Science Education Law Poses Problems for NSF

With less than faint praise from President Reagan, science and math teaching initiative goes on the books

A long-discussed science and mathematics education law was enacted this summer in a burst of legislative zeal seemingly powered more by the issue of religion in the schools than by concern about the state of science and math teaching. President Reagan on 11 August approved the bill authorizing more than $1 billion over 2 years for improvement in science and mathematics instruction, but accompanied the signing with a statement that in sections read like a veto message. And chances are dim that the programs created in the law will actually be funded at anything approaching the levels called for.

For the National Science Foundation (NSF), a nominal beneficiary, the measure seems mainly to add an element of confusion. NSF has been moving slowly on spending funds it already has for science and math education and is still grappling with some basic policy questions in respect to its education program. And the new law gives the foundation some procedural directions that appear to go against the grain of standard NSF practice.

The new law was enacted amid some unusual parliamentary maneuvering. The House and Senate had passed differing versions of a science and math education bill. Then in late July, the House took a surprising shortcut by adopting the Senate bill outright. What prompted the action was an amendment in the Senate version providing for access by student groups to school facilities outside school hours for religious and other kinds of activities.

The normal procedure would have been for conferees from the two houses to meet to reconcile the differences in House and Senate bills. But House Speaker Thomas P. O'Neill (D–Mass.), who opposed the equal access amendment, denied a routine request to send the bill to conference and consigned the equal access portion of the Senate measure to the Judiciary Committee where it was expected to languish.

This affronted House Education and Labor Committee chairman Carl D. Perkins (D–Ky.), a strong proponent of the equal access measure as well as part author of the science and education bill (*Science*, 11 March 1983, p. 1198). Perkins countered by moving to bring the bill to the floor under a safety-valve provision of the House rules that enables committee chairmen under narrowly defined circumstances to circumvent the leadership.

A compromise was then negotiated under which the bill came to the floor with the equal access and the science and math titles to be voted on separately. Floor debate on the measure was dominated by discussion of the equal access provision, and both sections of the bill were passed by large majorities, thus sending it to the President.

In his signing statement, Reagan said he approved the bill despite its "objectionable provisions," because he believed that "the need to enhance the quality of science and mathematics instruction and to protect the rights of public school students to free speech, including religious speech, tips the balance in favor of approval."

Listing what he regarded as the bill's defects, Reagan said, "it is too expensive; it authorizes too many complex and administratively burdensome programs; it duplicates some existing activities; it authorizes unnecessary or inappropriate programs that are unrelated to improving science and mathematics instruction in our country; and it denies state and local governments the broad flexibility and decision-making authority they need to address local educational needs in the most effective manner."

The law that Reagan lambasted authorizes $566 million for the current fiscal year (which ends on 30 September), $75 million of which would go to NSF. In fiscal year 1985, the total would rise to $680 million, with $139 million for NSF. The bulk of the money is earmarked for the Department of Education; in 1984, $350 million would go in grants to state and local educational agencies and to institutions of higher education to improve teaching skills in mathematics, science, computer learning, and foreign languages.

The catch for NSF is that, while no funds have been appropriated or are in prospect for the law, the existence of authorizing legislation, which defines program details as well as sets spending limits, raises some awkward questions. A main one is how the provisions of the new law will affect the way the foundation spends funds for science and math education appropriated now and in the future.

Critics say that procedures set out in the bill would give NSF less flexibility in running its education activities and require it to revise extensively the way it administers education programs. In general, so the argument goes, the new law prescribes procedures more suitable for the Department of Education, which traditionally disburses funds in the form of block grants to the states on a formula basis. NSF, on the other hand, characteristically awards smaller grants on a competitive basis. The critics say that, to conform to the new requirements, NSF would have to engage in detailed consultation and liaison with state and local education authorities and adopt administrative practices that would blunt the competitive grants principle and require a bigger bureaucracy.

The main apprehensions on this score seem to center on a new program called Partnerships in Education for Mathematics, Science and Engineering created by the law. Aimed at bringing together in-

The Education Debate

The recent rash of studies attesting to problems in precollege science and math education has produced a variety of responses at both the federal and local levels. Congress has passed a bill that establishes a framework for channeling federal money into education programs. The article beginning on this page examines the history and impact of this legislation. The Reagan Administration argues that the problems are best tackled locally. One group that has responded is private business, which is putting unprecedented resources into local education, mostly into specific schools. The article beginning on page 1453 examines this phenomenon.

Northwestern Seeks a Federal Lab

Northwestern University and the city of Evanston, Illinois, want the federal government to establish a national laboratory on a plot of land close to the university's campus. The facility would be the centerpiece of an ambitious $400-million project to attract high-tech industry into the area. Thanks to support from Evanston's congressman, Representative Sidney Yates (D-Ill.), they are close to getting what they want.

