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Increased pressures for added area vocational-technical schools in Minnesota led to this study with objectives of determining: (1) present and future employment needs, (2) geographic distribution of schools, (3) utilization of school facilities, (4) present and projected enrollment of students, (5) student characteristics, (6) projected facility needs, (7) projected cost of adequate buildings, equipment, and maintenance, and (8) staff needs and qualifications. The historical background, mission and goals, occupational information and employment needs, vocational-technical school districts, enrollment and student characteristics, utilization, and staffing were examined in the development of recommendations and implications for the future. Some major recommendations were that: (1) the department of education establish criteria for school accreditation, (2) course offerings be expanded in all operating area vocational-technical schools, (3) a communication system be established among area vocational-technical schools and schools offering baccalaureate programs, (4) a detailed system for follow-up of graduates be initiated, (5) a single file of information be developed showing occupational training being offered in the state, and (6) classes and employment be scheduled to provide for a more efficient use of educational facilities and student time. (DM)

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VOCATIONAL - TECHNICAL EDUCATION

1968

A STUDY OF THE EFFECT OF THE
AREA VOCATIONAL TECHNICAL SCHOOLS
IN THE STATE OF MINNESOTA

VOCATIONAL TECHNICAL EDUCATION
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A Summary Report of
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The data upon which this report is based came from many sources. Use was made of official records and reports of the Department of Education.

Questionnaires sent to all area vocational technical schools were followed up until 100 percent return was accomplished.

This study should be considered in conjunction with:

1. Education 1967 (Domian Report), Chapter IV

2. Minnesota's Manpower 1960 to 1975

3. Education For a Changing World of Work, Report of the Panel of Consultants on Vocational Education

4. Projected Program Activities in Vocational Technical Education, July 1, 1967,--June 30, 1968

5. Minnesota Cooperative Manpower Plan, Minnesota State Manpower Coordinating Committee, June 30, 1967

The last two publications represent planning documents and studies done either by the Vocational Division or by the cooperative efforts of several agencies including the Vocational Division.

SECTION ONE

OVERVIEW OF THE STUDY

PURPOSE - SCOPE - CONDUCT
ORGANIZATION - GENERAL METHODOLOGY

OVERVIEW

The history of area vocational technical schools in Minnesota indicates that for many years communities were reluctant to invest monies in anticipation of future economic development of the State. As a result of this reluctance, the area vocational technical schools had to prove their worth through the willingness of a small number of communities to invest resources in the idea.

As these schools have proven themselves, the interests of local communities have increased. Establishment of an area vocational technical school in a community represents economic as well as educational advantages.

The State Board for Vocational Education in 1964 approved the recommendation of the Department of Education that the first priority for use of available federal funds be for enlargement of existing school facilities and updating equipment. It was also recommended at that time that course offerings in all area vocational technical schools be increased. This has been done.

The 1964 report also indicated that the north and south suburban area of the Twin Cities were not being served adequately. This condition has been alleviated partly by the approval of Anoka as an area vocational technical school. Development of this facility is limited only by financial resources. The suburban Hennepin area is presently under study.

Increased pressures for added area vocational technical schools raise the question as to whether the State should support a large number of small area vocational technical schools or a small number of large schools. The objectives of the study considered this and related questions. Much of the information gathered led to additional questions as well as answers. Keeping the study current will provide data not more than one year old, on which the State Board for Vocational Education may determine policy.

The variables affecting projections are many and projections with respect to enrollment and costs should be corrected more frequently than once every five years.

OBJECTIVES AND SCOPE OF THE STUDY

In 1967, the State Board for Vocational Education requested that the Vocational Division of the State Department of Education initiate a new study to investigate the future needs of the state. This study was begun on August 14, 1967.

