> </ul>	<ul style="list-style-type: none"> <li>• water</li> <li>• margarine containers with lids</li> <li>• wax paper</li> <li>• measuring cups</li> <li>• ruler</li> <li>• markers</li> <li>• eyedropper</li> </ul>	60 min. over a day
<i>We Are on Our Way</i>	13	Falling Water	Explores the movement of water and designs a water system.	<ul style="list-style-type: none"> <li>• works in a group, respects other people, works safely, and keeps a clean work space</li> <li>• records the work and communicates with the class</li> <li>• explores and designs at least three different waterfalls</li> <li>• explains how water travels toward the ocean</li> </ul>	<ul style="list-style-type: none"> <li>• variety of plastic containers</li> <li>• water table or basin</li> <li>• plastic jug or bottle for pouring water</li> <li>• safety goggles</li> <li>• variety of nails (different sizes)</li> <li>• hammer</li> <li>• modeling clay or tape to cover holes</li> <li>• Styrofoam trays</li> <li>• water buckets</li> </ul>	2 – 40 min. periods

<b>Name of Module</b>	<b>Lesson</b>	<b>Name of Activity</b>	<b>Main Concepts</b>	<b>Specific Expectations</b>	<b>Materials Required</b>	<b>Pacing *</b>
<i>We Are on Our Way</i>	14	The Boater's Log	Communicates the learning of the module through a boater's log.	<ul style="list-style-type: none"> <li>• work independently</li> <li>• work on a rough copy of your log</li> <li>• edit rough copy</li> <li>• create a boater's log</li> <li>• describe the learning from the activities in We Are on Our Way</li> <li>• share your boater's log with others</li> </ul>	<ul style="list-style-type: none"> <li>• paper</li> <li>• stapler</li> <li>• markers, pens, and pencils</li> <li>• ribbon</li> <li>• other materials as required</li> </ul>	2 – 40 min. periods
<i>Sink or Swim</i>	15	We're All Wet!	Explores and creates spin dryers and tests their effectiveness with respect to drying wet materials.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• design and create two drying devices</li> <li>• compare the two devices and record results</li> <li>• present models to other groups</li> <li>• fill in Inquiry Checklist for the group</li> </ul>	<ul style="list-style-type: none"> <li>• plastic margarine containers</li> <li>• thick string</li> <li>• hole punchers (adult supervision required for hammer and nails, screws, awl, goggles, etc.)</li> <li>• scissors</li> <li>• pieces of fabric</li> </ul>	1 – 60 min. period
<i>Sink or Swim</i>	16	What a Mess!	Explores and investigates the way different substances react with water (soluble and insoluble solids, and other liquids). Students will explore the many ways that water can be cleaned through the use of filtration, and how these methods are used in everyday life.	<p>1) • work as a group, respect other people, work safely, and keep a clean work space</p> <ul style="list-style-type: none"> <li>• identify ways to remove pollutants from water</li> <li>• explore a variety of methods of cleaning dirtied water</li> <li>• record the work and share with others</li> </ul> <p>2) • work as a group, respect other people, work safely, and keep a clean work space</p> <ul style="list-style-type: none"> <li>• identify ways to remove oil from water</li> <li>• explore a variety of methods of cleaning the oil spill</li> <li>• record the work and share with others</li> </ul>	<ul style="list-style-type: none"> <li>• two empty 2 qt (2 L) plastic bottles with lids</li> <li>• empty clear jars</li> <li>• plastic funnels</li> <li>• variety of filters: paper towel, tissue, filter paper, gravel, sand, cotton, wool, beans</li> <li>• magnifying glasses</li> <li>• pie plates or basins</li> <li>• container of water</li> <li>• container of oil (vegetable)</li> <li>• plastic funnels</li> <li>• paper towel</li> <li>• feathers</li> <li>• screening</li> <li>• sponges</li> <li>• cotton wool</li> <li>• pieces of stockings (nylons)</li> </ul>	1 – 90 min period