Last month, the House of Representatives approved a bill containing $26 million for a Basic Industry Research Laboratory on the Evanston site. The bill, which provides funds to the Department of Interior and some programs in the Department of Energy (DOE), was written by an appropriations subcommittee chaired by Yates. According to the committee's report on the legislation, the lab would be funded by DOE's conservation program and it would "perform research and training in manufacturing, material, mineral and environmental technologies with the purpose of increasing energy efficiency in manufacturing and the conservation of energy resources by these industries."

If the proposal makes it all the way through Congress, DOE could have problems fitting the facility into its current programs. The proposal has not gone through the usual review process and it was, of course, not conceived as an integral part of DOE's energy conservation activities. Thus, grafting it on to an existing program may not be easy. More important, although the $26 million in the House bill is supposed to cover the cost of constructing and equipping the lab, DOE is likely to be faced with a heavy bill in future years for operating costs. Unless the conservation budget grows enough to accommodate this increased commitment, other research would end up being squeezed.

The scope of the lab's activities will clearly be much broader than energy conservation. According to William I. Ihlanfeldt, vice president for institutional relations at Northwestern, it will encompass a spectrum of technologies important to basic industries, and it will act as an interface between the university and private companies. Part of the plan, for example, is that university researchers would work in the lab part of their time.

The facility is envisaged as the key to a science park, a project that the university and the city of Evanston have been planning for some time. The hope is that the combination of the federal lab and Northwestern's expertise in engineering will entice private companies to establish R&D facilities alongside the lab. According to Ihlanfeldt, if the federal facility is built, ground should be broken for all the expected units in the park within 7 years, but without the federal facility it would be a "15- to 20-year project."

Soon after they conceived the idea, university officials sought help from Schlossberg-Cassidy and Associates, a Washington, D.C.–based consulting firm that gained notoriety last year by helping secure funds for some university buildings through pork barrel amendments in Congress. Ihlanfeldt says Schlossberg-Cassidy helped refine the idea and draw up a proposal, but the university itself approached Representative Yates.

Funds for the facility were put into the Interior and Energy appropriations bill, which was approved by the House on 8 August with few people aware of the proposal. The Senate Appropriations Committee has, however, not included funds for the lab in its version of the bill, which is expected to be on the Senate floor in late September. The lab's fate will therefore rest on the outcome of a House-Senate conference committee, which will probably complete its work shortly before Congress adjourns in early October for the elections.

This proposal indicates why the phenonemon of pork barrel politics in relation to university facilities continues unabated in the face of condemnation from just about every academic organization. There are no longer any federal programs to provide university construction funds, and with university research seen as a key to attracting high-tech industry to a region, there are major economic and political incentives for members of Congress to cut some pork for their academic constituents.—**COLIN NORMAN**

dustry and universities with state and local school authorities to fashion innovative programs, the program is authorized $60 million in federal funds next year to use on a 50:50 cost-sharing basis with public and private agencies. The partnership scheme emerged in the Senate version and, according to Senate staff sources, the designation of NSF to administer the program was something of a compliment to the foundation, since it was based on the belief that NSF could do the best job of uniting university scientists and public school educators in the effort. The sponsors view the anxieties generated by the procedural requirements as exaggerated. One staff member observed that it is "true that they will have to deal with people they haven't dealt with before," but notes that the legislation was extensively revised to meet what were regarded as "valid concerns" on the part of NSF traditionalists and that no more complaints were registered until "2 days before the vote." Proponents of the partnership felt strongly that it "was necessary to try something different" if the initiative were to succeed.

So long as no funding is provided for the partnerships program, the issue of its administrative impact appears academic. Such is not the case in respect to NSF teacher retraining and educational materials development initiatives, which are mentioned in the new law and for which funds have actually been appropriated.

Sources on Capitol Hill say that the old rules probably apply in the short run, but that the situation is too complicated to allow an easy answer. From NSF, the response to virtually any question on its education program is "no comment." The foundation is still building up the staff of its education directorate which was reestablished early this year after being dismantled early in the Reagan Administration. And it has spent little of the money pressed on it by Congress to aid precollege education. A new assistant director for science and engineering education, Bassam Z. Shakhashiri, took over only early this summer, and the foundation's new director, Erich Bloch, took office early this month. Faced with the task of rebuilding the directorate and at the same time fashioning the basic policies under which it will operate, Shakhashiri has been handing out rain checks to the press.

