



Education

\$1.2-million grant to train science teachers

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PORTSMOUTH — In the darkened auditorium of Portsmouth High School, students and teachers joined Governor Carcieri yesterday in watching a computer simulation of the way heat affects atoms.

The atoms changed from white to red as they gyrated in larger and larger arcs, going from a solid substance, to a liquid, and then becoming a gas.

Carcieri announced a \$1.2-million grant from the National Science Foundation that will train 100 high school science teachers to use computer simulations like this one as tools in the classroom, advancing the governor's "Physics First" initiative.

"This is big-time stuff we're talking about," said Peter McWalters, state commissioner of education.

The simulations will enable students to "go in and start 'touching,' if you will, the concepts essential to physics," McWalters said.

Carcieri said the grant will provide 120 hours of training over three years to each of 100 teachers, who will in turn reach an estimated 10,000 students, bringing "real world experiences into the classroom."

In addition, the grant will allow 50 students from six Physics First high schools to participate in a summer camp at Rhode Island College that will incorporate the computerized molecular modeling approach not only in physics but in chemistry and biology.

Carcieri said "the whole idea is to get a little excitement in science and physics" and encourage more Rhode Island schoolchildren to pursue careers in those fields, making the state more competitive economically.

"A lot of people came together to make this a reality," he said.

The grant is "putting us on the map. It's a key to the future of our state," the governor said.

Physics First, a pilot program begun last year in Portsmouth, East Providence, Cranston West, Lincoln, Mount Pleasant and Woonsocket high schools, reorders science instruction into what educators say is a

logical sequence.

Mastering the principles of physics in the freshman year is critical to understanding modern chemistry and biology in the sophomore and junior years and in building a strong foundation that will encourage more students to pursue advanced scientific study, educators say.

But “it’s not sufficient to put physics first and teach the same old stuff,” said Robert Tinker, who helped the state seek the foundation grant.

The new order must also modernize the content of high school science courses, said Tinker, president of the Concord Consortium, a nonprofit organization based in Concord, Mass. which aims to harness advances in information technology to improve practices in the classroom.

The Concord Consortium developed the molecular modeling software that will be used in implementing the new curriculum. Through computer simulation, it conveys an intuitive understanding of principles that are so abstract that they are generally not taught at the high school level, he said.

“We are slowly learning in education that you can learn concepts without all the formalism,” Tinker said as he drew the attention of his audience to a projection screen showing a multicolored computerized model of a hemoglobin molecule, which carries oxygen through the blood.

While the software is already available — free — to anyone with a computer and access to the Internet, the foundation grant will train teachers to use it as part of a cohesive curriculum, starting with the six high schools involved in the Physics First initiative.

And McWalters pointed out that the 120 hours of instruction devoted to retraining each teacher acknowledges research that shows it takes that long to change day-to-day classroom practices; much more effort than “changing books and offering a few workshops.”

Carcieri said the state Department of Education provided the catalyst for the collaboration necessary to secure the grant.

The Concord Consortium wrote the proposal with the East Bay Collaborative, which will also train the teachers, he said.

The training will take place at Rhode Island College, which established a professional development center for science and technology teachers last year, Carcieri said.

The center, supported by a grant from the General Assembly, is part of the Physics First initiative, according to a Carcieri spokeswoman.

The molecular modeling software is available on the Web site of the Concord Consortium, www.concord.org.

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