<b>Name of Module</b>	<b>Lesson</b>	<b>Name of Activity</b>	<b>Main Concepts</b>	<b>Specific Expectations</b>	<b>Materials Required</b>	<b>Pacing *</b>
<i>Sink or Swim</i>	17	There's a Hole in the...	Creates mixtures using water and solids to produce useful substances.	<ul style="list-style-type: none"> <li>• work with a partner, respect other people, work safely, and keep a clean work space</li> <li>• follow the recipe carefully and create "goo glue"</li> <li>• test the "goo glue" product with a variety of materials</li> <li>• share your findings with others</li> <li>• create a commercial about the glue to tell about its special features</li> </ul>	<ul style="list-style-type: none"> <li>• measuring spoons</li> <li>• coffee filter or paper towel</li> <li>• spoon or stir stick</li> <li>• plastic containers</li> <li>• large bins full of water</li> <li>• your boats that need repairs</li> <li>• skim milk</li> <li>• vinegar</li> <li>• baking soda</li> <li>• recipe for "goo glue" (page 26)</li> </ul>	2 – 40 min. periods
<i>Sink or Swim</i>	18	It's Time to Roll Along	Explores wheels, axles, and hinges and then designs and creates a trailer for the boat.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• explore and investigate wheels and axles</li> <li>• plan, design, and create a trailer</li> <li>• present and share models with others</li> </ul>	<ul style="list-style-type: none"> <li>• wooden BBQ sticks</li> <li>• dowels</li> <li>• scrap pieces of wood</li> <li>• toilet/paper towel rolls</li> <li>• plastic container</li> <li>• film containers and lids</li> <li>• scissors</li> <li>• glue</li> <li>• straws</li> <li>• cardboard</li> <li>• Styrofoam trays</li> <li>• wire</li> <li>• cans</li> <li>• hole punch</li> <li>• toy boat</li> </ul>	3 – 60 min. periods

<b>Name of Module</b>	<b>Lesson</b>	<b>Name of Activity</b>	<b>Main Concepts</b>	<b>Specific Expectations</b>	<b>Materials Required</b>	<b>Pacing *</b>
<i>Lets Celebrate</i>	20	At the Carnival with a Bounce, Stretch, and Spin	Explores and investigates movement through a variety of objects that will bounce (balls), roll (ramps and racers), stretch (elastics), and spin (spin tops).	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• explore and investigate the different movements of objects: turning, spinning, bouncing, stretching, and rolling</li> <li>• explore and investigate the wheel and axle, and inclined planes</li> <li>• plan, design, and create games for a carnival</li> <li>• present and share your games with your classmates</li> </ul>	<ul style="list-style-type: none"> <li>• variety of balls (rubber, ping-pong, hollow, “super” balls, etc.)</li> <li>• variety of elastics/ rubber bands (thick, thin, large, small, etc.)</li> <li>• pencils and pens for use in spinners</li> <li>• plastic container lids</li> <li>• heavy cardboard</li> <li>• film containers</li> <li>• variety of materials to go in film containers (sand, modeling clay, marbles, etc.)</li> <li>• wood boards, shelving (for ramps)</li> <li>• hammer and nails (with adult supervision)</li> <li>• scraps of fabric, carpet, sandpaper</li> </ul>	5 – 30 min. periods 1 – 90 min period
<i>Lets Celebrate</i>	21	Ice Sculptures	Explores and investigates the properties of ice and how to use this knowledge to create a real ice structure.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• explore and investigate ice cubes and salt and how they interact with each other</li> <li>• plan, design, and create an ice sculpture</li> <li>• present and share your ice sculpture with others</li> </ul>	<ul style="list-style-type: none"> <li>• water</li> <li>• freezer</li> <li>• freezer bag</li> <li>• different containers of various sizes (ice cube trays, paper cups, Styro-foam cups, yogurt containers, etc.)</li> <li>• table salt</li> <li>• baking soda</li> <li>• sugar</li> <li>• paper towel (small pieces)</li> <li>• cloth (j-Cloth, different material scraps)</li> <li>• scissors</li> </ul>	2 – 40 min periods