The objectives of the study are to determine:

1. Present and future employment needs.

2. Geographic distribution of area vocational technical schools in the state.

3. Distribution of area vocational technical schools with regard to population, density, and mobility.

4. Utilization of area vocational technical school facilities.

5. Present and projected enrollment of students.

6. Student characteristics; for example, sex, age, and socio-economic factors.

7. Projected facility needs for additional students.

8. Projected costs of adequate buildings, equipment, and maintenance.

9. Staff needs and qualifications.

Because of time and personnel constraints it was not possible to conduct the study in sufficient depth and breadth, nor was it possible to review as many alternatives as should have been considered; for example, comparison of similar programs in other institutions, analysis of data pertinent to efficient use of resources with regard to educational level.

1. The study is limited to public post-secondary vocational technical education under the jurisdiction of the State Board for Vocational Education.

2. Little consideration has been given in this study to high school vocational education, and the implications of its potential in fighting the war on poverty.

3. Little consideration has been given to adult programs.

4. In projecting costs of needed facilities, the cost of construction has been assumed to remain constant. Construction costs are rising and will undoubtedly continue to increase. The same is true regarding the costs of equipment.

5. Data pertaining to state junior colleges, state colleges, the University of Minnesota, private colleges and vocational schools, full-time pre-employment training conducted by industry, and apprenticeship programs were taken from State Department of Education records.

SECTION TWO

HISTORICAL BACKGROUND

HISTORICAL BACKGROUND

Although the history of Minnesota's vocational technical education program may be traced back to the latter part of the 19th century, the most significant advances have been in recent years. Many developments have coincided with Federal legislation, as this brief historical sketch indicates.

FEDERAL

1906 The first positive action in the development of vocational education was felt when the National Society for the Promotion of Industrial Education was formed.

1917 Smith-Hughes Act, Public Law 347, 64th Congress, approved February 23, 1917, provided a Federal grant of approximately $7.2 million annually to the states for the promotion of vocational education in agriculture, trade and industrial education, and home economics.

1929 George-Reed Act, Public Law 702, 70th Congress, approved February 5, 1929, authorized an appropriation of $500,000 for the year ending June 30, 1930, and an additional $500,000

STATE

1914 Minneapolis Vocational High School and Technical Institute, public institution founded.

Dunwoody Industrial Institute, privately endowed institution founded.

1916 State Board for Vocational Education formed in anticipation of the Smith-Hughes Act. This Board later became the Minnesota State Board of Education.

1921 St. Paul Vocational School, public institution founded.

FEDERAL	STATE
each year thereafter for four years. The appropriation was divided equally between agriculture and home economics.	
1934 George-Ellzey Act, Public Law 245, 73rd Congress, approved May 21, 1934, authorized an appropriation of $3 million each year for three years. The money was equally divided among agricultural education, home economics education, and trade and industrial education.	
1936 George-Deen Act, Public Law 673, 74th Congress, approved June 8, 1936, replaced the George-Ellzey Act when it became evident that enough funds were not made available through the George-Ellzey Act. The George-Deen Act authorized $12 million. The money was divided equally among the three services; allotments to the states were made on the basis of farm population for agriculture, rural population for home economics, and nonfarm population for trade and industrial education.	
	1940-1945 Vocational Training Acts for War Production Training, Public Law 668, 76th Congress, approved in 1940, appropriated $15 million. Public Law 812, 76th Congress, appropriated $26 million in 1940-1941. Subsequent laws resulted in approximately $279 million for a 5-year period (1940-1945). 7½ million persons received training

FEDERAL	STATE
	in war production occupations, at a cost of approximately $40 per individual trainee.
	1945 The Minnesota State Legislature found that 93% of available trade and technical training was centered in three first-class cities: Minneapolis, St. Paul, and Duluth. Two bills were introduced to correct this inequity, Senate File 496 and House File 537. The House measure, authored by Walter Rogosheske, Frederick Memmer, Richard T. Hart, John Kinzer, and Joseph J. Daun, became the Area Vocational Technical School enabling law.
1946 George-Barden Act authorized an appropriation of $28,850,000 annually for further development of vocational education. Public Law 586, 79th Congress, approved August 1, 1946.	
	1947 First Area Vocational Technical School in Minnesota, established at Mankato.
1958 National Defense Education Act, Public Law 85-864, 85th Congress, approved September 2, 1958, authorized an appropriation of $15 million annually for four years to support programs limited exclusively to the training of highly skilled technicians in recognized occupations necessary to the National defense.	
1961 Area Redevelopment Act, Public Law 87-27, 87th Congress, approved May 1, 1961, authorized $4.5 million annually until 1965 for vocational education.	

