

OF INTEREST TO TEACHERS

Hands-on Science Is Best, Say Professional Groups

"When U.S. Secretary of Education William J. Bennett called...for a 'revolution' in the way science is taught to elementary-school children, he echoed themes being advanced with increasing urgency by science educators across the country.

"For years, members of the scientific community have warned that early training determines to a large extent a child's desire and ability to tackle more advanced scientific training. But in recent months, the warnings have been accompanied by harsh critiques of elementary-school science—and by programs to improve it. . . .

"Most science educators agree strongly with [Secretary of Education] Bennett's contention that science 'is a way of thinking' and that its teaching must be enlivened to give children a grasp of the scientific method of reasoning and discovery.

"With the Secretary, they call for an end to the heavy reliance on textbooks to teach science. What would stimulate children more—and be more attuned to their needs—are activity-based, 'hands-on' learning programs, they say.

"Kids are turned off to reading out of a science textbook because the words are too hard," said Thomas C. Fitch, professor of science education at Illinois State University. "They don't have the prerequisite understanding to bring meaning out of the printed page." . . .

"Seen only as a laundry list of theorems in a workbook, science can be a bore," wrote Mr. Bennett in *First Lessons*. "But as a 'hands-on' adventure guided by a knowledgeable teacher, it can sweep children up to the excitement of discovery."

"Administrators at a Mesa, Ariz., junior high school provided a dramatic illustration of Mr. Bennett's point several years ago when they inadvertently offered entering 7th graders the choice of continuing with science classes or dropping them for other course options.

"Ninety-six percent of the incoming students who had been in an activity-based elementary science program chose to continue studying science; only 4 percent of the students who had been in textbook-oriented programs chose to continue. . . .

"Only a small number of districts have adopted hands-on programs, even though guides for doing so have existed since the 1960's. . . . The spread of such programs has been hindered by resistance from teachers and administrators. . . . 'Activity programs tend to cost more than textbooks,' said Gus A. Sayer, assistant superintendent of the Weston (Mass.) Public Schools. . . . Many districts, however are finding ways to hold down the cost of materials needed for activity-based programs.

"In Fairfax County, Va., for example, the district

maintains a central materials depository, known as the Instructional Materials Processing Center, where staff members buy some commonly available materials in quantity and build others in-house. . . .

"Changing long-entrenched classroom methods requires a substantial commitment on the part of administrators, many educators noted. [They recommend new methods of teacher training and in-service education.]

"In addition, educators note, school systems need the support of outside institutions, such as science museums and universities, to assist in developing curricula and materials, as well as in training teachers. . . .

"But beyond the problems of training existing teachers are questions about the science training teachers receive before entering the profession. [The NSTA will award certification for elementary teachers meeting minimum requirements—12 college credit hours of science.] Currently, . . . they average 3 credit hours, mostly in the life sciences. . . .

"Perhaps an even larger obstacle to the development of hands-on elementary science programs is the insistence by parents, school officials, and others on measurable results. . . . Standardized tests do not measure what such programs teach.

"We want children to manipulate materials, come to conclusions, and communicate those to others," said George Hein, director of the program-evaluation and research group at the Lesley College Graduate School of Education. "Clearly the tests available don't measure that." . . .

"Rather than abandon tests, Mr. Hein suggested, science educators should develop new ways of evaluating learning, perhaps using writing or drawing instead of multiple-choice exams."—*Education Week*, vol. VI, No. 1, September 17, 1986. Reprinted by permission.

Chemistry Texts Ill-Suited for Average High School Student

"Secondary school chemistry texts have not caught up with the demand to give nonscience students an understanding of science, the head of a chemistry textbook evaluation team has concluded.

