Federal funds for the improvement of mathematics education

Editor’s note.—The Board of Directors of the National Council of Teachers of Mathematics commissioned a special committee to prepare information to help members of the NCTM to apply for funds to help them in their teaching and in their research. The following report of the committee explains several opportunities presently available. Inasmuch as the situation appears to be active and altering, however, the NCTM regards this report as an initial statement, to be followed by further announcements as new developments arise.

Congress has authorized a large sum of money for the improvement of education by passing the Elementary and Secondary Education Act of 1965. Since these funds will be available for projects in all subject areas, teachers and mathematics educators should make every effort to see that school planning makes provision for improved mathematics programs. This can be done by providing school and state leaders with the necessary information and statements of need which can be incorporated into their requests for funds.

The new education act can have great impact on mathematics education—if we make plans immediately to capitalize on the resources available. The funds provided by this act may be used for a variety of mathematics programs, instructional materials, research, and educational services. The major provisions of this act do not necessitate matching funds as do some of the previously established programs of federal aid benefitting mathematics. Sources of funds for such projects are described below.

ELEMENTARY AND SECONDARY Education Act
Title I: Grants to Local Public School Districts to Broaden and Strengthen Elementary and Secondary School Programs

This title is designed to improve the education of disadvantaged children in both public and private schools and authorizes approximately one billion dollars during 1965-66. Any public school system with ten or more pupils, aged 5-17, from families with total annual incomes of less than $2,000 may qualify for these funds. Each local public educational agency must construct its own plans for improving the educational opportunities of all educationally deprived children in its district and submit this plan to the state agency. The funds may be used to develop new programs, instructional aids, and new instructional approaches which offer promise of improving educational opportunities for elementary and secondary students. The listing below is illustrative of the many possible uses in mathematics education to which these funds may be put.

1 In-service education in mathematics for teachers of the culturally deprived
2 Supervisory personnel, specialists, consultants for programs of improvement in school mathematics
3 Special classes or summer camps dealing with applications of mathematics
4 Enrichment programs or remedial programs on Saturdays, evenings, or during the summer
5 Mathematics laboratories or team-teaching classrooms
6 Programed instruction, correspondence courses, or teaching machines for individual instruction
7 Additional teaching personnel to provide special classes or services
8 Teacher aides and instructional secretaries to provide added pupil services
9 Improved testing programs and guidance services to identify talent, diagnose difficulties, and prevent dropouts
The above listing is not intended to be exhaustive. Rather it suggests that mathematics educators use imagination in planning new programs for all disadvantaged pupils in a community. The likelihood of award of funds for a creative and needed program is high. Proposals for a new program should be made to the state education department, according to established state guidelines.

Title II: School Library Resources, Textbooks, and Other Instructional Materials

Title II is a five-year program. It authorizes $100 million for 1965-66. These funds will make it possible to provide textbooks and other instructional materials such as pamphlets, periodicals, recordings, slides, films, projectuals, charts, and video tapes for the use of children and teachers. It is estimated that this title allows an average $2 per year per student and teacher through grade twelve. The state educational agencies will administer this title also.

Title III: Supplementary Educational Centers and Services

Title III is a five-year program. The sum of $100 million has been authorized for the fiscal year 1965. Grants will be made to the local educational agency by the U.S. Office of Education to stimulate and assist in the provision of vitally needed educational services not now available in sufficient quantity or quality.

This title has broad potential for programs in mathematics. Examples of eligible services include specialized instructional assistance, new teaching approaches, an advanced class in mathematics which is not ordinarily taught, a resource or instructional center for students as well as teachers of mathematics, television programs, and other special projects. A museum devoted to the history of mathematics is another possibility. Funds may also be used to develop exemplary elementary and secondary programs to serve as models. Local school systems must apply directly to the U.S. Office of Education and also submit one copy of the project proposal to the state educational agency which will review it and make recommendations to the U.S. Office as to the worthiness of the project.