	FEDERAL	STATE
	The Act authorizes vocational education for unemployed and under-employed persons who reside in certain geographic areas which were designated as redevelopment areas by the Secretary of Commerce.	
1962	Manpower Development and Training Act, Public Law 87-415, 87th Congress, approved March 15, 1962, authorized a total of $419 million for the following three years "for training and skill development programs." Persons entering training programs to be referred by the Labor Department which could, through the Secretary of Health, Education and Welfare, contract with private institutions or agencies for training not available in public institutions.	
1963	Vocational Education Act, Public Law 88-210, 88th Congress, approved December 18, 1963.	
1965		Provided tuition-free vocational technical education to "any qualified nonresident person who is not a high school graduate who has been out of school at least a year and who has reached the age of 18 but who has not attained his 21st birthday."
1967		Area vocational technical schools 25 and 26 established at Anoka and Rochester.

FEDERAL	STATE
	1967 Legislation amended to provide opportunity for veterans who entered active military service before age 21 and have now exceeded this age, to attend area vocational technical schools tuition free. Maximum age for such benefits, under normal circumstances, 29 years.

SECTION THREE

MISSION AND GOALS OF VOCATIONAL EDUCATION

MISSION

The purpose of the area vocational technical school is broadly defined in the 1945 Minnesota Area School Act and the Declaration of Purpose of the Vocational Education Act of 1963.

Minnesota Statutes, Section 121.21, Subdivision 3, states:

> It is the purpose of this section to more nearly equalize the educational opportunities in certain phases of vocational technical education to persons of the state who are of the age and maturity to profitably pursue training for a specific occupation. If the State Board finds, as a result of its inquiry, that the establishment of a new area vocational technical school, according to the petition, would further the educational interests of all the people of the state, and is in accordance with the plans and program of the State Department for the vocational and technical education of the people, it may approve the petition.

The Vocational Education Act of 1963 states:

> It is the purpose of this part to authorize Federal grants to States to assist them to maintain, extend, and improve existing programs of vocational education, and to provide part-time employment for youths who need the earning from such employment to continue their vocational training on the full-time basis, so that persons of all ages in all communities of the state--those in high school, those who have completed or discontinued their form of education and are preparing to enter the labor market, upgrade their skills or learn new ones, and those with special educational handicaps--will have ready access to vocational training or retraining which is of high quality, which is realistic in the light of actual or anticipated opportunities for gainful employment, and which is suited to their needs, interests, and ability to benefit from such training.[1]

A review of the basic elements and philosophy of vocational education states:

> In 1963, Congress gave a thorough review to the basic elements and philosophy of vocational education for the first time since 1917. Recognizing the need for flexibility in a rapidly changing society, an entirely new law was enacted. The Vocational Education

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[1]Public Law, 88-210, 88th Congress, H. R. 4955, December 18, 1963, Part A, Section I.

Act of 1963 was specifically designed to provide a vehicle for meeting new manpower needs as they arise and for making programs available to young people which are tailored to meet their individual needs.

There are three facets of that Act which are of prime importance: (1) a recognition of post-secondary and adult education as the areas of future growth; (2) special programs to meet the special needs of persons who, by reason of disadvantage or handicap, have difficulty in succeeding in regular programs; and (3) provision for a complete professional evaluation after five years of operation.

The evaluation was completed in January of 1968, and the Congress is reviewing the program in depth. This review cannot be conducted out of the context of the total picture of American education.