"Postsecondary textbooks are being reorganized, he says, but 'the movement toward more descriptive chemistry and more laboratory demonstrations in the classroom is not reflected in most of the available secondary-level chemistry texts.' Glenn Crosby, a chemistry professor at Washington State U., chaired an evaluation project that looked at 31 texts and supplemental materials for high school chemistry classes as part of an ongoing evaluation by the American Assn. for the Advancement of Science. According to Crosby's evidence, chemistry textbooks have become more quantita-

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tive, theoretical and formal. 'Facts have given ground to the exposition of principles and the formulation of laws,' he says.

"Implicit in this approach is the assumption that chemistry is not for everybody, that it is a discipline to be studied only by the elite,' he says. But various education reports have shown concern for 'the generally low level of science literacy in our country.' This means textbooks must put greater emphasis on descriptive chemistry and on laboratory demonstrations in the classroom, he says."—*Education U.S.A.*, April 28, 1986. Reprinted by permission from *Education U.S.A.* Copyright 1986, National School Public Relations Association.

High School Students Taking More Math and Science

"High school students are taking advanced math and science courses at six times the rate of students 20 years ago, and female students have increased their enrollment in the courses at more than twice the rate of males. A report from the College Board says that in 1985 almost 100,000 exams were given in AP math and science courses, compared to 16,500 in 1965. The number of high schools offering math/science AP courses has at least doubled, and in the case of biology, increased fivefold."—*Education U.S.A.*, April 21, 1986. Reprinted by permission from *Education U.S.A.* Copyright 1986, National School Public Relations Association.

Science Education Woes Due to Faults of Many

"Textbooks, lack of supplies, unqualified teachers and inadequate leadership all contribute to making science teaching an 'outrage,' the executive director of the National Science Teachers Assn. charged at . . . NSTA's annual meeting. . . .

"Bill Aldridge said the best science education is through hands-on experiences. However, the nation's schools don't have the supplies, and about 70,000 of the 200,000 high school science teachers are unqualified, he said. . . .

"The NSTA head also blamed the deficiencies on the lack of leadership by principals and administrators, saying their 'scientific illiteracy' leads them to believe science can be taught from a book.

"Almost simultaneously, the National Science Board, the governing body of the National Science Foundation reported 'serious deficiencies' in college-level education in science, math and engineering.

"Areas needing attention, said the report, include laboratory instruction, faculty preparation and courses and curricula. [It called for massive new funding.]

"Aldridge, on the other hand, said with only \$25,000

more per school in science resources and equipment, schools could improve science education greatly by moving away from reliance on textbooks."—*Education U.S.A.*, April 7, 1986. Reprinted by permission from *Education U.S.A.* Copyright 1986, National School Public Relations Association.

Women Account for Half of College Enrollment in U.S., Three Other Nations

"Women now make up at least half of all the students in higher education in Canada, Finland, France, and the United States and at least 40 percent in most other industrialized Western countries, the Organization for Economic Cooperation and Development has reported.

"Enrollment of women is below 40 percent in only four of the organization's 24 member countries—Japan, Luxembourg, Switzerland, and Turkey.

"The study says women have made 'significant inroads' in such traditionally male disciplines as architecture, business administration, and law. But it warns 'there is little reason for complacency' over the status of women in higher education.

"Educational equity between the sexes is still far from being realized,' the report says. "Fewer girls attain the highest levels—for instance the top scholarships or postgraduate degrees. Classes remain sharply divided by sex; in some, a boy is a rarity and vice versa. . . .

"In Canada and the United States, the report says, there is some evidence of progress for women in 'the most solidly male bastions—engineering and the applied sciences.' In Canada, the enrollment of women has risen 11-fold since the early 1970's, and in the United States it has risen 19-fold. Even so, the report notes, 'only one engineering student in 10 is a woman in these countries, and the proportion is still lower in many others.'"—*The Chronicle of Higher Education*, September 17, 1986. Reprinted with permission. Copyright 1986 by *The Chronicle of Higher Education*.

Student Problems Force "Redefinition" of Schools, NEA President Says

"Teachers [are being] forced to deal with unprecedented social problems, NEA President Mary Hatwood Futrell said in a press conference [recently].

