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ABSTRACT

Education in a technological society must teach its people to perform the work and provide the services required to maintain and further develop the society. It must also prepare its people to cope with the rapid change which new technology causes in their personal lives, such as occupational obsolescence, social mobility, world wide communication and social awareness, and others. The concept of career education has been developed in view of these demands of a technological society. Career education relates to all educational experiences from early childhood throughout the productive life of the individual. In early childhood it provides an awareness of the world of work and some direct, hands-on experiences to motivate the learner's interest. At the end of high school, the burden is on the high school system to give strong, positive assistance to students in obtaining job placement or placement in a post-secondary institution. The development of a career education system requires the accomplishment of differing objectives at each level of the existing school system, including public and private technical institutes, junior colleges, area vocational schools, and colleges and universities. (SB)

TECHNICAL EDUCATION, CAREERS UNLIMITED*

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*Keynote Address before the National Technical Education Clinic, co-sponsored by the U.S. Office of Education and the American Technical Education Association, March 15, 1972 at Fort Worth, Texas.

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The evidence of rapid technological change and its effects on the lives of the people of this Nation is everywhere about us. The realization of its importance is made sharply evident by the very fact of this Ninth Annual National Technical Education Clinic at which are assembled Federal, State, and local Education leaders whose responsibility it is to provide programs of Technical Education designed to cope with a technological society.

We in the Office of Education especially welcome the co-sponsorship and shared professional leadership of the American Technical Education Association at this conference. It is by such cooperative efforts in educational leadership functions that the technical information, the professional exchange and the necessary bridging from the past to the present and into the future in the development and achievement of major educational objectives may be best served. We are proud to be a part of it!

It is becoming increasingly clear that the largest increase in job opportunities in the Nation's workforce is now and will continue to be for persons who have earned less than a baccalaureate degree but who have the specialized skills and knowledge to support the

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professionals in the Nation's work and to guide the efforts of the skilled and semi-skilled persons at the technical and specialists level in all major fields of work. The education and work experience required to prepare such specialized supportive people must be based not only on high school preparation but also on technical education beyond the high school.

The tremendous variety of these supportive jobs and the rapidly growing opportunities for qualified persons lends meaning and urgency to the theme of this conference, "Technical Education, Careers Unlimited." Some persons will enter Technical Education immediately after high school, but an increasing number will be entering programs at various stages in their career and at various ages throughout their lifetime. Indeed, it is this establishment which must be strengthened to provide many of the Nation's technicians, specialists and highly skilled technical personnel.

There is already a large establishment which serves this need. All institutions that are providing specialized non-baccalaureate educational programs beyond the high school, whether private or public, are an important part of the occupational education establishment and function within the overall concept which is now A major priority of the U.S. Office of Education.

My purpose here this morning is to describe and explain what new initiatives and developments are occurring in the U.S. Office of

Education and to share with you some of the exciting challenges before us. Hopefully, we in the USOE can enlist your assistance in making the results of these initiatives a reality where it really counts, in dynamic programs preparing individual persons to perform the complex technical tasks which sustain our society.

Since most of the emphasis of technical educators usually lies beyond the high school, I should like to point out that persons in these types of technical programs are always building upon their earlier education, including their pre-school training. Specialized programs beyond high school to prepare the skilled technical manpower necessary for our society is a part of a continuum of learning experiences which started when the students entered school, or before.

With that in mind, let us look at the career education concept as it relates generally to all levels of education and particularly as it relates to programs beyond high school.

Education in a technological society must teach its people to perform the work and provide the services required to maintain and further develop the society. It must also prepare its people to cope with the rapid changes which new technology causes in their personal lives, such as occupational obsolescence, social mobility, world wide instant communication and social awareness, changing political emphasis, governmental service delivery systems, environmental awareness, and many other subtle but significant social and psychological

changes.

For the past year career education has been a major objective of the Office of Education. No Office of Education initiative has attracted more attention nor received more support!

Career Education actually relates to all educational experiences from early childhood throughout the productive life of the individual. In early childhood it provides an awareness of the world of work, and some direct, hands-on experiences to motivate and captivate the learner's interest.

