



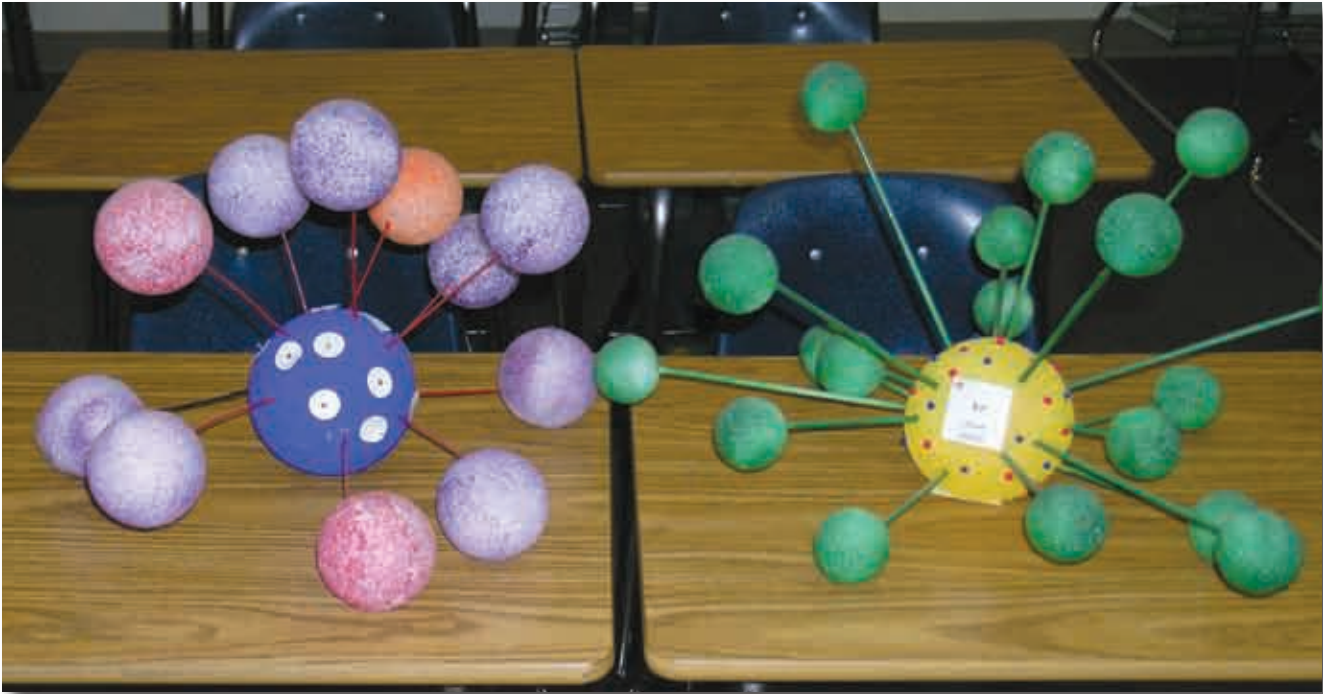
No portion of this article may be reproduced without  
express written permission of Style Publishing Group, LLC.  
©2007 • All rights reserved.



Style Publishing Group  
P.O. Box 1676  
Frisco, Texas 75034  
Phone: 972.335.1181  
Toll Free: 877.781.7067  
Fax: 214.722.2313

E-mail: [info@friscostyle.com](mailto:info@friscostyle.com)  
Web: [www.friscostyle.com](http://www.friscostyle.com)

**Ad Sales: (972) 335-1306**



Middle School Science Projects

photo by Andy Johnson

## Frisco ISD Science: Learning Through Discovery

By Debbie Vallejo

A CARPENTER, A SCHOOLTEACHER AND A SCIENTIST were traveling by train through Scotland when they saw a black sheep through the window of the train.

“Aha,” said the carpenter with a smile, “I see that Scottish sheep are black.”

“Hmm,” said the schoolteacher, “You mean that some Scottish sheep are black.”

“No,” said the scientist glumly, “All we know is that there is at least one sheep in Scotland and that at least one side of that one sheep is black.”

Richard Feynman, a Nobel-prize-winning physicist, described science as a “culture of doubt.” Definitions of science include words such as “observation,” “discovery,” “investigation,” and “patterns.” To students beginning the school year in Frisco Independent School District (FISD), science means classes full of tactile, hands-on projects. It means fun and it means work.