"Futrell said educators have been forced to 'redefine our mission' to address six new problems affecting student performance and health. They are dropouts, drug and alcohol abuse, teenage pregnancy, teen depression and suicide, child abuse and eating disorders. . . .

"Discussion of social problems can be integrated into

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the regular curriculum, Futrell said, stressing the need for training teachers in these areas and involving the community in discussing solutions."—*Education U.S.A.*, August 25, 1986. Reprinted by permission from *Education U.S.A.* Copyright 1986, National School Public Relations Association.

PTA Issues Statement on Parental Role

"Responding to what it views as the lack of clear definition in recent state mandates for parental involvement in schooling, the National PTA has for the first time in its 90-year history adopted a statement defining the rights and responsibilities of parents and PTA's for children's education.

"Asserting that 'the primary responsibility for the education of children lies with the family,' the statement says that role encompasses nurturing, instilling a commitment to learning and a regard for self and others, and preparing the child for the school environment, among other tasks. . . .

"A copy may be obtained by sending a stamped, self-addressed envelope to Program Department, National PTA, 700 North Rush Street, Chicago, Ill. 60611."—*Education Week*, vol. VI, No. 1, September 10, 1986. Reprinted by permission.

Information About AIDS and Schools

AIDS: Your Child and the School offers current information on what has been called the most critical health problem of our time. This comprehensive resource guide helps teachers and parents deal effectively with AIDS-related issues in the schools. Information in the volume includes insights from researchers and educators, a listing of regional and local information centers, AIDS hotlines, educational organizations, and a bibliography for further research. To order, send \$5.00 to Robert D. Reed, Publisher, R&E Publishers, P.O. Box 2008, Saratoga, CA 94070.

Price of Independent-School Education Increases 80 Percent Over Past Six Years

"The median tuition for elementary and secondary independent schools—both boarding and day—has risen by roughly 80 percent between 1980-81 and the current school year, an analysis of data collected by the National Association of Independent Schools shows.

"The dramatic increase has been necessary to raise teachers' salaries to a 'livable' level, to provide addi-

tional financial aid, and, more recently, to cover the skyrocketing cost of liability insurance, independent-school officials say."—*Education Week*, vol. VI, No. 2, September 24, 1986. Reprinted by permission.

Free Materials for Schools

Schools and other nonprofit organizations can obtain a huge catalog containing \$10 million worth of useful materials, and then choose items they can use—all for free.

NAEIR, the National Association for the Exchange of Industrial Resources, ships these catalogs to its members every three months. Available materials include office supplies, computer materials, arts and crafts, janitorial supplies, electronics, sporting goods, electric motors, hand and power tools, wallcovering, and automotive parts.

As members of NAEIR, schools pay \$395 annual dues to cover the association's operating expenses. The merchandise is free except for shipping and handling charges.

NAEIR solicits donations of slow-moving or excess inventory from manufacturers, wholesalers, and distributors, who are then eligible for a tax deduction on the items donated. Only new materials are accepted.

NAEIR's new member guarantee means a totally no-risk introduction to its services. If after the first year, the value of the material received is not worth at least twice the cost of the annual dues, NAEIR will either give a second year's membership free or refund the dues.

Members who take full advantage of the gift catalogs average \$4,200 in free goods per year, a more than 10 to 1 return on their investment.

For more information, write to NAEIR, Dept. ER, 560 McClure St., P.O. Box 8076, Galesburg, IL 61402 or telephone 309-343-0704.

Daycare Program Offers More Than Babysitting

"In response to the needs of working parents for a structured, affordable, and professional day care program, the Merrick (N.Y.) Public Schools launched an after-school program that has turned out to be far more than babysitting.

"A variety of supervised activities are offered, such as gym, recreation, arts and crafts, music, science, films, library and homework time. In addition, there are guidance and rap sessions, as well as parent education workshops. It's available to all elementary students starting at dismissal time and includes transportation to the school where it's housed. Parents pay \$6 a day (with discounts

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and scholarships available) and have to pick up their children by 6 p.m.