At the end of high school, the burden is on the school system to give strong, positive assistance to the students in obtaining job placement, or placement in a postsecondary institution, whichever the student chooses. Thus, a strong accountability factor is built into career education.

The development of a career education system requires the accomplishment of differing objectives at each level of the existing school system. For example, in kindergarten through the sixth grade, the objectives are to develop in each pupil self-awareness and positive attitudes about the personal and social significance of work. Students in these grades receive a meaningful overview of the world of work by being exposed to job clusters. The USOE has developed fifteen major clusters that encompass the 20,000 different job categories listed in the Dictionary of Occupational Titles.

In the seventh and eighth grades, students devote more attention to the occupational clusters of their choice, leading to an in-depth exploration at the ninth grade. Subject matter also is more meaningful and relevant because it is unified and focused around a career theme.

In grades nine and ten, the student gets in-depth exploration and training in an occupational area, and is provided a foundation for further progress. This leaves open the option to move between clusters.

In grades eleven and twelve, the student receives intensive preparation in a selected cluster, or in a specific occupation, in preparation for job-entry or further education. His studies are related more closely to the world of work. Guidance and counseling are more concentrated. The school is obligated to assist the student in obtaining a job, entry into a postsecondary occupational education program, or entry into a four-year college program.

Career education in our technological society is designed to provide new dimensions to the education of all Americans.

These are some its most urgent objectives:

* It aims to lead all persons to respect the dignity of work well done, and to hold in high regard those who do it.
* It aims to acquaint all of our youth with a knowledge of all the different kinds of work which must be done in our complex

technological society and to kindle in each the desire to master some exciting job which needs to be done, one which uses a full measure of his abilities and which will make him self-supporting and self-respecting.

* It aims to reduce the disgraceful failure and attrition rates in our high schools and colleges, often caused by ill-advised or unrealistic career choices or inadequate scholastic preparation.
* It aims to insure all against the debilitating and eroding effects of enforced unemployment. Constantly available options to continue career education at any stage or age in a career will open the way if we but provide the educational opportunities.
* It aims to enable more people of all ages to spend more time in organized study whenever they need it to keep up with changes in this society's complex technological work.

Let us examine how these aims may be accomplished:

CAREER EDUCATION FOR EVERYONE

Career education, as the concept is now evolving under the leadership of Dr. Sidney P. Marland, U.S. Commissioner of Education, will begin as early as kindergarten, revised curriculums will relate reading, writing and arithmetic to the varied ways in which adults earn a living. These careers have been grouped by the Office of Education

into families or "clusters" of occupations, as follows:

AGRIBUSINESS

BUSINESS AND OFFICE

HEALTH

PUBLIC SERVICE

ENVIRONMENT

COMMUNICATIONS & MEDIA

HOSPITALITY & RECREATION

FINE ARTS & HUMANITIES

MANUFACTURING

MARKETING & DISTRIBUTION

MARINE SCIENCE

PERSONAL SERVICES

CONSTRUCTION

TRANSPORTATION

CONSUMER & HOMEMAKING EDUCATION

The elementary occupational awareness and the prevocational and exploratory education starting in the middle and junior high schools are aimed at providing an occupational literacy and familiarity with the world of work. This helps to inform the student about the variety of challenging and interesting work in the modern world and society's need to get it done. It also builds respect for those who do it.

The concept relates to the subjects taught by all teachers so that real career-centered learning will be used to provide an interesting emphasis and heighten student interest and motivation whether

the class deals with history, language, general science, health, social science, or whatever.

As each youngster advances into junior high school, he will select various clusters or broad groupings of related occupations and begin exploring the nature of specific careers in each one. By senior high school, he will concentrate on the group of career opportunities which interests him most and will develop sufficient entry level skills in a specific occupation to qualify for a job.

It is visualized that students will have an opportunity to enjoy actual work experience during their high school years through cooperative arrangements with employers. Yet each student's program will remain flexible enough to enable him to switch to a related occupation later with a minimum of supplementary training. In addition, each student in a career education program will keep his options open.

It is expected that the career education cluster approach will provide better educated youth to enter either professional preparation in a four-year college or the post-high school programs which educate technicians or similarly specialized personnel.

