



CONNECTIONS

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SCIENCE AND LIFE

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Science and Life

Gregory Grambo

The bases are loaded. Mary comes up to bat. Her stance at the plate, the way she holds the bat, and ultimately the way she swings it are all controlled by scientific principles. Science plays an important role in practically all activities that students engage in daily. The way mouthwash reacts to germs, how the TV works, the muscles we use to stand and turn on the TV, how chalk breaks off and sticks to the blackboard, creating lines and words—these are just a few of the many ways that science impacts upon children's lives.

Lots of things are taken for granted by children and adults alike. Making students aware of the scientific principles behind the various aspects of their lives is something I have been doing for a long time.

This year I have had opportunity to work on projects with six teachers through the federal Magnet Schools Assistance Program grant. Although I have always had my students work in groups doing hands-on experiments, this year the small-group work gave a new one-on-one dimension to science teaching that I had never explored before. As a result, I've developed several new science units geared toward children working cooperatively.

Riding High

Most children love amusement and theme parks. Utilizing the natural link between what children love to do and what they want to learn more about, I have tried to capture these ideas and experiences in a unit that deals with the scientific principles behind the workings of amusement park rides. Together we explore such ideas as

how gravity affects the roller coaster and how gears are used to turn the carousel. At present, we have several videotapes at our school dealing with these principles. I felt, however, that a lecture from a ride designer or a trip to a shop where rides are actually made would significantly enhance this unit for the students.

Drawing What You See

Have you ever wondered why some people can draw and why others feel they cannot? Coordination of the hand and eye gives one the ability to draw. The brain's insistence on picture comparison between what is drawn and idealistic images filed in the brain cause some people to feel that they cannot draw. In another unit I developed, students learn to draw by understanding the science of brain functions and how these can interfere with their brain's influence and ultimately enable them to draw what they see.

Detective Stories

Police make arrests and help maintain order in our society. And science plays an increasingly important role in the collection of evidence and the conviction of criminals.

Observation skills are the key to helping police to sort and identify items collected. Through a fingerprinting unit I have written, students develop their observation skills while learning the sciences the police use in fingerprinting. In this unit, students become aware of and learn to identify the major types of fingerprints. They learn to detect and lift latent prints, and to match fingerprints. The Great Powder Puzzle helps children understand that there are many differences

between objects and that there are ways of telling things apart. In this set of experiments, the task students have to accomplish is to tell apart five white powders, so that if given a sample of any of these powders mixed together, they could identify what powders were put into the mixture. These qualitative analysis skills help police scientists to identify makeup, car paints, and other chemical compounds left behind at the scene of a crime.

Elections, Doctors, Maps

Other activities worked on this year were unit projects that involved several classes on a core unit working in small groups in the same room at the same time. The first project centered around the 1992 presidential election. Ken Male and I had the children do research on the environmental issues presented by all the candidates and organize their data into a paper to be shared with the class. In another project on Colonial America, we explored the concept of the type of medicine doctors used during this time period. Again students worked in groups, under the direction of Fred Schild and myself, to grind herbs to make medicines. Experiments even showed how to put in stitches. Other groups of students researched geographical regions on Colonial America, and through the math concepts of scale taught by Lew McNeece, made maps and then models of villages and towns that could have functioned in their chosen region of the country.

The Einstein Times

As educators and observers of the business world, we have observed the growth of the role technology and sci-

Adventures in Science! Students Kerri Harris and Claudia Calderon (Class 7-249) with teacher Greg Grambo.



ence play in society. Computer technology, in particular, has become much more available to all of us and as a result has brought us into the space age. Computers are used in supermarkets to check out merchandise. They help run automobiles and are the heart of every child's video game system.

As technology takes a more active role in our society, so it should with our children. Science teachers are the catalysts who spark awareness and ignite the desire in children to investigate new technology. To help bring this about, we've developed a school science newspaper called *The Einstein Times*, which the students themselves write, edit, word-process, and publish. Working on this paper not only helps them share their knowledge of science with their peers, but also builds their written-communication skills and enhances their self esteem. *The Einstein Times* ties creativity, science learning, verbal and written language, and the students' high energy levels into a vehicle that drives the educational engine.