These basic facts must now be recognized and dealt with in considering vocational education: (1) the level of American education of greatest overall importance has shifted from the secondary level to the post-secondary level; (2) thousands of disadvantaged young people drop out of school before high school graduation; and (3) the manpower needs of the economy are becoming so highly technical, varied and shifting that it is highly improbable that a single-purpose terminal secondary school training program can adequately prepare students for a lifetime career.

The capacity of traditional vocational programs to cope with these facts of life is doubted by many educators. Some have suggested that vocational education no longer has a reason for being. I disagree with those who see no future in vocational and technical education. I believe that the nation's educators can bring about the changes in vocational and technical education which will make those programs fill what seems to be a void in the future of our education system.[1]

The State Advisory Council prepared and the State Board for Vocational Education adopted the following Policy Statement on Vocational Technical Education in Minnesota in 1966. This succinct document outlines many of the guidelines followed in the research for and preparation of this report. The entire Statement is presented on the following pages.

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[1]Senator Wayne L. Morse, Education for Twenty-First Century Employment, Compact, June 1968, Vol. 2, No. 3, page 4.

Vocational technical education is specific preparation for employment in occupations in all fields and levels other than the professional or those requiring a baccalaureate degree.

It is the primary concern of this Council that the youth and adults throughout the state of Minnesota will have ready access to vocational technical education which is of high quality and which is suited to their needs, interests, and abilities.

We believe that any state supported vocational technical education program should conform to the following well-established standards and principles if it is to provide efficient and effective training:

1. *The State Board for Vocational Education shall be the administrative authority for all vocational technical education in the state of Minnesota. The State Plan for Vocational Technical Education shall be the instrument through which vocational technical education programs are defined and structured.*

2. *Vocational technical education shall provide adequate and timely instruction in both preparatory and supplementary training which will reflect occupational trends, meet the changing needs of job requirements and encourage effective citizenship.*

3. *There shall be an established need for the program.*

4. *The primary purpose of the curriculum shall be to prepare students for occupational entry or advancement, with the exception of those students enrolled in vocational classes in the secondary schools where the training is directed toward competence in useful skills.*

5. *The content of the curriculum shall be based on the skills and knowledge required in the occupations and will be developed and conducted in consultation with persons actively engaged in the occupations.*

6. *Vocational technical programs shall be supervised and directed by a professionally qualified vocational program director.*

7. *The instructional staff shall be composed of persons who are occupationally and professionally competent.*

8. *The staff serving vocational technical programs shall include competent personnel responsible for and capable of insuring a sound program of assistance to students in selection, enrollment, placement and follow-up.*

9. *The staff, through proper coordination with industry, shall accept the responsibility for the placement of students.*

10. *Instructional facilities and equipment shall be comparable to those acceptable in the occupation.*

All public institutions offering vocational technical courses which conform to the foregoing standards and principles shall be eligible to apply for vocational technical funds.

The task of planning, developing and carrying on the vocational technical program to prepare the nation's work force is a continuing responsibility and challenge to the vocational leadership of the nation. Today's world owes much of its material progress and development to the highly skilled and knowledgeable worker who was trained in the vocational programs of yesterday's world. Tomorrow's world will be shaped in the image of the youth and adults that we educate today in the high schools and area vocational technical schools as well as the colleges. At all times the aim shall be to meet fully our obligation to educate for vocational, civic, and personal competence.

SUPPORTING STATEMENTS

1. All federal acts dealing with vocational education including the Smith-Hughes Act of 1917, the George-Barden Acts of 1946, 1956, 1958, and the Vocational Education Act of 1963, have stated without reservation that each state must have a State Board for Vocational Education.

   Federal regulations require that the State, through its legislative authority, create such a Board. In administering the vocational education programs, the Office of Education will deal only through the State Board and its authorized representatives. (Sec. 5-a1 P. L. 88-210)

   In Minnesota the State Legislature in 1917 designated the State Board as the State Board for Vocational Education. (Minnesota Statutes 124.53)

   As a condition for the allotment of vocational funds, the State Board is required to submit a state plan in an approvable form and to cause amendments to be made whenever there are changes that it deems advisable.

