The accomplishments of education research are many, and they are leaving an indelible imprint on the shape and character of American education. The role of the federal government in education is one of leadership and financial and technical assistance to the states or to individual school districts or higher education institutions. The birth of federal support to education research occurred in 1862 when Congress passed the Morrill Act. Another jump in education research took place in 1917 with the passage of the Smith-Hughes Act for vocational education. In 1954 the Comparative Research Act was a major turning point for educational research and development. It was followed by the National Defense Education Act in 1958. A number of other acts passed by Congress have also led to noticeable improvements in American education including the Higher Education Act of 1965 and the Elementary and Secondary Education Act of 1965. Many recently developed forms of educational technology are now being widely employed in instructional programs because of federal education policy. Education research is in its infancy in the United States and operates in a complex social arena. Its accomplishments are difficult to measure and evaluate because it is a social science. (RC)
It is an honor and a pleasure to be able to express my views on the relationship between education research and government policy before such a distinguished audience and panel. I look forward with great interest to hearing Minister Yadlin's views and to the dialogue that will follow.

It would be difficult, if not impossible, to discuss education research and policy in this country without an understanding and appreciation of the pluralism of American society in general, and of American education in particular.

Thus, if I were to say there is a very irregular and imperfect relationship between education research and government policy formation, and that there is really no great body of knowledge about education crying to be translated into policy, I might well be misunderstood by our overseas visitors. I believe that it would be a somewhat fair statement, but at the same time the fact is that the accomplishments of education research are many, and they are leaving an indelible imprint on the shape and character of American education.
Let me take a few minutes to describe some of the factors that must be considered before decisions are arrived at by this nation's education policymakers and before administrators begin to put those decisions into action. We do not have the centralized national ministry of education that is found in most Western nations. The power to install curriculums, to set standards of teacher competence, and so on, resides with the government of each state, not with the federal government. The role of the federal government in education is one of leadership and financial and technical assistance to the States or to individual school districts or higher education institutions.

At the Federal level a number of factors must be considered when we think of education legislation and its implementation. Both Houses of Congress have a committee on education. The White House, or Executive Office, has its own views on Federal education legislation, and it is to the White House that my Office is responsible — although as Commissioner I also maintain a close working relationship with the legislative branch of our government.

In Washington we also must acknowledge the power of various associations and organizations representing such interest groups as teachers, school administrators, colleges and universities, parents, and other constituencies with a legitimate voice who should be informed and consulted.

So, from a Federal perspective, even if there is research evidence that favors a certain policy, it does not follow that this policy will be adopted. Research is only one factor in the making of education policy.
IT IS IN OUR STATE GOVERNMENTS; HOWEVER, THAT THE GREAT DIFFERENTIATION BETWEEN A CENTRALIZED AND A LOCALIZED RESPONSIBILITY FOR THE SCHOOLS IS MOST APPARENT.

OUR STATES EMBRACE SOME 16,000 LOCAL SCHOOL DISTRICTS. EACH DISTRICT HAS ITS OWN SCHOOL BOARD, WHICH SETS POLICY AND IS REFLECTIVE OF LOCAL OPINION. EACH BOARD HAS ITS OWN ADMINISTRATIVE STAFF AND HIRES ITS OWN TEACHERS AND OTHER EDUCATION SPECIALISTS.

APPROXIMATELY 90 PERCENT OF THE MONEY FOR PUBLIC SCHOOLS IS RAISED BY STATE AND LOCAL JURISDICTIONS, MOSTLY THROUGH TAXES BUT OFTEN THROUGH BOND ISSUES. WHEN EDUCATION RESEARCH FINDINGS BECOME AVAILABLE, THEY NEED TO BE DISSEMINATED TO THE STATES AND LOCAL SCHOOL DISTRICTS IN THE HOPE THEY WILL BE ADOPTED WHERE FEASIBLE. WHAT MAY BE EDUCATIONALLY EXCELLENT FOR CHICAGO, OR A SECTION OF CHICAGO, MAY NOT APPLY TO SCHOOLS IN OTHER PARTS OF THIS STATE OF ILLINOIS, OR TO SCHOOLS IN THE STATE OF MAINE, OR ALONG OUR GULF COAST.

AGAINST THIS BROAD BACKDROP, I WANT NOW TO TOUCH UPON THE GROWTH OF THE FEDERAL ROLE IN EDUCATION AND OF FEDERAL SUPPORT OF EDUCATION RESEARCH AND DEVELOPMENT.

