



Building rockets and shooting them off in the school's neighborhood is just one of the aerodynamics exercises at Morningside Middle School that is a hit with the students during the spring.

When Mike Smith, technology lab teacher at Morningside Middle School in Fort Worth, got ready to go to college he told his father he wanted to be a teacher. His father, who owned his own banking and car businesses and didn't like the idea, told Mike he'd pay him as much as he would make teaching to work for him "and you won't have to go to school."

Mike didn't take his father's advice but did major in science in college, and worked in the family business for several years before deciding to live his dream to teach in public schools. He returned to college and got a bachelor's degree in industrial technology before starting to teach at Morningside. When he graduated from college, he was told the district would switch from traditional industrial arts labs to Tech Lab 2000 education. "I didn't understand what a Tech Lab 2000 was after they told

Middle Schools Stress Problem Solving, Creative Thinking and Team Communication

me," recalled Smith.

"They said they were going to put in a technology lab and I thought, 'That's fine - I can adapt to anything.' Then they started showing us pictures of what the labs would look like and what we were going to be doing and I thought, 'Now what do we do!'"

Today Smith thinks he's found heaven, and he just may teach forever because he's gone from being a teacher in a standard classroom to being a facilitator for 24 students in teams of two at 12 work stations, each independent of each other, in six 45-minute classes a day.

These middle school students learn to use a myriad of hardware and software tools. For most middle students, driving a car is something they must wait for - but not in Mike

Smith's classroom. At one of the students' favorite workstations, students design and drive a car or glider on the computer (using *Car Builder*, *CO² Powered Cars*, *Glidepath*, and *Flight Simulator*). They then measure how fast their car is moving (some travel at 90 - 140 mph on a 66 foot "track"!), test its aerodynamics efficiency using an internal computer-driven wind tunnel, and then decide if they want to change its design to improve its performance.

Using desktop publishing tools (*Pagemaker* and *Ready Set Go* software packages) at the publishing workstation, they create the lay-out for a two-page newsletter using graphics from clip art packages and a CD-ROM. By telecommunicating

using computers, modems, and faxes, students at two different middle school campuses work on a newsletter together. They transmit text and graphics to each other over networked computers that "talk" to each other, thanks to cables that link together many Fort Worth schools.

At other workstations, students apply their science and math skills as they interact with the technologies. Some students busily draw to scale multi-view designs of their classroom, school, or house using computer-aided design software (*Claris CAD* and *Generic CAD*) while their classmates

are experimenting with growing plants without dirt at hydroponic workstations. Using satellite communication (and a program called *Satellite Kits*), these students are amazed when they learn they can transmit *music*

via a light beam from one room to another!

Flying airplanes and rockets - this forms the centerpiece of activity at another workstation. Students busily test airplane wingshapes using aerodynamic wind tunnel and stress analyzer technologies. They then build airplanes and rockets from kits like *Whitewings* using card stock or plastics - and then launch them to heights of 1,200 to 1,500 feet!

"There's not another class around that every 12 weeks everything changes. There's not another class around that has 12 different things going on at one time. So it keeps your interest up and keeps your brain going because you have to get in and figure out this stuff with the kids.

"One of the hardest things I had to

The district switched from traditional industrial arts to "Tech Lab 2000."