How do teachers make science appealing? How do they tap into students’ natural curiosity and drive to

discover? Frisco is utilizing all kinds of resources and opportunities to create a science program rich in content and practical experience. Lisa Barton is the science department head for Centennial High School. “All good science programs provide hands-on activities and labs for their science students,” explains Barton. “It sparks their interest in science as well as their imagination. I hope there is not a science teacher left in the state that thinks that simply doing bookwork is teaching science. Great teachers want students to *do* science.”

One of the more popular projects is assigned at the middle school level. Kids are required to take a mousetrap and build a vehicle out of it. A competition is held in class where the students demonstrate the outcome of their work. The vehicle that passes certain tests with the best score, wins. Teachers require students to complete a lab write-up explaining how they built the vehicle, their starting point, research, steps taken to complete the project and so on.

Another popular project is the leaf-

blower hovercraft. High school physics students create a hovercraft using a leaf blower and plywood. This project builds students’ knowledge of technology, air, friction and a host of other engineering concepts. The students present the finished product to the class and complete a write-up explaining the steps taken to create the hovercraft and any snags encountered along the way.

---

“I hope there is not a science teacher left in the state that thinks that simply doing bookwork is teaching science.”

---

The Crime Scene Investigation (CSI) project is also a favorite among students. Integrated Physics and Chemistry (IPC)

classes spend a month on a CSI unit. "Students solve one of several crimes," says Anthony Chavez, the science department head for Frisco High School. "They are given clues such as hair samples, blood samples, testimonies, pictures and other items." Through the use of science experiments, such as blood-type testing and handwriting evaluation, the students deduce who committed the crime. The head of the CSI unit for the Frisco Police Department gives a lecture to all the IPC students as part of the unit.

Teachers are constantly adding new and creative ways to teach concepts. In Advanced Placement Physics last year an old junk car was purchased along with some tools and supplies. Students worked to modify the car and test the end result. For example, students removed the old brake pads, tested their coefficient of friction, installed new brake pads and measured how friction on the pads directly affected braking distance. These values were later graphed and evaluated.

"There are many interesting and beneficial programs that Frisco ISD students participate in through science courses," says Donnie Wiseman, Science Coordinator for Fisd Secondary Schools. Many schools in Frisco participate in math and science teams affiliated with the Texas Math and Science Coaches Association (TMSCA). Students work with teachers throughout the year and then are able to compete for individual and team awards at the UIL district, regional and state levels.

Students may also elect to participate in Winston Science, a 17-day event filled with competitions and demonstrations. Some of the competitions include Helium Balloon Competition, Human Powered Vehicle, Numbers Competition, How In the World Does it Work Competition, Leaf-blower Hovercraft and more.

Participants of Winston Science attend presentations and work with some of the leading scientists in the state.

Participants of Science Fair select a topic or problem, make the hypothesis, create experiments and then draw conclusions based on the data. Students create a display and write a report on their topic, then use the

curriculum. Having projects built into the curriculum, rather than picked at random, has allowed teachers and students to create hands-on activities related to the topic they are currently studying. "Students have displayed a better sense of ownership for their learning across multiple science topics, rather than one isolated

concept that may or may not parallel course material," says Wiseman.

Science Fair or no Science Fair, all the projects and activities take a fair amount of work. In the midst of all the labs, research, write-ups and presentations, how do students keep from feeling over-

whelmed? Frisco ISD teachers use teaming and other methods of communication to balance projects and homework in an effort to avoid overwhelming students. In addition, guidelines are provided for each project, teachers monitor progress as needed, and tutoring is available for students needing a little more TLC.

Still, parents may wonder if ALL the work is really necessary. "All of the projects assigned are aligned with curriculum that teaches the Texas Essential Knowledge and Skills (TEKS)," says Wiseman. "These are concepts we have to get across to our kids."

Whatever your personal feeling toward the subject of science, it seems that new and improved methods of teaching the information allow even the less scientifically inclined to enjoy the process of discovery.

*Debbie Vallejo is a freelance writer living in Frisco.*



Middle School Science Project

photo by Andy Johnson

end result to make presentations in local, state and national competitions. Frisco ISD, thus far, has opted out of participating in Science Fair. "Frisco, like many other school districts, moved away from the traditional science fair approach to increase instruction over a broader spectrum," explains Wiseman. Students still complete lengthy science projects, but the projects are simply spread over a course of instruction by aligning them with curriculum.

"Science Fair has become too unfair of a practice," says Chavez. "Students with financial means tend to purchase expensive supplies or hire tutors for that specific purpose." Chavez also feels that parents play too large of a role in choosing the topic and performing the experiments and believes "the Internet is jam-packed with science fair project ideas and completed projects ready to be downloaded."

Instead, Frisco students have multiple opportunities to create, build and apply science concepts specified by the state