



K-8 Science Education A Resource Guide for Parents

Tips, Activities &
Internet Resources



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Introduction

Our life is filled with opportunities to learn science. Parents don't need advanced degrees in chemistry or physics to help their children learn science. All that parents need is a willingness to observe the world and a willingness to help nurture a child's natural curiosity. When parents encourage their children to ask questions, and help them explore and discover the natural world, they are helping build an interest in science.

This short booklet is designed to help parents develop a child's curiosity and a love of scientific investigation. The earlier parents encourage this curiosity the better.

Each grade level contains "Tips and Activities" developed by the Ohio Department of Education. They are fun, helpful and easy to use with children.

There are also websites listed to encourage children to develop a positive attitude toward science in a fun, non-threatening way. These sites have been carefully selected and checked for ease of use and appropriateness for each grade level. They are all free of charge, require no log-in information and at the time of this printing, did not contain any inappropriate advertising.

The SMART Consortium encourages all parents to participate in their children's learning process, and to encourage a child's natural curiosity and their ability to observe what goes on around them in the natural world.



Kindergarten Tips and Activities for Parents

- Have your child identify the sun, moon and stars at various times of the day.
- While watching cartoons, discuss with your child the characters that they see and have them compare cartoons to “real life.”
- Discuss the physical features of families from humans to animals to plants and explore the similarities.
- Take your child to the zoo and point out similarities in families of animals.
- Point out various objects in an environment and ask your child whether something is living or non-living and ask him or her to give you reasons why.
- Take your child on a variety of outings to parks, zoos, farms and museums, and sharpen his or her observation skills by playing “I spy.” This is a game where you make statements about the characteristics of something in a particular area and the child then tries to figure out what it is. For example, “I spy something tall, brown and green with large red fruit,” and the child would point out an apple tree.

Internet Resources for Kindergarten Students

You can help these critters find their natural habitats in animal homes. It's a fun science and geography game for preschool and kindergarten-sized brains.

<http://resources.kaboose.com/games/kid-science-games.html>

Kindergarten Science Series Website/Activities

http://harcourtschool.com/menus/science/gradek_n1.html

This site provides three interactive science units appropriate for kindergarteners.

<http://kidport.com/GRADEK/Science/ScienceIndex.htm>

Weather for Kids in Kindergarten, 1st Grade, 2nd Grade

Play brain games to hone your math, science and language arts skills. <http://kids.aol.com/homework-help/junior/earth-science/weather>

A variety of on-line games about sea creatures.

<http://www.mbayaq.org/lc/activities/default.asp>

Create a mobile that shows a specific habitat and the plants and animals that live in that habitat. Use memorization to pair animals together in this online game.

www.pbs.org/teachers/earlychildhood/theme/animals.html



Grade One Tips and Activities for Parents

- Make a sundial and monitor the sun's motion throughout the day, week, month or year.
- Watch wild animals in the neighborhood and parks and make observations about their behavior during the seasons. For example, watch birds nesting in the spring and follow the development of their young. Compare that to the behavior you see in the fall season.
- Take a group of objects (e.g., buttons, shells, office supplies) and help develop your child's observation skills by sorting them by color, shape, use or texture.
- Develop your child's senses by having him or her explore a variety of textures, smells, sounds and tastes in a variety of situations and have him or her discuss them with you in great detail. Environments could include a park, a garage, a kitchen or a store.
- Collect something of interest like rocks, leaves, shells or insects. Not only will your child have a valuable collection, but finding out the "inside scoop" on these items is what science is all about.
- Make three small models of simple houses made of different materials and test the strength of each.
- Conduct a simple experiment several times in the same way to determine if you get the same results each time.

Internet Resources for Grade One Students

This site provides on-line games for grade 1 students—habitat, adaptation/diversity, plants and animals and links to lots of other resources. www.crscience.org/teacher/lswbsites.html

Many free elementary science activities and interactive educational science games online for kids. www.apples4theteacher.com/science.html

Enjoy these fun games & activities while learning more about science and technology. Learn about plants & animals as you spot them in an outdoor scene. www.sciencekids.co.nz/gamesactivities.html

Sort and classify objects according to their attributes and organize data about the objects. www.nasa.gov/audience/forkids/kidsclub/text/extras/Game_Descriptions_National_Standards.html

The student will investigate energy and its uses. The site includes a circuits game and interactive web page with a quiz. <http://classroom.ic-schools.net/sci-units/energy.htm>

Use this site to find a game or activity under a subject and academic standard, including topics on solids, liquids, and gases and the properties of each. <http://rces.rocklin.k12.ca.us/Student%20Links%201.htm>