CAREER EDUCATION MUST START WITH CHILDREN

Until half a century ago, before the impact of applied modern technology began to displace muscle power with machinery, children had contact with the world of work which permitted them to comprehend and understand most of the common occupations and to respect the

persons who performed the work of the society.

In recent years however, children have been isolated from the world of work. Farm and home chores have almost disappeared, and even the work within the home has been changed to such a degree that there is little meaningful contact between a modern child and those who do the work and supply the services in today's complex society. Working parents and members of the family leave home to work, perform their duties, and return. Their children are seldom able to obtain any meaningful understanding of what they do because they have little opportunity to observe and to interpret the tasks performed, or the satisfactions, disciplines and rewards of work.

Career Education programs give great promise of reopening the world of work to children as an interesting, exciting, challenging and fascinating area of activities and adventures. It is an excellent means of motivating children to learn about reading, mathematics, science, etc. while simultaneously learning about the necessity for and the dignity and satisfactions of work well done.

CAREER EDUCATION BEYOND THE HIGH SCHOOL

Career education beyond the high school includes preparation required by an individual to enter employment, improvement of his knowledge or skills as they relate to his job, or preparation for a new one. It also includes the cultural and recreational knowledge necessary to cope with living in the post industrial society. Man cannot live by bread alone!

Career education, in the context and the relationship of preparation for the work today and in the future, has little relationship to past practice. The accumulated results of applied science and technology have radically changed the world of work during the last half of the twentieth century to require a more demanding educational preparation where the specialization needed must in large measure be learned by adults after high school.

Machines have taken the place of the unskilled worker in our mines, forests, factories, and on our farms and are rapidly displacing the unskilled in offices, transportation systems, and slightly skilled work by which a large proportion of the population of this and other Nations supported themselves and their families has largely been swept away by mechanization. Most work of the past could be learned by working beside an experienced worker and observing and learning those elements of the work which comprised most of his employment activities on the job. A person needed only to bring to the job a limited amount of basic educational preparation. In recent years, our Nation has aspired to a level of general literacy in which nearly all people are able to read and write and exercise a functional literacy regarding arithmetic, social understandings, and the tools which basic education provides as a basis for learning to live and to earn a living in our society.

With the unskilled worker displaced to a great extent,

we as a Nation are confronted with a unique educational problem never before experienced to the same degree by any society. Our social heritage and mores have been built on the concept that most of our population must work to support themselves and to lead satisfying and fulfilling lives. A person without a job and without the preparation to get one does not enjoy a very favorable status in most of this society. Without a job he cannot support himself and can neither respect himself nor others, nor the society in which he lives.

There is no alternative to providing a better education for our population because the technological world in which we now live will become more complicated rather than less complicated in the future.

It is precisely because of the seriousness of the educational problem which our Nation currently faces that Commissioner Marland and all of us in the Office of Education are placing so much emphasis on the concept of career education. Our educational system has assumed that all our youth must be prepared to earn a baccalaureate degree when in fact fewer than twenty percent have in the past graduated with baccalaureate degrees into professional and managerial jobs. Further, the Bureau of Labor Statistics predicts that in the foreseeable future, 83 percent of the Nation's work will not require a bachelor's degree preparation. Fewer than 30 percent of our students now receive vocational preparation which will enable them to get a job when they leave high school and over 50 percent of our youth receive

an education which neither prepares them to enter further education beyond high school with reasonable assurance of success nor to become employed. It is this short fall in our educational system which we beleive needs to be changed and which can be changed by implementing the concept of career education. Career education, as we conceive it would guarantee that all students, when they leave high school, will be prepared either to take a job or to enter the next step of educational preparation for their chosen work.

KINDS OF WORKERS PREPARED IN POST HIGH SCHOOL EDUCATION

Almost all professionals, most technicians and similar supportive specialists, and many skilled workers will continue into programs beyond high school before they enter the work force. Almost all of these workers will return to institutions beyond the high school for formal upgrading, updating, or additional preparation for their careers in order to cope with changes in technology which affect their chosen occupations.

TECHNICIANS AND SIMILARLY SPECIALIZED SUPPORTIVE PERSONNEL

As stated at the outset, technicians and similarly specialized supportive persons are the most needed personnel in today's world of work.

