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# Students Gear Up For Jobs

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Derek Haberman is 17 and has been working for what seems like hours on an horrific contraption replete with thousands of tiny wires. He clearly does not like to be interrupted.

Reporters who majored in English and journalism should probably not do stories on electronics. It's scary, being confronted with all these tubes and wires when you're used to simple type.

As any devotee of Lou Grant knows, of course, even the news business has gone electronic. No longer are stories written, typed, glued, blue-penciled and set in glorious print. They are "fed," like this one, into a glowing green-eyed Cyclops, which presumably feeds it to a substantially larger friend humming ominously in a very cold room down the hall.

Newspapers, then, like the rest of the world, are slaves to electricity. The juice goes, and the newspaper with it.

So if you major in English and journalism these days, you'd best throw in a few semesters of basic electricity, with a helpful smattering of computers. If you can fit it in, that is, between high school graduation requirements and college prep.

Newspaper people being a stubborn lot, they resisted technology. In the early days of electric typewriters, reporters were known to throw IBM Selectrics down stairwells. Even now, they nearly always swear at the computers.

Which would probably come as a great surprise to Derek Haberman and the other students in Jim Carney's electronics class at Marconi Technical Center. Because they clearly like all those tubes and wires, those mainstays of the new technology.

The difference between Jim Car-



Austin Quilty cuts metal in class at El Camino.

ney's students and the would-be journalists of today may well be that the electronics majors will find work in their chosen field when they graduate.

Haberman explains it easily. The students in Carney's electronics class do not waste words, or time. There is a definite sense of purpose here — of students doing something they like and want to learn.

Derek is working on a paper punch readout for a computer. He has been interested in electronics since he was 12, and this is his second year in the Marconi Tech program. A senior at Casa Robles High School, he plans to go on to a highly touted electronics program at American River College

— where Carney's "advanced placement" students are allowed to obtain as much as eight units of college electronics credit, including three units of math, based on their high school training.

For their trouble, the electronics students — and the kids studying computers down the hall at Marconi Tech — receive no academic credit in science or math, because electronics and computer training are considered vocational education or industrial arts, and therefore not part of the traditional three Rs.

And certainly not part of college prep.

As the San Juan Unified School District board of education wrestles with graduation requirements once again tonight, board members face the ire of San Juan industrial arts teachers effectively organized for

— over —



San Juan High student Patti Little works on a kit tester.

the first time in anybody's memory.

Last week, the board removed a four-year English requirement which was passed, but never actually implemented, by a previous board noted for intense rivalries and sometimes bizarre decisions. The industrial arts/vocational education instructors turned out in force and supported last week's move, because it meant their students would have more elective time, which is where vocational education is classified.

"Many students are not college-bound," El Camino High School vocational education teacher Gary Erickson told the board. "For such students, high school exposure to industrial, business or trade-oriented courses is much more relevant than the extra English and math courses. There should be no stigma attached to the high school graduate who chooses not to go through a four-year college curriculum, but rather chooses a trade.

"As a matter of fact, many blue collar jobs pay higher than 'professional' jobs."

For college-bound students, Erickson said, "Industrial education programs are becoming increasingly popular with those students who

and just want some introductory manual training skills for use in their day-to-day living."

Tonight, during a special meeting in district headquarters, the board will face a recommendation by Superintendent Fred Stewart that the district's two-year science requirement remain — a recommendation opposed by vocational education teachers and viewed with some ambivalence by science teachers who question the wisdom of forcing two years of high school science down the craws of recalcitrant students.

Earlier, the district's own graduation requirement review committee recommended reducing the science requirement to one year, with a proviso that a full study be made of elementary and secondary science education in the district.

Stewart advocates keeping the two-year science requirement until the full study can be completed. No such study of science curriculum has been made in the district. It is in response to the growing concern of educators that American science and math

education in the public schools is outdated and falling far short of that in other countries — notably technology-minded Japan.

Educators are particularly concerned about the lack of "relevance" in science and math curricula, and about the sharp decline in student interest during the middle or junior high school years.

David Hammond, the San Juan district's program specialist in science and math and a former science teacher, admitted to "mixed feelings" about the two-year science requirement for students not interested in science. But, he "wouldn't be surprised" if certain vocational programs with strong math and science emphasis — such as electronics or agriculture — are allowed in lieu of traditional science courses to satisfy a portion of the two-year requirement.

At Marconi Tech, students in Jim Carney's electronics class say they've learned volumes about math and science in the circuitry of a stereo. More important, they say they understand the application of mathematical and scientific principles. Many are taking advanced math and science in their regular high school curriculum.

"There is a great deal of math involved here," says Carney. "Yet, when educators talk about math and science, they leave us out."

Ron Hackett, San Juan's vocational education director, says students who go on to complete American River College's two-year electronics program — to which Carney's curriculum is heavily geared — receive an average of two job offers each at a starting salary of about \$14,000 annually.

The students in Carney's class are acutely aware of that fact; they know, too, about the expected burgeoning of the electronics industry in the Roseville area, and about the shortage of high-technology employees to fill those jobs.

"This seems to be the logical thing to do," said Carney student Whitney Gray, 16, who is in his second year at Marconi Tech and is interested in something he calls digital circuitry — a concept the reporter found difficult to grasp. "Electronics," Gray offered helpfully, "is a lot of simple concepts connected by a lot of complicated formulas."

Patti Little, 18, who used to be a yell leader and is taking trigonometry in her regular curriculum at San Juan High School, took auto shop last year — and liked the electronics part of it best. "I really like math," say Patti, who wants to be an engineer. "and I want to be in a field that has a lot of math. It's challenging. I don't get bored."

Kevin Adams, 18, is building an alarm security unit he says a friend has offered to buy for \$500. He says he uses more math in his electronics class than he does in physics. Like many of the kids in Carney's class, Kevin says he's been doing this sort of thing since he was small. He wants to go into business for himself after college, "engineering my own stuff" — mainly medical testing equipment.

"It is," says Adams authoritatively, "a field in great demand."