Grade Two Tips and Activities for Parents

- Have your child identify the sun, moon and stars at various times of the day. Observe the moon together over several weeks. Draw its various shapes. Examine the moon chart in the weather section of your daily newspaper or calendar.
- Record weather changes over the year and note changes in seasons. Identify what type of precipitation and events are expected at various times of the year and why. For example, the spring season brings much rain and thunderstorms which prepares the land for growing plants.
- While sitting at the dinner table, talk about the basic requirements for survival and talk about how other living things achieve those requirements.
- Make musical instruments from odds and ends around the house. Make a variety of sounds and make adjustments to the sounds and note what is responsible for the change.
- Help your child develop language and observations by using animals to discuss what they have in common and what characteristics are different. For example, birds can be used for size comparisons, types of feathers, habitat and food sources.

Internet Resources for Grade Two Students

This site deals with the Earth and its place in the Universe. Students can illustrate the positions of the Earth, moon, and sun during solar and lunar eclipses.

<http://classroom.jc-schools.net/sci-units/earth.htm>

Biology of Plants – learn about plant parts, making food, pollination, adaptations, and more. Play games and learn about how the animals are classified.

<http://richmond.k12.wi.us/Computers/Grade2/tabid/1080/Default.aspx>

Browse online activities by grade & subject, including World War II Remembered ... Maggie's Science Labeling Game · The Magic School Bus Science Activities ...etc.

<http://www2.scholastic.com/browse/learn.jsp>

Cool Science for Curious Kids is a fun and interactive site to help kids appreciate science. Five activities adapted from science and children's museums." - From the Howard Hughes Medical Institute. - <http://www.hhmi.org/coolscience/>



Grade Three Tips and Activities for Parents

- Take a closer look at everyday products or processes and investigate questions such as: “What happens to the trash when it leaves in the garbage truck?” “Where does electricity come from?” “Why do the streets get potholes?” “What makes a plant grow?” “Why is bottled water better than some tap water?”
- Start lists for various topics of science. As your child has mastered a term or concept add it to the list. Examples could include types of animals found in the rainforest or plants that produce food for humans.
- Look at the variety of contributions of scientists and discuss their heritage, gender, ethnicity and skills.
- Discuss the physical features of families from humans to animals to plants and explore the similarities and differences.
- Encourage your child to find answers to questions by using a variety of references available at home, libraries, museums, state or local agencies and the Internet.
- Use a variety of household items (e.g., eggs, magnets, wheels, balls, tools) to demonstrate gravity, magnetism and force. Use the items safely.
- Work with your child on projects such as making bird feeders, caring for pets, setting up a home weather station, and preparing a family vegetable or flower garden.

Internet Resources for Grade Three Students

Kids can play map games, health games, health quizzes, animal games, and more. Make an environment by painting it and placing animals and plants in your creation.

www.sheppardsoftware.com/web_games_menu.htm

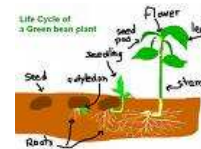
Biology Links – What do plants and animals need for habitats or biomes? Other content includes prairie plants and roots, tree identification sites and more.

<http://sciencespot.net/Pages/kdzbiopa.html>

Play and create fun and free science quiz games. Test your knowledge and compete in science here at Purposegames.com.

www.purposegames.com/games?c=14&so=mp

Created by the Lawrence Hall of Science, students can play online games, download activities to do at home, and more cool stuff. <http://lawrencehallofscience.org/kids/>



Grade Four Tips and Activities for Parents

- Observe the sky together. Identify the objects in the sky and define and discuss their significance and location. For example, observe the sun's position in the morning, mid-day and evening.
- Identify types of clouds present in the sky and determine what type of precipitation they will produce.
- Graph the number of hours of daylight over a two-week period in the early fall, in January and again in late spring. Ask your child what is happening. How does he or she explain the differences in the length of the day?
- Identify unique land features of your area and discuss how they were formed.
- If you travel with your child to other parts of the state and country, identify differences in the land features and weather and explore reasons for those differences.
- Start a small garden and let your child care for it. Discuss what the garden needs for survival and why.
- Have discussions with your child comparing entertainment, communication and manufacturing now and when you were a child.
- Discuss news articles about science from the newspaper and determine what is fact or fiction. Ask yourselves the question "Is this possible and why?"

Internet Resources for Grade Four Students

Kids can play and create fun and free science quiz games. They can test their knowledge and compete in science here at Purposegames.com.

www.purposegames.com/games?c=14&so=mp

A sit full of vocabulary games for grades 1; 2; 3; 4; 5; 6.

