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THE COLLEGE OF EDUCATION

In the Spotlight

UNIVERSITY OF MAINE

Everyday Life Is Full of 'Science Moments' to Teach and Share with Children

by Mary Bird and Herman Weller

The backpack is bought, the new sneakers are broken in, and carpools for scouts and soccer are planned. Now, it's time to think about the real significance of a new school year.

The routine business of getting back to school is the easy part. It's much more challenging to figure out how to support children's efforts to learn more about the world and their place in it, and to hone the new skills they are acquiring daily. Even if you have felt comfortable reading with your child or helping with math homework in the past, chances are that you, like the vast majority of American parents, feel stymied when it comes to science.

So what can you do to broaden and deepen your child's learning of science? A lot, and you don't need to be an expert or spend enormous sums of cash. For science, as for any school subject, home support falls into three general categories: time, space and resources.

Time for Science

Just as reading, writing and mathematics are important elements of everyone's day-to-day existence, science fits into the human calendar as well. It's not limited to 40 minutes per day in the classroom, or a half hour of homework at night. The trick is to spot the "science moments" in your family's day and make the most of them.

- Did Dad wake up with a runny nose this morning? What a perfect opportunity to conduct research on mucus - a favorite topic of eight-year-olds!
- Is that insect really going to be able to cling to your windshield all the way to school? At what speed does it lose its grip?
- What is the green furry stuff growing on the sandwich that's been buried for a week at the bottom of the backpack?

When children are little, pausing to consider such curiosities is a natural part of the process of families learning together. The joy of such moments can - and should - continue right through their school lives.

Science moments can be haphazard in occurrence. Amidst all the complexities of a school year schedule, try to find more formal time for science explorations. One family makes a point of staying up late for a stroll each time the moon is full. Another, up before dawn for Saturday hockey, uses the post-game hour for an early-morning hike -

even in the dark of winter. If bedtime reading is still a tradition for your school-age children, try scheduling a science book between "Goose Bumps" thrillers. Sharks, tornadoes and whales are best-selling science topics, but there are hundreds of others to accommodate different tastes.

Beyond the clock and calendar lies a more abstract and urgent notion of time. Children need time to wrestle with ideas, to pursue their questions, to simply think. When a child spends an hour with a shell collection or a construction set, it is time spent observing, comparing, making choices, solving problems, inventing and discovering.

Such "play" might seem unstructured, but it is important work. Concentrate on the odd pink streak inside that shell, or the precarious balance of a tower. Help your child savor the opportunity - and cultivate the ability - to focus. It will pay dividends in every area of school and home life.

Space for Science

Space for science at home can be made in many ways. It might be a tabletop exhibit of collections or works in progress - experiments, inventions or a special school project. It can be a bulletin board for posting the latest question under investigation, a nature sketch or technical illustration. A child who seems to be "wasting" time drawing likenesses of favorite superhero action figures is actually learning a great deal about careful observation and representation - skills that are essential to the scientific process. Celebrate this achievement, and help your child place it in a larger context by posting the art with other works of merit.

When planning study space for science, as for any subject, it's important to consider your child's personality and your family's customs. Every child needs space to work quietly, without interruption. Every child also benefits from family engagement in school studies. Some households accommodate these two needs by providing supervised study time at the kitchen table, along with quiet reading or project time somewhere else in the home.

Aside from physical facilities, space for science has an abstract, intellectual dimension. Children need space to think for themselves, to ask questions and seek their own answers. Sometimes it is hard to stand back and let a child grapple with an idea, especially when we adults know the answer or have an encyclopedia nearby. But puzzling things out is good exercise for the brain, and frustration can provide fine rewards, as all major scientific discoverers can attest.

The key is to be sensitive to your child's individual borderline between productive frustration and disaster. Know when to stand back, and when to rush in.

Resources for Science

Resources can be as costly as a fine microscope or as inexpensive as a library card, as near as your refrigerator or as exotic as a distant galaxy. The trick is to recognize resources when you spot them and to be alert to your child's individual interests, needs and capabilities.

- A young child learning to recognize pattern and symmetry will find preparation of a simple fruit salad a rich resource. As each piece of fruit is cut crosswise or lengthwise, arrangement of sections or seeds tell an important mathematical - and ecological - story. Planting the seeds teaches another lesson.
- A broken alarm clock becomes an opportunity for dissection and study of gears.

- A birdfeeder invites study of populations and behavior.
- A bathroom scale or a height chart teaches patterns of growth.

- A week-old birthday balloon challenges understanding of gases and permeability of membranes.

Check with your child's teacher to find out about the science curriculum, then scout around your home, yard or community for useful materials, sites and people to help you expand on your child's school experience.

The road crew up the street is using some very interesting equipment, and turning up some beautiful rocks. The woman on the corner knows all about cats. Aunt Lucy is a plumber. Yesterday's paper had an article on changing leaves. Once you start thinking, the list of resources will be endless.

Perhaps the best resource to support a child's science learning is the child that still exists inside each adult. By slowing down, taking time to listen to children's ideas, patiently appreciating the struggle for knowledge, and being willing to play to learn, parents open themselves to many rich opportunities for exploration they can share with their children. Every child is born to investigate the world. Once a child starts school, we often forget that those investigations can - and should - continue to go on within the family. It doesn't take a lot of scientific expertise or money to provide a safe, stimulating environment where children have the time, space and resources to find out about themselves and their place in the world. All it takes is open eyes, open ears and an open heart.

(Mary Bird, instructor, and Herman Weller, associate professor, teach science education at the University of Maine College of Education)

To find out more about what families can do together, read **Helping Your Child Learn Science**, by Nancy Paulu with Margery Martin, published by the U.S. Department of Education Office of Educational Research and Improvement, GPO stock #065-000-00520-4

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