"About 65 students are enrolled in the program, which is fully self-sustaining. Director Sidney Schaffer says parents really appreciate not having to lose wages by having to rush home to greet their children, but more than that they see the program as a positive educational force. As one parent put it, 'We were concerned our daughter would find the prolonged days a strain. Instead, we have found that the program is a source of stimulation and active recreation.'"—*It Starts in the Classroom*, February 1986. Reprinted by permission from *It Starts in the Classroom*. Copyright 1985, National School Public Relations Association.

Undergraduate Education Needs Changes

"There is a serious 'mismatch' between [America's] educational ends and what colleges and universities are providing, according to a new report from the Educational Commission of the States.

"Calling the need for improvements in undergraduate education the 'most urgent priority for state leaders,' an ECS committee outlined 22 recommendations to meet the challenges facing higher education. These challenges include preparing students for a changing workplace, improving their preparation for college, increasing college participation and completion rates, meeting the educational needs of a diverse population, improving student and institutional assessment, motivating faculty and rewarding them for improvements and more sharply defining the institutional mission."—*Education U.S.A.*, August 4, 1986. Reprinted by permission from *Education U.S.A.* Copyright 1986, National School Public Relations Association.

Highlight on Reading and Recycling

"To highlight recreational reading and point up the importance of recycling materials, the North Platte (Neb.) Public Schools and the Clean City Committee sponsored a Used Book Exchange for elementary students. Youngsters brought up to five books from their personal library to school. In exchange, they were given a ticket that entitled them to choose five different books. On the day of the exchange, which was held in a vacant store in a local shopping mall, more than 1,250 books were exchanged in addition to 1,500 used books for the children to take home."—*It Starts in the Classroom*, February 1986. Reprinted by permission from *It Starts in the Classroom*. Copyright 1985, National School Public Relations Association.

Minority Enrollment in SDA Colleges

According to a recent report in *The Chronicle of Higher Education* on the "Racial and Ethnic Makeup of College and University Enrollments" in U.S. institutions of higher learning in 1984, Adventist colleges compare favorably with the rest of the nation in the enrollment of minorities (American Indians, Asians, blacks, and Hispanics) and foreign students in higher education.

The greater percentage of minorities and foreigners now attending our schools provides a rich cultural milieu that fosters greater understanding of the international mission of the church. We must become aware of the diversity and changing nature of our student population and develop programs to meet their needs.

College	Minority	Foreign	State Average Minorities
Andrews University	27.6%	21.9%	12.7%
Atlantic Union College	31.9	12.8	8.0
Columbia Union College	33.1	6.3	21.5
Kettering College	9.0	.4	10.1
Loma Linda University	29.6	9.9	29.6
Oakwood College	85.5	14.5	22.8
Southern College of SDA	16.1	2.7	15.8
Southwestern Adventist College	22.1	7.8	25.4
Union College	9.3	9.6	5.1
Walla Walla College	5.1	13.1	9.8

No Such Thing as After Hours

"Rather than fritter away week-nights watching television, students from Air Academy and Rampart High School in Colorado Springs, Colo., hit the books. Look into the school library on a given night and you'll see three students and a physics teacher sitting around a table loaded with books, calculators, pencils and what's left of a take-out pizza. At the next table, an English teacher is helping a basketball player understand the "Canterbury Tales." On the other side of the room along a row of partitioned desks, six students have their heads buried in makeup tests. Scattered elsewhere are more students, researching, reading, writing, studying and cranking out homework.

"It's called 'Help Night,' an alternative to TV, offered from 6:30-9 p.m. Mondays through Thursdays and it's had phenomenal success in its two years of existence. Between 100-150 students take advantage of the program each night, helped by three teachers whose specialties span math, science, social studies and English.