THE U.S. OFFICE OF EDUCATION WAS CREATED IN 1867 WITH A MANDATE TO COLLECT "SUCH STATISTICS AND FACTS AS SHALL SHOW THE CONDITION AND PROGRESS OF EDUCATION IN THE SEVERAL STATES AND THE TERRITORIES," TO DIFFUSE "INFORMATION RESPECTING THE ORGANIZATION AND MANAGEMENT OF SCHOOL SYSTEMS . . . AND OTHERWISE PROMOTE THE CAUSE OF EDUCATION THROUGHOUT THE COUNTRY."
Under this authority, the U.S. Commissioner of Education has supported thousands of data collection activities. Perhaps the best known recent survey is that -- and I think we are justified in calling it a major research project -- conducted by Dr. James Coleman, from whom we heard this morning.

However, the birth of Federal support to education research really occurred in 1862, when Congress passed the first Morrill Act. This act gave huge tracts of federally owned land to each State. Funds from the sale of the land were to be invested, and the proceeds of the investments were to be used to endow college instruction in agriculture, engineering, and military tactics. The Civil War, then under way, was responsible for the military tactics requirement.

The importance of the Morrill Act is that it recognized that the Nation needed manpower trained in the agricultural and mechanical arts at the college level. There is no doubt in my mind that this act, in making funds available for research and training in agriculture, is primarily responsible for the United States’ being second to none today in its agricultural know-how and production and in its ability to translate agricultural research results into understandable language and disseminate it to the farmer.

The U.S. Department of Agriculture has developed a network of agents -- one in each county of the Nation -- to keep farmers informed of the latest research findings in agriculture. The possibility of a comparable system of education agents, to serve local school systems, is now being explored by the National Institute of Education, a sister agency of the U.S. Office of Education.
Another jump in education research in this nation took place in 1917, when Congress passed the Smith-Hughes Act. It authorized Federal grants to the States for vocational education -- in agriculture, home economics, and various mechanical trades -- in the public schools. This legislation, and subsequent vocational education legislation, channelled substantial research monies into vocational education. As a result, curriculums in such diverse areas as concrete technology and oceanography, as well as in the more traditional home economics and mechanical trades, have been developed and refined. Vocational counseling has reached new levels of effectiveness in helping young men and women decide on their occupational future.

The year 1954 saw a major turning point for education research and development in the United States when Congress passed the Cooperative Research Act. This landmark act enabled the U.S. Commissioner of Education to enter into financial agreements with colleges, universities, and State education agencies for research, surveys, and demonstrations.

In 1958, in the National Defense Education Act, Congress authorized the National Science Foundation to support activities designed to improve mathematics and science instruction in the nation's elementary and secondary schools.

The National Science Foundation, whose purpose is to strengthen research and education in the sciences, had discovered that mathematics and science textbooks were, in general, badly outdated as a result of the explosive growth of scientific knowledge during and following World War II.
FEDERAL POLICY INDICATED THAT IMPROVEMENT IN MATHEMATICS AND SCIENCE INSTRUCTION SHOULD BEGIN IN THE HIGH SCHOOL, THE FIRST LEVEL OF EDUCATION AT WHICH THE SEVERAL SCIENCES ARE TYPICALLY TAUGHT AS DISCRETE SUBJECTS.

THE NATIONAL DEFENSE EDUCATION ACT ALSO AUTHORIZED THE COMMISSIONER OF EDUCATION TO CONDUCT RESEARCH IN FOREIGN LANGUAGE INSTRUCTION.

UNDER THE COOPERATIVE RESEARCH ACT HUNDREDS OF RESEARCH PROJECTS HAVE BEEN AUTHORIZED; THEY HAVE RESULTED IN SIGNIFICANT IMPROVEMENTS IN EDUCATION IN SUCH DIVERSE AREAS AS FOREIGN LANGUAGES, ENGLISH, AND THE SOCIAL SCIENCES. RECENT RESEARCH ADVANCES ALSO ARE HELPING THE HANDICAPPED ENTER THE MAINSTREAM OF EDUCATION. SOME EXAMPLES:

...CURRICULUM PACKAGES TO TEACH THE MENTALLY HANDICAPPED HAVE BEEN DESIGNED, TESTED, AND DISSEMINATED.

...THE KURZWEIL READING MACHINE ENABLES A BLIND PERSON TO SUBMIT ANY PAGE OF PRINT TO A COMPUTER/CAMERA WHICH turns it INTO SPEECH. THE FIRST SUCH MACHINE HAS BEEN EVALUATED, AND 14 MORE ARE ON ORDER AT AN INITIAL COST OF $25,000 EACH.

...ANOTHER MACHINE, NOW ON SALE FOR LESS THAN $3,000, ENABLES A BLIND PERSON TO "READ" PRINT, INCLUDING COMPUTER CARDS. NO BIGGER THAN A PORTABLE TAPE RECORDER, IT TURNS PRINT INTO SOMETHING LIKE TYPE, WHICH CAN BE FELT AND READ BY THE BLIND.

