

Science courses nearly extinct in elementary grades, study finds

Nanette Asimov, Chronicle Staff Writer

Thursday, October 25, 2007

The third-graders looked puzzled when asked what they liked best about science. No answer.

OK, then, next question: "What *is* science?" a visitor asked the children in a hallway at Bessie Carmichael Elementary School in San Francisco.

"Science is like art," said Manuel, 7, who let that cryptic response hang in the air as he ducked away.

He might have meant that both can open the heart to beauty. Or maybe he was saying that science, like art, is something students don't get much of these days in elementary school.

If it were the latter, a new survey of 923 Bay Area elementary school teachers would agree.

About 80 percent of those teachers said they spent less than an hour each week teaching science, according to researchers from the Lawrence Hall of Science at UC Berkeley and from WestEd, an education think tank based in San Francisco.

In contrast, a national study seven years ago found elementary school science instruction averaged more than two hours per week, said Rena Dorph, the lead researcher on the new study.

"It's alarming because it's a very short amount of time per week dedicated to a subject that's considered a core subject in schools," said Dorph, who is director of the Center for Research, Evaluation and Assessment at the Lawrence Hall of Science.

Understanding science helps children learn to think and solve problems while questioning the world around them, Dorph said.

There is also evidence that people who go into scientific fields generally learned to love science as children, she said.

And as a practical matter, colleges require applicants to have taken science in high school.

"And how are you going to understand high school science if you haven't had it before fifth grade?" Dorph asked.

Her research team - reviewing responses from more than 80 Bay Area school districts as well as the teachers - made other sobering findings about elementary science instruction in Bay Area schools:

-- About 16 percent of the elementary teachers said they spent no time on science at all. (Most taught at schools that had missed the reading and math benchmarks of No Child Left Behind and were trying to catch up.)

-- Most kindergarten to fifth-grade students typically had science instruction no more than twice a week.

-- Ten times as many teachers said they felt unprepared to teach science (41 percent) than felt unprepared to teach math (4 percent) or reading (4 percent).

-- Fewer than half of Bay Area fifth-graders (47 percent) scored at grade level or above on last spring's California Standards Test in science. (Only fifth-graders are tested in science at the elementary level.)

"The demands of No Child Left Behind have made it almost impossible to devote enough time to science," said Melinda Dart, a fourth-grade teacher at Wilson Elementary School in Daly City's Jefferson Elementary District.

Dart was not among the anonymous hundreds surveyed by the researchers. But she agrees with the findings.

Dart is planning a field trip to the Exploratorium in December and is preparing her students by teaching them about electricity and magnets. In one lesson, she had them rub balloons with various materials so they would see the effects of positive and negative charges.

But she has had time for only three 30-minute science lessons since the semester began.

"It's very rushed," she said. "In order to develop a scientific way of thinking, the thing you need most is time. And in our test-driven schools today, time for experimenting and exploring is what we have the least of."

In San Francisco, Principal Jeffrey Burgos of Bessie Carmichael Elementary agreed - but said teachers can find ways to be creative beyond the limited time already set aside for science.

"You don't have to be a rocket scientist to figure out that you can't get everything into one day," which is about five hours of instructional time, he said.

So you shoehorn it in, sneaking science into reading and math lessons.

Second-grade teacher Bernadette Ison is a master at that.

Her classroom at Bessie Carmichael is filled with children who are learning English and who come from lower-income families - just the kind of challenges that policymakers say is why basic reading

and math should trump science and social studies.

"So we integrate science into our literacy," Ison said. "Our reading curriculum is called "Nature Walk," and we have a theme called "Animals."

On Friday, the students will take a nature walk around Stow Lake in Golden Gate Park. Afterward, they'll write an essay on what they saw and learned, Ison said.

This year, the California Board of Education has purchased new elementary science textbooks and materials that are just now reaching classrooms.

The reviews have been mixed. Some teachers said the materials were clearer than what they replaced, though they covered less ground.

Others said they were overwhelming. One teacher counted 1,199 pages in the teachers' edition science workbooks, as well as flip charts, four large boxes of materials, vocabulary and concept cards, CDs and DVDs.

Perhaps it's no wonder that teachers have little time to teach it all. They barely have time to learn it themselves.

The other day, the textbook company came to the Jefferson Elementary District in Daly City to show teachers how to use all the new stuff, said third-grade teacher Janet Harrison.

The textbook instructors stayed 90 minutes, Harrison said. And then they were gone.

Got science?

Some of a new study's findings about elementary school science instruction in Bay Area schools:

- 80 percent of teachers say they spend less than an hour each week teaching science.
- 16 percent of the elementary teachers say they teach no science at all.
- Ten times as many teachers say they feel unprepared to teach science than feel unprepared to teach math or reading.
- Fewer than half of Bay Area fifth-graders scored at grade level or above on last spring's California Standards Test in science.

To see the full report, visit www.lawrencehallofscience.org/rea/bayareastudy.

E-mail Nanette Asimov at nasimov@sfchronicle.com.