Their education requires a comprehension of the basic principles and technological knowledge of the professional whose efforts they support. In addition, they frequently learn managerial and administrative skills which permit them to direct the efforts of the skilled and

semi-skilled workers whose efforts are required to accomplish the tasks in their field. Usually, however, administrative skills are learned after the person is employed.

Technicians require less than a baccalaureate education to start their careers as supportive personnel. They usually require from one to three years of organized study beyond high school before starting to work in the field. Because they perform tasks and services which involve very important responsibilities, their preparation will permit no compromise with ignorance.

ADULT EDUCATION BEYOND THE HIGH SCHOOL (A Great Challenge)

A major career education emphasis beyond the high school must be to provide opportunity and encouragement to more adults. For example, it will help them upgrade their skills and knowledge on their present jobs, learn new skills and knowledge to change or advance their careers, retrain for new jobs when their present jobs have been eliminated by organizational or technological changes, and provide saleable skills to those who have never been in the workforce.

Career education also provides specialized educational services for: women who have already raised families or who must supplement family income or provide all of it; older workers at all levels displaced by younger, better-prepared workers; retired military or other persons who want to enter another field of employment; and scientists, managers, and other professional leaders who have been displaced by such national technological goal changes as aerospace

environmental improvement.

The increasing necessity for our nation to provide educational opportunities for those who have left school and are unemployed, or those who are under-employed, is becoming increasingly evident. Clearly these persons, many of whom are mature, able, and talented but are perhaps handicapped by academic, socioeconomic, or other circumstances, represent a valuable pool of human resources which must be developed. This is a major challenge to our postsecondary technical education programs.

There are thousands of individuals who are unable to obtain employment because of lack of educational preparation. They have out-grown the high school and will not return to the institution which failed them. The responsibility for providing a means for these individuals to re-enter organized educational programs to start where their previous educational preparation left off and to equip them to do work by which they can support themselves with dignity and self-respect becomes a responsibility of the educational institutions beyond high school. This is an essential part of career education in junior colleges, technical institutes, area vocational schools, divisions of four year colleges, both private and public, and proprietary business and technical schools.

More programs to serve these underprepared persons are needed. We know how to organize such programs, and we as educational leaders must provide these services to all who need them. Herb Striner has pointed out that gross national product growth depends on Adult

Occupational Education!

Today, as in the past, many of the Nation's youth and adults participate in organized, postsecondary educational programs in technical institutes, junior and community colleges, branches of four year colleges, and universities, business colleges, and a wide variety of public or private specialized schools where they prepare to enter jobs as widely divergent as heavy construction equipment operation and training to be artists' models. The range of these programs is as broad as the applied technologies, related arts, health, environmental science and conservation, social sciences, physical sciences, biological sciences, and horticulture.

PUBLIC JUNIOR COLLEGES, TECHNICAL INSTITUTES AND AREA VOCATIONAL TECHNICAL SCHOOLS

The fastest growing segments of the postsecondary, non-baccalaureate career educational establishment are the junior and community colleges, public technical institutes, and area vocational and technical schools. These schools receive most of the Federal, State and local financial support for occupational education below the baccalaureate level. They have the advantage of being able to respond to the needs of the geographic areas which support them.

The involvement of four-year colleges and universities in post-high school non-baccalaureate career education appears to be growing in response to national needs.

A study, "Technical Education: Less Than Baccalaureate Level Programs in Higher Education," made by Eastern Kentucky University in

1971 showed that over 150 State colleges and universities, including land-grant colleges, offered technical programs. This number represented slightly more than 75 percent of all such institutions.

A recent study, "A Summary of Paraprofessional Training in Colleges and Universities, 1970-71" published by the Office of New Careers, Department of Health, Education and Welfare, Washington, D.C., indicated that 363 colleges and universities offered a total of 937 non-baccalaureate programs for paraprofessionals in the combined fields of health, education, and welfare service. This study included both public and private institutions, and was limited to health, education and welfare fields in view of the growing need for technicians and similar specialists. The same study reported that 397 junior colleges offered a total of 1,384 programs in the same fields.