<http://www.eduplace.com/parents/hmsc/content/vocabgames/>

Not games, but some really science information presented in an entertaining and fascinating way.

www.newton.k12.ks.us/tech/fourth_grade_internet_activities1.htm

Science Online Matter. Compare the effect of physical and chemical changes on matter.

<http://classroom.jc-schools.net/sci-units/matter.htm>

Fantastic Science for Grades 3-6, 3-6 Games for 3rd Grade | 4th Grade | 5th Grade | 6th Grade. A Pangaea Map Game is included - Locate modern day continents on a Map of Pangaea!

www.uen.org/3-6interactives/science.shtml



Grade Five Tips and Activities for Parents

- Visit a zoo and take time to read the display information about the animals. Observe the behavioral and physical characteristics of the animals.
- Get involved in a community project with your child that focuses on caring for the environment (e.g., recycling, cleaning up litter, planting trees).
- When you see a living creature on a walk, on television or in a book or movie, classify it as an amphibian, mammal, bird, reptile, fish, insect or crustacean. If you are not sure of a particular creature's category, research it together in a directory, encyclopedia or animal book.
- Observe the moon together over several weeks; note whether you are looking at it at the same time every day or at different times. Note the moon's location and draw its various shapes; be aware of the stars around it. Examine the moon chart in the weather section of your daily newspaper or on a calendar.

Internet Resources for Grade Five Students

Play and create fun and free Science quiz games. Test your knowledge and compete in Science here at Purposegames.com. www.purposegames.com/games?c=14&so=mp

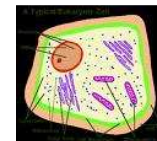
This site contains BrainPop science movies, game boards, games and lessons including a grade 5 *Diversity and Adaptation Among Living Things* game. <http://classroom.jc-schools.net/sci-units/plants-animals.htm>

This site contains grade by grade games and activities for science as well as all subjects. <http://guest.portaportal.com/solscience>

You will find online science games for kids along with other important information for the National Institute of Environmental Health Sciences. <http://www.niehs.nih.gov/kids/>

This is a net guide to elementary science fun and games for kids online where you will find many resources. http://childparenting.about.com/od/sciencegamesonline/Science_Games_Online.htm

This site is intended for elementary and secondary school students and teachers who are interested in learning about the nervous system and brain with hands on activities, experiments and information. <http://faculty.washington.edu/chudler/chgames.html>



Grade Six Tips and Activities for Parents

- Encourage your child to be a “collector.” Provide a place for collections to display rocks, insects, leaves, stamps and shells. Go to the library to find books that help your child identify characteristics of the items.
- Make certain that you teach your child rules of safety in the handling of electrical, mechanical and chemical equipment. Educationally-approved and age-appropriate toys and games are good for gift-giving: subscription to a scientific magazine for children, an easy-to-assemble radio earphone set, model airplanes, a general science kit, an aquarium or terrarium, a chemistry set, and microscope or telescope.
- Ask about the scientists your child is currently studying. Are men, women and different ethnicities represented and are any scientists from your home state? What does your child know about these scientists and their work?
- Science in the sixth grade continues to give attention to the sources of common things and to everyday processes. You and your child can investigate questions such as “Why do magnets pick up some metals and not others?” “How does electricity travel?” “How are movies made?”
- Inquire about the local ecosystem. What does your child know about the food chain and how species of birds, fish, insects and mammals fit into it? Visit a nearby wetlands or preserved area.

Internet Resources for Grade Six Students

This website contains interactive online science games as well as other interactive science activities." - From Woodlands Junior School, U.K. - <http://www.woodlands-junior.kent.sch.uk/revision/Science/index.html>

Click on to the various buttons to find out everything about rocks and minerals including WickED science stuff and the rock cycle. Play this game and learn.

www.teachers.ash.org.au/jmresources/rocks/links.html

Clicking on a game link will open a new window about cells and life processes and living things.

www.gamequarium.com/cells.html

A great Kids' Web Classroom including information and games on organisms and their needs. Don't forget to take a look at Roach World and the Yucky Fun and games.

www.keystone.fi.edu/cc_org/orgkids.shtml

Many, many science games appropriate for students in grade six science class.

www.cs.virginia.edu/~apr5w/

This is an educational directory that provides a variety of resources about physical science and physical science games.

http://cybersleuth-kids.com/sleuth/Science/Physical_Science/



Grade Seven Tips and Activities for Parents

- You and your child can investigate questions such as "Where does our water come from?" "What is added to make it safe for drinking?" "What is the source of our electricity?" "How is electricity stored?"
- Discuss with your child the different forms and sources of energy in your home and community. Identify if it is electrical, mechanical, chemical, thermal, nuclear, radiant or acoustic.
- Have your child name the tools and/or instruments in your home that could be used for a scientific investigation or experiment. Discuss the safety of using tools.
- Inquire about the local ecosystem. What does your child know about the food chain and how species of birds, fish, insects and mammals fit into it?
- Visit a local pond, stream, river or lake. What steps does your community or state take to preserve these sources of water?
- Identify the environmental concerns of economic development in your community, county or state.