"There are many reasons kids attend the program, according to Brink Spear, one of the teachers. For one, a

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student who has missed classes can go to a Help Night session and make up work without missing more classes. For another, 'Some kids actually need the help,' Spear said. 'They don't get the individual attention from the teacher in the classroom.' And finally, it may be just as simple as this: 'Some kids just need to get out of the house and have a nice place to study.'"—*It Starts in the Classroom*, February 1986. Reprinted by permission from *It Starts in the Classroom*. Copyright 1985, National School Public Relations Association.

Bible Available in 21 New Languages

An additional 6.5 million people for the first time have the Bible available in their own language. For these people, it is at last possible to have, in words they can understand, a full record of the works of God and of the ways in which He calls upon them to respond.

The seven new Bibles—each one translated under the auspices of the American Bible Society and its partner Bible societies around the world—are published in languages spoken by the people of Cameroon and Nigeria, India and Burma, Papua New Guinea, and Haiti, as well as 130,000 speakers of Navajo, a native American language.

They appear for the first time in the "first complete Bible" category of the 1985 Scripture Languages Report, the annual tabulation of all tongues in which the Word has been published since the invention of printing 500 years ago.

At the end of 1985 the total number of languages stood at 1,829, which is 21 more than in 1984. The total reflects only those languages in which at least one complete book of the Bible has appeared.

Even though the 1,829 figure represents little more than one-third of the estimated total of some 5,000 languages and distinct dialects, they are the ones understood by about 98 percent of the world's people.—From an ABS news release, February 1986.

"Crack"—A Deadly High

"Crack" (or "rock" as it is called on the West Coast of the U.S.) is one of the newest and deadliest fads today. It is a ready-to-smoke form of cocaine that is easily affordable by teenagers and has been called the ultimate high.

The truth about crack and its effects are examined in an article in the October 1986 issue of *Listen*.

"The more intense high derives solely from the method by which it's used, namely smoking," explains Dr. Arnold M. Washton, director of research for 800-COCAINE. "Smoking a drug sends a high concentration of that drug directly to the brain in less than 10

seconds." That is how crack gets its power, not from the fact that it's a purer or stronger drug.

An additional hazard in crack use is the impurities and "cuts" added by dealers, which are not removed by the chemical extraction process. These cuts can be anything from corn starch to poisonous local anesthetics.

The most frightening thing about crack is its ability to quickly produce a dependence. Even individuals who are not especially addiction-prone often find themselves hooked on crack because of its intense high, the fact that it wears off so quickly, and because it leaves the user craving more.

U.S. Constitution Documents Available

The National Archives is preparing a poster exhibit of facsimile documents about the U.S. Constitution as a part of the celebration of the Constitution's 200th anniversary in 1987. The exhibit will be available for schools, libraries, historical societies, and other groups. The documents tell a story about the United States and the struggle to write its Constitution.

The Archives also provides teaching materials and offers teacher workshops on using primary sources in the classroom. The newest teaching package, "The Constitution: Evolution of a Government," contains reproductions of 40 Archives documents and a teacher's guide. It is for students in the upper elementary grades up. For more information and prices, write: The National Archives, 7th St., Washington, DC 20408.

Bright Ideas

- "Teachers believe in encouraging parents' involvement at Heritage School in [Winnipeg, Manitoba], and one of the ways is by organizing a bulletin board just for parents. They change it at least monthly by adding information about current trends, research, workshops, and other items of interest. Monthly themes range from 'Learning through Play' to 'Studying Tips—Ways Parents Can Help.' Parents are also encouraged to take copies of materials home so they can continue to be actively involved in their children's education."

- "How do you teach the concept of 100 to children? Pam Langfitt, a teacher . . . in Clinton, Iowa, came up with an idea: '100 Day' on the 100th day of school. It started with a trip to a nursing home and a visit to a woman celebrating her 100th birthday. Students prepared questions about life 100 years ago. Back at school, the students used the number 100 to measure distances, showed collections of 100, numbered people from 1-100, and found it took all three first-grade classes and then

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SOURCES FOR IDEAS AND MATERIALS

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A listing of software judged to be of excellent quality; includes science and other areas.