Further information on Titles I, II, and III may be obtained from Mr. Arthur L. Harris, associate commissioner, Bureau of Educational Assistance Programs, Room 2A005, 400 Maryland Avenue, S.W., Washington, D.C. 20202.

Title IV: Educational Research and Training

This title amends the Cooperative Research Act of 1954. It broadens the original act by authorizing grants, contracts, and arrangements for research and the dissemination of information derived from research. It provides that the recipient of such grants may be a public or other non-profit agency, institution, organization, or individual, as well as a university or college. In preparing proposals and conducting research under the auspices of this title the assistance of expert research workers in mathematics education should be obtained. In addition, the U.S. Commissioner of Education is authorized to make grants for the training of research workers in the field of education, including research traineeships, internships, fellowships, and institutes. Finally, $100 million has been authorized over a five-year period for the construction and operation of national and regional educational laboratories for research in the field of education.

Essentially, the purpose of this title is to improve education by providing for the development of new educational products, by increasing fundamental understanding of the educational process, and by training educational researchers. Imaginative ideas for increasing instructional efficiency, the development of courses of study based on such ideas, and the evaluation of such courses are all areas in which product-
oriented research is needed. If anything, basic, information-oriented research is an even more critical need. There is little fundamental understanding of teaching, learning, and creating mathematics. The third critical need is for training research workers in mathematics education. Sound training programs are needed at all levels, from undergraduate through senior postdoctoral.

Further information may be obtained from Mr. Ralph C. M. Flynt, associate commissioner, Bureau of Educational Research and Development, U.S. Office of Education, Room 3A015, 400 Maryland Avenue, S.W., Washington, D.C. 20202.

Title V: Grants to Strengthen State Departments of Education

Title V authorizes the Commissioner to make grants to stimulate and assist in strengthening the leadership resources of state educational agencies and to assist in the establishment and improvement of programs to identify and meet state educational needs.

State agencies may identify statewide educational problems, write curriculum materials, or support statewide programs designed to measure the educational achievement of pupils. Under this title a state agency might, for example, develop a strong program of in-service education in mathematics for elementary school teachers. Another possible program is a statewide project to evaluate mathematics curricula.

Further information may be obtained from Mr. Wayne O. Reed, associate commissioner, U.S. Office of Education, Room 4A055, 400 Maryland Avenue, S.W., Washington, D.C. 20202.

Other Sources

National Defense Education Act (NDEA)

The original NDEA of 1958 is still in operation. This act makes available several sources of funds relevant to mathematics education. Title II of this act provides loans for students in college and graduate school. These funds are administered through the individual colleges. The third critical need is for training research workers in mathematics education. Title III authorizes §90 million for the purchase of equipment and materials. About §10 million is authorized for state supervision and administration. Title III funds require a dollar-for-dollar matching of state or local funds. Title IV provides up to $7,500 per student for a graduate fellowship program. Title VII provides for research and dissemination in the area of educational media including television, audio-visual aids, and computer assisted instruction. In all of the areas listed, funds may be obtained for use in mathematics education and related activities.

Further information may be obtained from the Commissioner, U.S. Office of Education, Washington, D.C. 20202.

National Science Foundation (NSF)

NSF was established as an independent agency of the U.S. Government in 1950. The major activities of the foundation, relevant to mathematics education, are the course-content improvement program and the various institute programs for college, secondary, and elementary teachers and talented high school students. At the elementary level, the emphasis is on key teachers and supervisors. Publication NSF 64-8, describing all NSF projects, may be obtained by writing the National Science Foundation, Washington, D.C. 20550.

Miscellaneous sources

Another possible source of funds for projects concerning vocational or applied mathematics emanates from the Vocational Education Act of 1963. This act provides for facilities for vocational education in junior colleges, colleges, and universities, and for training programs to develop manpower in the vocations.

Information may be obtained from the Division of Vocational Education, U.S. Office of Education, Room 3A015, 400 Maryland Avenue, S.W., Washington, D.C. 20202.