



# REGIONAL • FORUM

The Southern Technology Council is an Advisory Body to the Southern Growth Policies Board

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## STC Sponsors Math and Science Symposium

"Too often we've neglected science and math and looked for easy answers where there are none," said Southern Technology Council chairman **Governor Ray Mabus** of Mississippi, speaking to a recent STC symposium on math and science education. "Less than two percent of Mississippians have *no* reading, writing, or math skills. The real challenge is in teaching the *higher* level skills that need to be mastered today."

Speakers at the half-day symposium—held in Jackson, Mississippi on May 22—provided STC members with background information on current issues in math and science education. Gov. Mabus gave the opening address. Other speakers were **Dr. Iris Rotberg**, program director for the Directorate for Education and Human Resources at the National Science Foundation (NSF); **Dr. Melvin Webb**, dean of the School of Education at Clark Atlanta University; and **Ms. Bonnie Moody**, a former science teacher and now director of the Center of Excellence for the Enrichment of Mathematics and Science Education at Henderson State University in Arkansas.

Dr. Rotberg's speech focused on the publicity from international tests in which the U.S. students fared quite poorly and the ensuing national obsession with test scores. "I am concerned," she said, "that the public policy dialogue will continue to focus on test scores rather than on the far more important questions about our accomplishments—and our problems—in science and engineering education."

She pointed out numerous reasons why the international comparisons are not methodologically sound and are based on biased samples:

- High school attendance rates are



STC symposium speakers (left to right) Dr. Melvin Webb, Dr. Iris Rotberg, and Ms. Bonnie Moody.

generally much higher in the U.S., and the more students who take a test, the lower that country's average score will be.

- Each country differs in its division of students by language, social class, ethnicity, race, religion, immigration status, region, public or private schools, academic or vocational schools. "We can't even accurately describe the countries' educational systems, much less compare them," she said.

- In some countries, significant numbers of low-achieving schools—or schools in which the curriculum is considered to be inadequate—are excluded from the comparisons. Several countries track students for all subjects in separate classrooms or separate schools as early as 10 years of age.

- In other countries, many students who are in industrial apprenticeship programs do not participate in the test comparisons.

- Curriculum differences from nation to nation affect the test results. For example, unlike advanced math students from other countries, U.S. students are more likely to wait until college to take calculus. Dr. Rotberg commented, "While there is room for debate about whether a higher proportion of U.S. high school students should take calculus, this issue cannot be resolved by examining the

results of international comparisons."

She also pointed out that "an important reality is that the U.S. has a higher proportion of students in poverty than many other industrialized nations—an unfortunate fact of U.S. society having nothing to do with the quality of education...There is an unrealistic expectation that the education system by itself—without fundamental changes in the underlying conditions of poverty—can deal with the educational problems associated with poverty."

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## Math and Science Symposium

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Dr. Webb described two enrichment programs—including both a summer and a Saturday program—for disadvantaged youth at Clark Atlanta University. "For the first time in their lives," he declared, "these kids are taught by someone who smiles when he teaches math." This summer, for example, about 75 students in grades 10 through 12 are enrolled. When Webb performed a follow-up study on youngsters who participated in the program from 1979 through 1983, he found that 100 percent went on to college, 97 percent graduated from college, and 95 percent received their degrees in science, math, or engineering. "The kids always say it was the best summer of their lives," he concluded.

Ms. Moody, a former high school science teacher in Arkansas and winner of numerous teaching awards, including the NSF Presidential Award,



*Dr. Stuart Rosenfeld (l), Mr. Mac Holladay, Gov. Ray Mabus, and Dr. Melvin Webb.*

described problems in education from a teacher's point of view. She particularly cited the high cost of science equipment and supplies and limited science budgets. "At the junior high where I taught in 1989-90, we had a science budget of \$300 for 650 kids," she said. Earlier this week I talked with several elementary teachers who had no budget for science."

Even when funds are available to purchase equipment, software, and computers, she observed, teachers often have difficulty finding the time to learn how to use them due to both a lack of information and support services as well as a shortage of time.

Teachers also had difficulty obtaining permission to attend meetings or conferences during the school year, and even when they did, they usually had to pay their own expenses.

Ms. Moody also criticized the overemphasis testing and test scores have received. "Despite the need for assessment of our strengths and weaknesses," she said, "when testing drives a curriculum, the creativity, interest, joy of learning, and real in-depth knowledge of any subject area may be in jeopardy. Teachers and, in particular, presidential awardees are concerned that the push to be number one will result in a 'national curriculum' and a national 'test.' If you live in Wyoming, it is difficult to justify spending large amounts of time studying oceanography when the local geology is so much more a part of the real lives of the students."

Ms. Moody also identified as problems the inability of the education system to expel ineffective administrators and teachers, and the inadequate level of training some teachers receive in college. ■

## Bingaman-Hollings Legislation

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to submit an application for federal matching funds under this program. To be selected, a program would have to demonstrate that it has an experienced staff, is capable of providing in-factory assistance, and is able to integrate technology, training, and management factors.

One related program in this legislation would provide federal support for experienced managers and experts from industry to serve within a center, such as a community college, technical college, university-based extension service facility, etc. These industry representatives would work to provide closer links between centers and the manufacturing firms in their regions.

These bills contain a number of other programs related to enhancement of

quality manufacturing, such as: an industry/NIST testbed project to develop and test new generic computer-controlled manufacturing systems and associated manufacturing communications networks; federal matching grants to expand post-secondary degree programs in manufacturing engineering and management; a National Quality Laboratory; and a national advisory commission.

**Funding.** Projected authorizations for this legislation in FY 92 are \$485 million, broken down as follows: \$330 million for the Department of Defense (includes existing Mantech and Industrial Modernization Incentives Programs); \$85 million for the Department of Commerce; \$50 million for the Department of Energy; \$10 million for NASA; and \$10 million for the National Science Foundation. A significant expansion of these programs is anticipated for FY 93.

**Prospects.** Democratic support in the

Senate is strong (co-sponsors include, in addition to Senators Bingaman and Hollings, Senators Gore, Nunn, Rockefeller, Dixon, Levin, Mitchell, and Kennedy). This is likely to assure a successful Senate vote, expected by the end of July. Support is growing in the relevant House Committees, where Congressman George Brown (chairman of the House Science Committee) and Tim Valentine (chairman of the Economic Competitiveness subcommittee) have held hearings on Advanced Manufacturing and give high priority to creating companion legislation which will be considered in September, after which it will go the House-Senate conference. Furthermore, the House Armed Services Committee has created two panels which have begun a comprehensive series of hearings as an initial guide to new legislative initiatives. Republican leaders and the Administration have not yet committed one way or the other. The chances are slightly better than even that this legislation will pass in 1991. ■