2. Supplementary training means training which is supplementary to the daily employment of workers enrolled. It must increase his skill or knowledge and improve his ability in the work he is doing. It keeps abreast of technological and economic changes in his occupation and assists him to qualify for advancement in his field of work.

   Preparatory training means training designed to provide the skills and knowledge essential to the successful entrance into an occupation.

3. All schools contemplating the establishment of vocational programs shall verify occupational needs locally and statewide. The employment offices will make available to the State Board and local educational agencies occupational information regarding reasonable present and future prospects of employment.

   Additional available occupational survey information should be obtained from the employment community such as labor, management, and industrial development organizations. This shall be coordinated with information available through the Minnesota Department of Employment Security and other state and federal agencies.

4. Flexibility and adaptability must be essential characteristics. In the process of preparing the student for immediate employment, course content must be:

   a. Short and intensive, to meet specific but limited needs for job entrance or promotion.

   b. Extensive, in terms of content and time, to meet the needs of beginning or experienced workers for occupations demanding a high degree of skill and technical knowledge.

   c. Broad, in terms of technical content, with emphasis on related subject matter including communications, science, mathematics, drafting, occupational processes and practices, and human relationships.

5. Vocational education, more than any other type of education, needs close cooperation with the community. It trains workers for productive lives. It needs the periodic help and criticism of the real work-a-day world to be sure that its preparation for a life-work is useful.

6. Vocational technical programs, in order to be successful, require close ties with labor and management of the industries and occupations they serve. Maintaining these relationships is essential and requires adequate supervision and direction by qualified persons.

7. Vocational technical instructors are selected on the basis of occupational knowledge, experience and professional training. This criteria for an effective vocational technical program is required by the U. S. Office of Education and the Minnesota Department of Education. Appropriate occupational experience is an absolute requirement in the preparation of a vocational technical instructor who expects to teach either major subjects or related courses in the curriculum.

8. Vocational technical programs must provide an effective counseling and guidance service in order to insure, insofar as it is humanly possible to do so, that every student will select, enroll in, pursue and successfully complete the educational program that will best meet his interests, aptitudes, capacities, and abilities.

9. The student must be placed within the limits of ability and choice in employment in the occupation for which he was trained. No vocational or technical curriculum can be justified unless it prepares students for employment in one or a cluster of occupations. However, during times of high employment, actual employment of a student is not sufficient proof of the course value. Periodic surveys should be conducted asking both the former student and the employer to evaluate the contribution of the instruction to the competency of the worker. In addition, continuous coordination with industry should be maintained so that changes in industrial requirements or shortcomings of the educational program may be immediately pinpointed and relayed to the school. Persons responsible for this coordination should have adequate occupational experience, plus professional training, in order to understand the processes involved.

10. Instruction in occupational skills requires equipment and space comparable to the facilities with which a student will be working when he is employed. Through constant appraisal of developments in the occupation, vocational programs must evaluate equipment and facilities. Equipment used must be of high quality in order that it may meet the needs of the learner in providing learning experiences similar to those he will encounter in his occupation.

GOALS

The goals of vocational education, to provide high quality occupational education for full-time and part-time students, are:

1. Pre-employment education for high school and post-high school students.

2. Supplementary education necessary for advancement.

3. Retraining for adults having obsolescent skills.

4. Updating occupational skills, or preparation for entry into a new occupation, for those re-entering the labor market.

5. Providing opportunities for individuals to pursue vocations suited to their potential capabilities while meeting the needs of trades, business, industry, and agriculture.

POST-SECONDARY EDUCATION SHOULD ASSUME NEW ROLE

Post-secondary education has replaced secondary education as the terminal program for a majority of American young people. High school vocational programs should reflect this change. All too few have done so. The new technology has made many of the occupations for which high school training is adequate almost obsolete. The vast majority of American young people want to continue their education beyond high school. Why should they be enrolled in terminal training programs in high school?

Vocational programs can be of more use to these students if they are designed to prepare students for post-secondary technical programs. Basic principles of applied science would be of more use than lathe operation to a student who would like to continue his education.