..."CLOSED CAPTION" FILMS, NOW IN THE DEMONSTRATION PHASE, BEAR CAPTIONS THAT THE DEAF CAN SEE WITH A SPECIAL DECODING DEVICE. FEW OF THE MILLIONS OF PERSONS WHO HAVE BEEN WATCHING THE "ADAMS CHRONICLES" ON AMERICAN TV ARE AWARE THAT THE SERIES CONTAINS RUNNING CAPTIONS THAT CANNOT BE SEEN WITHOUT SUCH A DECODER.
A number of other acts passed by Congress contain specific "research, development, and dissemination" provisions that have led to noticeable improvements in American education.

In the Higher Education Act of 1965, the Commissioner of Education was authorized to support research, demonstration, and dissemination projects relating to the improvement of libraries and the development of librarians. The improvements in library technology and the art of librarianship have been far-reaching.

The Elementary and Secondary Education Act of 1965 amended the Cooperative Research Act, making it possible for the U.S. Office of Education to finance education research and development laboratories and centers across the nation. Federal funds were also made available to train researchers.

One of the great shifts in teaching methodology in recent decades in elementary and secondary schools has been the growth of self-directed learning and motivation of students. Students, individually or in small groups, plan and conduct their own learning tasks. Special educational materials help them master their tasks with minimum teacher direction. The work of the research laboratories and centers has played a major role in this development.
Many recently-developed forms of educational technology have been widely employed in instructional programs: educational TV, audiotapes, film strips, programmed instructional materials, language laboratories, dial-access systems, and microfiche. Computer-aided instruction in basic skills has shown great promise, though its costs have delayed widespread adoption. Computer management of instruction has been more extensively employed, particularly in school record systems, in scheduling, and in planning and monitoring instruction in individualized systems.

I can foresee in the next quarter of a century the development of three-dimensional photography, illustrations, movies, and television; simple, inexpensive video-recording and playing; and home education via video and computerized and programmed learning. I can also see the creation of chemical and mechanical methods for improving memory, learning, and analytic ability.

The most pervasive uses of the new educational technologies in education contribute to individualizing instruction by fostering self-managed learning and by offering alternative visual and auditory channels that supplement teacher-directed instruction.

Innovations in educational technology are most apt to become widely used if today's school systems are supplemented or replaced by educational opportunities outside formal schools, perhaps as outgrowths of greater student or parental control of the educational process. Federal education policy will certainly reflect these directions which were brought about through extensive research.
Perhaps the best known research product to be developed with Office of Education support is Sesame Street, the educational TV program that reaches millions of pre-schoolers daily. Because of the success of Sesame Street, we have stimulated and supported more organizations like the Children’s Television Workshop, the developer of Sesame Street. Excellent programs have been produced for commercial and public service TV that carry educational messages for bi-lingual audiences. Other programs are targeted at young adults, informing them how to be more effective parents.

The National Assessment of Educational Progress, carried out by the Education Commission of the States, is a major research undertaking supported by the Office of Education. This project measures the attainments of America’s population in such areas as science, citizenship, writing, reading, mathematics, and music. The goal of the Office of Education in funding this project is to provide information useful to education decision-makers and practitioners in identifying problems, setting priorities, and assessing progress.

The Office of Education recently began “packaging” the best compensatory education programs it has been able to uncover and validate through research and development. Compensatory education is education designed to bring financially and educationally disadvantaged children up to the performance level of more fortunate children of the same age. The validated programs are being converted into sophisticated curriculum guide packages and disseminated to schools throughout the country.
In 1972 Congress created the National Institute of Education as an agency parallel to the U.S. Office of Education within the Department of Health, Education, and Welfare. Research functions previously administered by the Office of Education were transferred to the National Institute and thus given a more prominent national focus.

Among many other activities, the National Institute is administering a three-year, $15-million study of compensatory education. Results of the study, now in its first year, will help Congress decide on the future of the compensatory education part of the Elementary and Secondary Education Act, which expires in 1977. Another study, of violence in the schools, is just getting under way. Some 600 school districts are involved in the study, of which the ultimate purpose is to prevent such crime.

I hope I have painted a pragmatic picture of education research in this country and its relationship to national education policy. Education research, as we use the term today, is in its infancy in the United States and operates in a complex social arena. Its accomplishments are difficult to measure and evaluate because it is a social science. That is, it does not lend itself to the scientific proofs that we commonly demand in the physical world. It does not see the kinds of specific breakthroughs that occur when medical science discovers a new vaccine or space scientists develop a new method of propulsion. Nevertheless, we can be proud of the successes of our education research, and I look forward with confidence to further significant breakthroughs and advances in American education because of it.

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