Both studies show that four-year colleges and universities are an important part of the non-baccalaureate postsecondary career education establishment, and perhaps these institutions should become significantly more involved. With their residential (dormitory) capabilities and established faculties and facilities in engineering, health, agricultural, oceanographic, earth, and social sciences, they have a unique capability to provide programs for very specialized kinds of technicians in fields where enrollment must be drawn from a State or region where only one program may be needed or justified to prepare the necessary specialized workers.

PRIVATE SCHOOLS AND COLLEGES: THEIR IMPORTANCE

Private educational institutions for occupational education beyond the high school comprise a very important part of postsecondary education. There are more private technical institutes, colleges, business schools and specialized trade and technical schools than public institutions which offer less than baccalaureate occupational education programs. The U.S. Office of Education lists about 7,500 accredited institutions under the federally supported student loan programs. Of this number there are about 2,500 public junior colleges, technical institutes, four-year colleges and universities and area vocational schools which offer technical education programs.

In addition to the accredited private institutions there is evidence that there are probably as many as 10,000 private schools offering specialized occupational programs. Many do not seek accreditation for purposes of student loans but are nonetheless long-established institutions rendering an effective specialized education service. The private postsecondary institutions probably enroll about as many students beyond the high school as do the public ones, but they usually graduate and place a larger proportion of their students. (This does not include home study correspondence schools.)

Much can be learned from them because their programs must be excellent or the institution will go bankrupt. They listen attentively to employers and teach what students need to know rather than what someone thinks is good for them. The instructors teach as if their jobs depend upon successful graduates because they do.

The Bureau of Adult, Vocational and Technical Education in the Office of Education maintains constant liaison with the organizations which accredit and represent private institutions. And Congress, through the Manpower Development and Training legislation, the Vocational Education Act of 1963 as Amended in 1968 and in other important legislation, has emphasized the need for the public and the private sectors to complement one another to provide the necessary educational programs for occupational education beyond the high school.

EMPLOYERS OF ALL KINDS, BOTH PRIVATE AND PUBLIC

A great deal of the career education beyond high school is obtained on the job but enhanced and completed by part-time attendance of informalized classroom laboratory or clinical educational programs. Examples are clinical programs for nurses, preparation of law enforcement officers, and cooperative education programs for technicians of all kinds. Apprenticeship programs for specialized craftsmen and service workers whose work involves the application of more complicated and interrelated technologies, particularly those spanning more than one major field of knowledge such as electrical and mechanical maintenance, are other examples.

Formal classroom or laboratory education combined with work on jobs will become increasingly necessary to prepare bio-medical equipment technicians, electro-mechanical technicians, and marine life and oceanographic technicians. They must understand both the biological and physical sciences underlying their disciplines to meet their responsibilities as technical supportive personnel.

Private industrial employers, the military, and all other employing agencies, both private and public, also have their part to play in post-secondary career education.

The contribution of employers of all sorts to specialized occupational education by providing on the job training and work experience will become even more important in the future. The advantages of cooperative education programs or comparable internships have been recognized since the preparation for scientific careers began. The internship served by medical doctors to learn how to heal by healing is little different except in degree from the many specialized work experiences required by modern technical workers in most fields. The reality of on the job training provides experiences which cannot be simulated in a school situation and permits the learner to gain some degree of self-support, to gain respect for himself and for the experienced masters of the work, and to learn the practices of the system within which he will work. More cooperative programs will be needed to prepare people for the very specialized kinds of work that cannot practically be simulated in a laboratory.

RECENT USOE DEVELOPMENTS IN POSTSECONDARY EDUCATION

As further evidence of the USOE commitment to career education, Commissioner Marland appointed a USOE task force under the chairmanship of the Executive Deputy Commissioner, Peter Muirhead, with representatives in working subcommittes from all major Bureaus and

offices of the Office of Education. In addition, he recently convened a panel of 24 scholars who are broadly representative of the academic community to examine the career education concept from their viewpoint and to constructively criticize the program as it develops and progresses.