At this point it is unwise to draw sweeping conclusions from passage of the new law. Not only is the funding outlook bleak, but the circumstances of its enactment were special. It came at a time when a gathering campaign atmo-

sphere makes legislators more willing to settle for symbolism rather than substance. And the equal access amendment, which was put forward by prayer-in-the-school proponents, offered a sufficiently gingerly handling of the church-state issue to win the assent of a bipartisan majority.

Grafting of the equal access amendment to the science and math education bill was in part an artifact of the Senate rules that allow a more promiscuous style of amendment than the House, which has a stiffer germaneness rule. However, the bill came through bristling with amendments, in part, simply because education bills have been such a rarity lately. Also adorning the bill were amendments providing for an asbestos cleanup program in the schools and for the establishment of so-called magnet schools. Also attached was an amendment prohibiting the teaching of "secular humanism," which though undefined and little debated, won the attention of anticensorship forces.

Had the usual conference process been followed, it is likely that the resulting legislation would have incorporated elements of the House version, whose provisions in respect to implementing rules were more congenial to NSF partisans. But House Science and Technology Committee chairman Don Fuqua (D–Fla.), whose committee has jurisdiction over NSF affairs, backed Perkins's tactics and voted for the equal access amendment. Staff sources in the House say that Fuqua and many of his committee colleagues saw the choice as being between the Senate version of the bill and no bill at all.

A footnote of some poignancy was the death of Perkins less than 2 weeks after the House vote. Chairman of the House Education and Labor Committee since 1967, Perkins, 71, had a record of unwavering support for liberal federal education and social programs, but sided with conservatives in seeking to open the way for student religious groups to meet in the schools. His last legislative coup served these two propensities.

As for the broader implications of the new law, the episode leaves prospects for federal science education programs still highly uncertain. And until the presidential election is decided and NSF gets its education act together, that is unlikely to change.—**JOHN WALSH**

A European Academy of Science?

Paris. French dreams of creating a single European scientific community came a step nearer fruition on 17 September when government ministers from 21 European countries endorsed a joint declaration committing themselves to increasing their mutual cooperation in science.

The declaration was made at the end of a 1-day meeting hosted in Paris by the French government and organized in collaboration with the Strasbourg-based Council of Europe. During the course of the day's discussions, various proposals were made for specific ways in which such cooperation might be increased. France, for example, has suggested that all European scientists should be provided with a European research worker's card giving them access to special privileges, such as reduced travel rates and exemptions from customs duty for scientific equipment transported temporarily from one country to another.

The Swedish government put forward the suggestion for a European research fellowship scheme, which would provide funding for the exchange of postgraduate research workers. Perhaps the most ambitious proposal came from the United Kingdom, which suggested the creation of a new European science academy—perhaps modeled loosely on the U.S. National Academy of Sciences—to act as a focus for the concept of a "European research worker."

All such proposals are now being carefully studied to see the extent to which they may fulfill the aims set out in two resolutions passed unanimously by the meeting. One encourages the development of new and existing networks linking research institutions with common interests in different European countries in 22 separate fields of science, and the other emphasizes the need to increase the mobility of European scientists.

However, the long-term significance of the Paris meeting is expected to lie less in the specific measures emerging from preparatory discussions than in the political visibility it is expected to give to collaboration. Some collaboration already exists in fields such as space research and particle physics but has frequently been lacking in other more modest scientific fields. The European Science Foundation—a body set up just over 10 years ago, which now brings together officials from 48 scientific organizations from 18 different countries—was identified by the ministers as the main channel through which specific proposals for greater collaboration between scientists should be developed.

Both the development of networks and increased researcher mobility, it was argued by the research ministers present, are necessary to give Europe's scientists the sense of cohesion needed to remain competitive at both the scientific and technological level with the United States and Japan.

In opening the meeting on Sunday evening, French Prime Minister Laurent Fabius suggested that Europe has no alternative to increasing its scientific collaboration if it wishes to remain competitive with other world powers. "It is a question of uniting to survive."

Similar views were expressed by almost all other government officials who spoke at the Paris meeting, including the West German minister for Research and Technology, Heinz Riesenhüber.

The proposal for a European academy was put to the meeting by Peter Brooke, the British minister responsible for science, who suggested that it might help to overcome barriers stemming from "History, psychology, and prejudice" which often prevent European scientists from working easily together. Mr. Brooke said that, although such an academy might receive substantial government grants for specific activities, such as the organization of postgraduate exchanges, the core of its funding should be raised from private corporations and foundations.

The initial fellows might be made up of all European Nobel Prize winners, who would then select new members, and the total figure might eventually reach between 2000 and 3000. Brooke added that the British Government was prepared to help organize initial discussions about how such a European academy might be set up, although it was important that the main initiative should come from the scientific community itself.—**DAVID DICKSON**