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Chapter I

# Congressional Summary

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On July 18, 1978 the Senate Governmental Affairs Committee marked up a bill to create a new Cabinet-level institution—the Department of Education. This is the first step in a potentially extended congressional process which may lead to formation of a major new governmental entity. To assist Congress in its deliberations on certain aspects of this action, the Office of Technology Assessment (OTA) has examined the potential long-term impacts, both positive and negative, of such a department on three science and technology-related areas:

- Science education programs currently housed in the National Science Foundation (NSF), but slated for transfer in the proposals for the new department;
- Graduate science and engineering education training across the country; and

- Educational analysis and research activities which should be the responsibility of an appropriate Federal agency.

Members of the community most concerned with science and technology issues, including a significant percentage of Congress, will want assurances prior to approval of a new department that the functions mentioned above will not be adversely impacted.

This report assesses potential impacts in each of these areas; suggests appropriate criteria which Congress may utilize to examine the science and technology-related aspects of the proposed department; and spells out the possible congressional options for dealing with science and technology educational issues if such a department is finally approved.

## NSF SCIENCE EDUCATION DIRECTORATE PROGRAMS

Probably the key element in the debate about the new department, vis-a-vis science and engineering, is whether the NSF Science Education Directorate programs proposed for transfer will suffer or be enhanced by such a transfer. The importance of this question cannot be measured simply by the seemingly small amount of dollar resources allocated to these efforts in the 1979 budget for NSF. By these standards, the programs might seem to be insignificant, but it has been estimated that the potential impact of these efforts is greatly magnified when the worldwide replication of such science curricula and other science education leadership programs is taken into account. For example, over 70 developed and underdeveloped countries utilize NSF science curricula currently. Thus, NSF science education programs affect not only the quality of the future U.S. supply of trained scientists and engineers, but also the worldwide supply of such human resources, which are so necessary for fur-

ther development and advancement of all societies. Because of this important multiplicative factor, much of the Congress' concern and hence OTA'S, centers on the possible impact of the proposed department on NSF Science Education Directorate programs. The bulk of this report discusses congressional options for dealing with these science education activities in a manner that will be consistent with a plan to create a Department of Education.

The administration proposal and the Senate bill have both suggested that most of NSF's science education programs be moved to the new department—\$56.18 million of the \$77.6 requested in NSF's budget for FY 79. The scientific education community has not supported this move—viewing it as of doubtful benefit to the goals of maintaining high scientific standards, involving the support of the scientific community, and having high visibility which is easier to main-

tain in a small agency. OTA suggests that the Congress may wish to consider the following options with regard to these types of programs:

### Option 1

#### **Leave the NSF Science Education Directorate intact.**

If creating a Department of Education that encompasses the entire spectrum of educational programs is of utmost importance, then clearly the motivation for including programs in science education at the postsecondary level would be great. However, the challenge will be to coordinate the new department in such a way as to ensure a comprehensive and integrated educational system in the United States. Previous attempts to accomplish this goal via the HEW programs in education were not successful. The difficulties of HEW in this regard should be examined carefully.

### Option 2

#### **Allow the new department to begin operations without the NSF Science Education Directorate programs. Move appropriate NSF activities after careful evaluation of their potential for successful operation in the new departmental setting.**

The National Foundation on the Arts and Humanities (NFA&H) was originally planned for inclusion in the new department. Because the agency is self-sufficient and successful, it has been proposed that it not be transferred until after the proposed Education Department is operating and can specify a definite need for NFA&H functions. The same reasoning could be applied to NSF.

### , Option 3

#### **Move selected parts of the NSF Science Education Directorate on an individually assessed basis as soon as a department is formulated.**

This option corresponds with the current thinking of the administration and the Senate bill. Following is a description of the Directorate's programs and the pros and cons of transfer. There are five specific programs:

1. **Advanced Scientific Training, Minorities, Women, and the Handicapped** in Science. This program constitutes 25 percent of the Directorate's budget. It has been argued that because this program is directed at aspiring scientific professionals it belongs in NSF. Current proposals have not suggested transfer of this activity.
2. **Science and Society.** This program has several components aimed at increasing the public's understanding of science. These efforts are inserted into both the formal educational system and informal educational processes, via television. The administration and Senate bill have recommended that part of the program be transferred and part remain at NSF. NSF is very much opposed to splitting the program components because such a split may inhibit the goals upon which the entire effort was initially based.
3. **Science Education Research and Development.** This R&D function is aimed at understanding the learning process. This logically serves the objectives of the new department and could increase the speed with which new information would be disseminated within the educational process. The National Institute of Education would be enhanced by the transfer.
4. Support for College and Secondary **School Students.** As a faculty improvement program this is considered a strong candidate for transfer since it is aimed at professional training and enrichment. However, NSF fears that some of its current support from university faculty members would be lost with transfer. The issue must be decided based on the relative importance of the establishment of the department versus the maintenance of successfully operating programs.
5. **Institutional Support to Upgrade Undergraduate Science Teaching.** The five areas included in this program are: a) assistance to undergraduate science education; b) minority institutions; c) science improvement; d) undergraduate instructional improvement; and e) resource centers for science and engineering. Because these are all aimed at institutional support it is likely

that transfer to the new department would strengthen the higher education division.

#### Option 4

##### **Move the entire Directorate to the Department of Education.**

Although this alternative was initially considered it has been abandoned because several of the programs (as discussed above) do not substantively apply to education. Any reorganization should be designed to maximize benefits of current and potential work; the dismantling of currently effective programs, not integrally related to education, would be the eventual result if the entire Science Education Directorate were transferred.

#### CRITERIA FOR CONGRESSIONAL EVALUATION

The wisdom of transferring some or all of the NSF Science Education Directorate programs to

the new department can be evaluated by utilizing the following five criteria:

Ž How important is building up the new department versus maintaining successfully operating programs?

- How will the goal of the program be affected by being housed in the new department?
- What is the present quality and effectiveness of the programs versus their potential increased or decreased performance in a new setting?
- What are the political and administrative considerations involved with transfer and subsequent smoothness of operation?
- How important is the continued involvement of the scientific community, which is more likely if the functions remain in NSF?

## GRADUATE SCIENCE AND ENGINEERING TRAINING

Should most or all the NSF Science Education Directorate programs be transferred, the status of postsecondary education in the new department will be of prime importance. If the policy of the department indicates an orientation mainly toward elementary and secondary education, it is possible that graduate training in the sciences and engineering will suffer adversely. Since much of the Nation's economic and social development depends on technological advances provided by trained scientists and engineers, this issue would be of importance and concern to Congress. Congress has two options for ensuring that the proposed Department of Education places appropriate emphasis on graduate training:

#### Option 1

**Make it an explicit part of the department's mission to support and improve graduate training in all areas, including science and engineering.**

#### Option 2

**Create a high-level post in the new department responsible for this function, such as an Assistant Secretary for Graduate Education.**

## EDUCATIONAL ANALYSIS AND RESEARCH

To ensure that the new department has sufficient programs for studying the educational proc-

ess itself, the following elements should be included:

- educational statistics
- research on education
- administrative research

Since the Department of Health, Education, and Welfare already has programs underway addressing the first two of these areas—the National Center for Educational Statistics and the the National Institute of Education—the Congress need only assure their transfer to the new department in order to have adequate coverage.

To address administrative research needs the Congress could consider the following option:

**Establish in the new department an administrative and research function that reports directly to an Assistant Secretary for Administrative and Management Policy.**