Two months ago I had the pleasure of speaking before the National Conference of State Junior and Community College Directors in Columbus, Ohio on postsecondary career education. I invited their assistance, their criticism, their support and participation in the development and implementation of career education beyond the high school. At that time I also invited a number of the members of the junior colleges directors' organization to form a liaison committee with the Office of Education, Bureau of Adult, Vocational and Technical Education. It held its first meeting February 3, 1972. In addition to State Community College Leaders, representatives of the American Vocational Association and the American Association of Junior Colleges were present. The Liaison committee will provide a means for continuing dialogue and cooperative efforts between the Bureau of Adult, Vocational and Technical Education; the State Directors of Community Colleges; the State Directors of Adult Education and others actively involved in developing and implementing career education across the nation.

The State Directors of Adult Education convened in a meeting in December to discuss career education as it relates to the Bureau of Adult, Vocational and Technical Educational Education in the U.S. Office of Education and to the programs being administered in the States through that office.

"The 25 Technical Careers" National Campaign by the Advertising Council which was first announced at the National Technical Education Clinic held in St. Louis in 1968. It was promoted and sponsored by the National Industrial Conference Board with the cooperation of the U.S. Office of Education and has been extended through December 31, 1972. The extended campaign is now supported by both the National Industrial Conference Board and the National Manpower Foundation with the cooperation of the U.S. Office of Education. The State Directors of Vocational Education have also been deeply involved since letters requesting brochures are referred to them. Many States have produced excellent directories and have greatly increased their capacity to inform their citizens about programs in their States. This national advertising program is supported by employers throughout the country in a mutual endeavor to find a way to meet the growing need for more technicians and specialized supportive personnel.

Since the campaign began in mid-1968 it has attracted considerable nationwide interest. More than 1,200,000 people have requested the "25 Technical Careers You Can Learn in 2 Years Or Less" booklet, and many have written follow-up letters to the Office of Education asking for further information. In addition, a heavy volume of correspondence has been received requesting information about technical career education, and advocating initiation or strengthening of technical education programs. This mail has been addressed to the President, the Secretary of Health,

Education and Welfare, Members of Congress, and the U.S. Commissioner of Education.

Since the campaign began there have been significant enrollment increases. In FY-1970 there were over 420,000 or 78 percent more student enrolled in public post-secondary education programs than in FY-1968. Incomplete reports indicate that enrollments in private technical schools increased during that period also. Perhaps even more significant is the increase in expenditures by Federal, State and local governments for post-secondary occupational education from $252,826,000 in 1969 to $454,142,000 in 1970. This represents nearly an 80 percent increase. We beleive that the continuation of the advertising campaign will continue to help strengthen occupational education programs beyond high school.

There is also continuing support for technical career education curriculum development. The major research, development and pilot programs in four technical areas: electro-mechanical, biomedical equipment, electro-optical, and nuclear medical under contract with the Technical Education Research Centers at Cambridge, Massachusetts, continue to be supported. You will hear more about them later this week in the session devoted to teacher education.

Two year post-high school curriculums are also being developed under contracts for Library Technicians, Educational Media Technicians, Veterinary and Meat Inspection Technicians, Air Pollution Technicians,

and Police Science Technicians. A contract for a special guide entitled"Administrative Factors and Actions in Initiating Post High School Environmental Programs, A Suggested Guide," is nearly complete and should help in this important area of post-secondary career education. The Bureau has also provided advice and encouragement to the National Fluid Power Foundation which has prepared a Fluid Power Technology curriculum guide.

Career education contractors are now developing materials K through 14 in the cluster areas of Agribusiness and National Resources, Transportation, Textile, Apparel and Accessories Industry, Recreation, Hospitality and Tourism, Public Service, Health, Manufacturing, Child care and Development, and several others. These important materials should strengthen the preparation and interests of elementary and high school students in post-secondary, non-baccalaureate career programs in years to come.

Much needs to be done though before the concept of career education becomes a fully developed system. Much has been done already in terms of developing working models, in building cooperative programs with employers of all kinds, and in cooperating with employee organizations and organized labor. But much more has to be accomplished!

The concept of career education seems well underway but, as Commissioner Marland says, "it must be built by the efforts of everyone, in his own way, if it ever is to achieve its aims." And if by such cumulative development, it does fulfill its evident promise it

will be of inestimable value both to the individuals involved and to our complicated technological society.

One inescapable aspect of that promise is the tremendous growth in the number and variety of post secondary career education programs and services to fulfill the inevitable need for technical education. For technology is an area in which careers are in fact unlimited!