<b>Name of Module</b>	<b>Lesson</b>	<b>Name of Activity</b>	<b>Main Concepts</b>	<b>Specific Expectations</b>	<b>Materials Required</b>	<b>Pacing *</b>
<i>Lets Celebrate</i>	22	My Roots	Locates simple information about family history and tradition through research and interviews of family members. Creates a family tree to share with the class.	<ul style="list-style-type: none"> <li>• interview members of your family</li> <li>• identify and describe your family's origin and traditions</li> <li>• present family tree and family celebrations in an interesting way</li> <li>• communicate learning with others</li> </ul>	<ul style="list-style-type: none"> <li>• paper</li> <li>• pencil</li> <li>• chart paper</li> <li>• glue</li> <li>• tape</li> <li>• markers</li> <li>• paint</li> <li>• other art materials as necessary</li> <li>• family tree sheet (page 37)</li> <li>• research books</li> <li>• internet access</li> </ul>	2 – 40 min. periods + homework
<i>Lets Celebrate</i>	23	Where in the World ..?	Investigates and researches a variety of aspects of culture (food, clothing, housing, games, etc.) related to the students' roots and compares these cultural aspects to the community in which they live.	<ul style="list-style-type: none"> <li>• work as a group and respect other people</li> <li>• research a variety of different aspects about your chosen country</li> <li>• share your information with others in the class</li> </ul>	<ul style="list-style-type: none"> <li>• research materials: books, encyclopedias, CD-ROMs, internet access, tourism pamphlets</li> <li>• Tracking Sheet (page 43)</li> <li>• materials as needed</li> </ul>	5 – 40 min. periods
<i>Lets Celebrate</i>	24	Celebrating our Heritage	A culminating project allowing the students to share their research and investigations of movement, their own heritage, and other cultures through a class celebration and fun fair.	<ul style="list-style-type: none"> <li>• work as a class to set up a heritage festival</li> <li>• work as a group to design and create the part of festival assigned</li> <li>• celebrate the heritages of the class</li> </ul>	<ul style="list-style-type: none"> <li>• chart paper and markers</li> <li>• work from previous activities</li> <li>• as requested by groups</li> </ul>	3 – 30 min. periods + 1 – 60 min period

<b>Name of Module</b>	<b>Lesson</b>	<b>Name of Activity</b>	<b>Main Concepts</b>	<b>Specific Expectations</b>	<b>Materials Required</b>	<b>Pacing *</b>
Out and About With Nature	25	Critters in Motion	Observes a small space in the schoolyard to become aware of the critters and their habitat.	<ul style="list-style-type: none"> <li>• work cooperatively and safely with a partner to adopt a place in your schoolyard</li> <li>• observe plants and animals that live in an outdoor place</li> <li>• lead a tour of your outdoor place</li> <li>• compare different sites in the playground with those of classmates</li> <li>• recognize adaptations of creatures to the outdoor place</li> </ul>	<ul style="list-style-type: none"> <li>• magnifying lens</li> <li>• notebook for recording observations and making a sketch of outdoor spot</li> <li>• string 3 ft (1 m) long or Hula-Hoop to set boundary for observations (optional)</li> </ul>	3 – 30 min. periods
Out and About With Nature	26	Collection Contraptions	Designs and creates tools for observing critters at a park or a pond.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• take responsibility for involvement in the project</li> <li>• plan and build tools for collecting and observing pond animals</li> </ul>	<ul style="list-style-type: none"> <li>• tool-making sheets (pages 27 to 32)</li> <li>• materials as required</li> </ul>	1 – 30 min period + 1 – 60 min period
Out and About With Nature	27	Nature’s Ways	The class take a closer look by exploring a pond, park, or wetland using the tools they have constructed.	<ul style="list-style-type: none"> <li>• work cooperatively, respect the animals and the environment, and work safely</li> <li>• observe the pond to explore a natural environment</li> <li>• use your tools to observe more closely</li> <li>• collect critters from in or around the pond to observe</li> <li>• record and share observations</li> </ul>	<ul style="list-style-type: none"> <li>• binoculars</li> <li>• ice cream pails</li> <li>• margarine containers</li> <li>• dippers</li> <li>• spoon or ladle</li> <li>• bug house</li> <li>• magnifying lenses</li> <li>• magnifying boxes</li> <li>• spotting scope (optional)</li> <li>• camera</li> <li>• string</li> <li>• Nature’s Ways Recording Sheet (page 39)</li> <li>• Nature’s Ways Tally Sheet (page 38)</li> <li>• guidebooks</li> <li>• clipboards (optional)</li> <li>• pencils</li> </ul>	1 – 40 min. period half day at pond