Miscellaneous

A Creationist View of Dinosaurs

Atlantic Union Office of Education
P.O. Box 1189
South Lancaster, MA 01561
(617) 368-8333

A two-volume guide for grades 3-6

Aviation for Elementary Level

Beach Aircraft Corp.
Dept. L86
P.O. Box 85

Wichita, KS 67201

A teaching kit with background and lesson plans on aviation history, elements of flight and careers in aviation, \$5. Free—a set of 17-16 x 20-inch color photographs of airplanes.

Elementary Science Experiments Kit
Educational Insights
19560 S. Rancho Way
Dominguez, CA 90220

A box of cards showing 135 experiments and projects—\$10.95.

Hospitals

Hospital labs are good locations for field trips, as well as offering the possibility of free supplies for certain types of experiments.

NASA

NASA has a wealth of resources available for schools including films (see film section), pamphlets, posters, pictures, videotapes, slides, tours, and a variety of other materials. Several of the space centers provide curriculum labs where teachers may copy video-

tapes, slides, and print materials at no charge. Teachers must bring their own blank videotapes and 35mm film. The center provides cameras, copy machines, and technical help. Many centers have prepared programs and tours for students (schedule these ahead of time). A letter to the National Aeronautics and Space Administration, Educational Publications Services, LEP, will produce much information. Ask for the address of the NASA center that serves your state. All materials from NASA centers are free. Write to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 and ask for "NASA Publications." There is a minimal charge for the documents in this catalog.

Origins

NAD Department of Education
Supplementary material on the Creation of the world to be used in secondary biology classes (available in 1987). □

LEGAL UPDATE

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contract basis to teach a course or two (it's cheaper than adding another full-time faculty member). Have these institutions weakened their claim to Title VII exemption? Having hired a nonmember to work in the service station, can they consistently argue that, for religious reasons, they may refuse to hire another nonmember in a similar job?

In Canada these issues have been substantially clarified. In 1984 the Supreme Court of Canada ruled in *Caldwell v. St. Thomas Aquinas High School* that good standing with the church is a *bona fide* occupational qualification for employment in a religious school. This effectively gave such schools wide latitude in their hiring practices.

It is hoped that the *Amos* case will provide a similar clarification of American law. The Supreme Court has agreed to review the case. A decision is expected by July 1987. □

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some. They went into the hall and lined up and found 100 kids took the entire length of the hall. They made a picture with 100 pieces of macaroni, and finally got to eat—100 pieces of popcorn."—*It Starts in the Class-*

room, March 1986. Reprinted by permission from *It Starts in the Classroom*, Copyright 1986, National School Public Relations Association.

Illiteracy Rate High in U.S.

One in seven Americans is illiterate, according to a survey conducted by the U.S. Department of Education. Illiteracy is highest in some of the most populous states. New York and Texas join Mississippi and Louisiana as the states with the highest adult illiteracy rates—16 percent of their residents could not pass a literacy test. California is not far behind, with an illiteracy rate of 14 percent.

Utah leads the states in literacy, followed by Alaska, Colorado, Montana, Oregon, Washington, and Wyoming. The illiteracy rates in these states is less than half that of New York and Texas.

Overall, the national illiteracy rate is 13 percent. Between 17 and 21 million American adults are illiterate.—Reported in *American Demographics*, August 1986.

Surge in School Computer Use

A Johns Hopkins University study finds that between 1983 and 1985, the number of computers used in U.S. schools skyrocketed from 250,000 to more than one million. Other findings: Three-quarters of the schools that previously had no computers got one or more machines during the two-year period; more than half of the elementary schools had more than five computers; and a majority of secondary schools had at least 15 computers.—Reported by *The American School Board Journal*, October 1986. □