Internet Resources for Grade Seven Students

Interested in science? Check out these pages.

www.kidport.com/grade7/science/ScienceIndex.htm

Here are some really cool games for the 7th-12th grade student. Topics include Science, Health, Technology, Visual Arts, Language Arts, Brain Games, Mathematics, and Social Studies. This is really a great site!

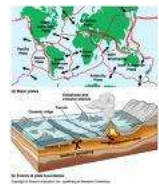
www.uen.org/7-12interactives/

Includes a comprehensive science review for grades 3 -8 from EOC Biology.

www.iq.poquoson.org/studysubjectareascience.html

The Tree Game (Grades 6 and 7). Grade 7 science students will analyze qualitative data, and develop and assess results.
www.learnalberta.ca/Browse.aspx?View=GradeSubject&Division=3&Grade=7&Subject=Science&Titl

7th grade science skills page for learning about the water cycle.
www.internet4classrooms.com/skills_7th_science.htm



Grade Eight Tips and Activities for Parents

- Schedule an evening gathering of students and parents to observe the night sky. Acquire the use of a telescope through a friend, school or local college. Communicate with the teacher to access books and charts to guide this activity.
- Identify the landforms in your community through observations and library research.
- Create a family tree and identify common physical characteristics of family members. Identify occupations of family members that involved any aspect of science.
- Learn about an individual in your community or state who is known for their skills in science and technology.

Internet Resources for Grade Eight Students

All games are 170 - 350K. It takes around 1 minute to load one game on a 56K. Students are asked to the location of the animal that best represents that body part.

www.ca.uky.edu/agripedia/agmania/Interactive/

This site has all sorts of educational games about outer space and astronomy from the BBC.

<http://www.bbc.co.uk/science/space/playspace/games.shtml>

These are not really games, but interactive science learning demonstrations using Shockwave and PBS' Nova program content. - illustrated - from pbs.org -

<http://www.pbs.org/wgbh/nova/hotscience/>

Here are some really cool games for the 7th-12th grade student. Topics include Science, Health, Technology, Visual Arts, Language Arts, Brain Games, Mathematics, and Social Studies. This is really a great site!

www.uen.org/7-12interactives/

If your interested in science you will want to check out these pages. www.kidport.com/Grade8/Science/ScienceIndex.htm

This site has many science games for the 8th grade student. www.franklin.ma.us/auto/schools/sullivan/grade8/vanover/scien/cefun/default.htm

The SMART Consortium

Formed in 1998, the SMART Consortium represents the collective efforts of more than 50 public school districts in four northeast Ohio counties (Cuyahoga, Lake, Lorain, and Geauga) to foster continuous, dramatic improvement in K-12 science and mathematics teaching and learning.

At present, 55 northeast Ohio school districts are members of SMART. The K-12 population in these districts ranges from 620 to 68,000 students. Members include 3 large city, 9 urban, 34 suburban, 4 rural, and 2 joint vocational districts, as well as 3 Educational Service Centers. Minority students constitute approximately 40 percent of the Consortium's total student population.

SMART is a member-driven, member-governed organization that consists of school districts, educational service centers and private, civic, and government/public sector organizations. Its Management Council consists of the superintendents of SMART's member school districts, as well as representatives of partnering organizations and the regional business community. An Executive Committee directs the work of the consortium at the senior/policy level.

SMART's momentum derives from the strong commitment of its members to improving mathematics and science teaching and learning. SMART has developed a compelling vision and has adopted stretch goals, recommendations and implementation strategies that will enable K-12 public schools to continue to improve mathematics and science teaching and learning in a consistent, sustained, stable manner. Through SMART, school districts can leverage the risks inherent in systemic change while maximizing the results.

The SMART Consortium

Executive Committee Members

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Harry Eastridge, Superintendent, Cuyahoga County ESC
Joffrey Jones, Superintendent, Euclid City Schools
Linda Williams, Superintendent, Lake County ESC
David Estrop, Superintendent, Lakewood City Schools
Thomas Rockwell, Superintendent, Lorain County ESC
William Hiller, Executive Director, Martha Holden Jennings Foundation
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