<b>Name of Module</b>	<b>Lesson</b>	<b>Name of Activity</b>	<b>Main Concepts</b>	<b>Specific Expectations</b>	<b>Materials Required</b>	<b>Pacing *</b>
Out and About With Nature	28	Changes, Changes, Changes	Researches to find out more about a critter observed at the pond, park, or wetland.	<ul style="list-style-type: none"> <li>• work with a partner cooperatively</li> <li>• research an animal or insect from in and around the pond</li> <li>• present the research to others</li> </ul>	<ul style="list-style-type: none"> <li>• reference books</li> <li>• magazines</li> <li>• Internet access</li> <li>• Bubble Map Chart (BLM 9)</li> <li>• Double Bubble Chart (BLM 10)</li> <li>• Research Sheet (BLM 14)</li> </ul>	3 – 40 min. periods
Out and About With Nature	29	A Closer Look	Three mini-activities, in which students further investigate the growth of a critter or an animal in nature, and through reading storybooks thinking of how all people need to respect earth.	<ul style="list-style-type: none"> <li>• participate actively in cooperative learning centers</li> <li>• observe and record field notes about animals in your classroom or an animal that can be visited regularly in the schoolyard</li> <li>• gather information about changes in self through measuring, talking with parents or guardians, and writing in journals</li> <li>• compare personal growth and development with the animal studied to analyze similarities and differences</li> <li>• record learning in journal at each activity center</li> <li>• reflect on personal values regarding respect for the earth and ecological choices</li> </ul>	<ul style="list-style-type: none"> <li>• journal</li> <li>• A Closer Look I, II, and III investigations (pages 56 to 58)</li> </ul>	4 – 40 min. periods

Name of Module	Lesson	Name of Activity	Main Concepts	Specific Expectations	Materials Required	Pacing *
Out and About With Nature	30	Critter Café	Creates a mural about the interaction of nature in and around the park, pond, or wetland.	<ul style="list-style-type: none"> <li>• work as a group, respect other people, work safely, and keep a clean work space</li> <li>• each group member prepare a life-size representation of an organism that was observed at the pond</li> <li>• in the group mural include: insect life cycle, pond observations, sketches, and information</li> <li>• present learning with others at Critter Café</li> </ul>	<ul style="list-style-type: none"> <li>• personal learning material from research</li> <li>• mural paper or large sheets of poster paper</li> <li>• paint and paintbrushes</li> <li>• sponges</li> <li>• fabric</li> <li>• different types of paper</li> <li>• old socks</li> <li>• buttons</li> <li>• pipe cleaners</li> <li>• string</li> <li>• thin wire</li> <li>• scissors</li> <li>• tape</li> <li>• glue</li> </ul>	2 – 60 min. periods

\* Timing will vary based on student’s new inquiries from original investigation and how many activities from Connecting the Curriculum are introduced. Remember Language Arts activities are integrated into each investigation.