Failure to recognize the shift from secondary to post-secondary education on the part of vocational educators has led to failure on the part of the general public to recognize the importance of technical education at the post-secondary level. As a result the parent and the child are so intent upon a college education that the possibility that the child might prefer to be a laboratory or electronics technician is completely overlooked.

Parents, realizing the importance of education in the future, are making every effort to make sure their children go to college. Young people, for whom a college education appears only a distant improbability, are in despair when they think of their future. The importance which has been placed upon a college degree in the marketplace is a disservice both to colleges and universities and to the young people who feel compelled to obtain a degree.

All too often the employer unrealistically demands the college degree for its presumed social status value regardless of the actual job requirements. More adequate recognition should be given to a degree other than the bachelor's, such as those issued by the post-secondary two-year institution. There is or should be room for a four-year degree similar to those granted by polytechnic institutes that have been so successful in many European countries.

Traditionally colleges and universities have been designed to provide students with an opportunity to get a liberal education--not to train them for a job. The curriculum was one designed to terminate with a doctorate in philosophy. In recent decades, universities have moved in the direction of training students for jobs by offering post-graduate professional education in such fields as medicine,

education, engineering, and law. To that extent they have in effect become vocational schools. If universal post-secondary education becomes a reality in this country, as I hope it does, post-secondary education will be, to an even greater extent, vocationally-oriented. This is as it should be.

In my opinion it would be a severe mistake to make our future entirely dependant upon adapting the college curriculum. The concepts which form the basis for vocational, technical and engineering curricula can be more readily adapted. An expansion of the applied sciences curricula offers a realistic avenue by which young people may prepare themselves for productive and satisfying careers throughout their lives.

It goes without saying that post-secondary vocational and technical institutions are in a position to play a major role in the future of our society. These institutions are in a unique position--a position in which they can train young people to enter the labor market and at the same time offer an education to prepare them to meet crises in their lives arising from the rapidly changing technology and expanding economy.

A view of the occupations in which there is a current shortage of manpower will indicate the direction occupational education must take: physicians, nurses, health service personnel, teachers, social workers, engineers, draftsmen and mathematicians.

Projections of employment growth over the next ten years indicate that the fastest growing occupational groups are professional and technical workers, service workers, clerical workers, and managerial and proprietary workers. I foresee a time in the not-too-far-distant future when our technology will have advanced to the point that all of the present "skilled labor" occupations will be obsolete. Persons who are now in, or are training for, those occupations will have to be retrained unless they have an education which will permit them to change with the needs of the economy.

The recent period of revolutionary discoveries and innovations in science and technology has resulted in such an accumulation of knowledge that even scientists and engineers are threatened with inability to keep up with their fields. If this problem is facing scientists and engineers, persons in the occupations ancillary to those fields are faced with an almost insurmountable task in keeping up. This means that post-secondary vocational and technical schools are going to have to adapt to continuing education programs in the technical fields. It means that education is going to become a facet of everybody's career which continues throughout an entire lifetime.

There are limits to what can be done in the form of legislation to guide vocational education in the future. Congress can make funds available and provide general guidelines for the use of those funds. The primary responsibility for vocational and technical education rests with the people involved at the local level. They must be ever alert to insure response to the ever-changing needs of the people for education and the needs of the economy for manpower.[1]

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[1] Morse, op. cit., pages 4-5.

SECTION FOUR

OCCUPATIONAL INFORMATION AND EMPLOYMENT NEEDS

OCCUPATIONAL INFORMATION AND EMPLOYMENT NEEDS

It has been argued that a society's occupations, with their intrinsic values, affect the priorities it sets. Occupational data, then, may serve to indicate the effects of work and leisure on a given society. Furthermore, they may provide educators with guidelines for the planning and development of programs to prepare members of a society for their roles.

Rupert N. Evans, in addressing the Conference on Occupational Data Requirements for Education Planning, June 1965, suggested that occupational data should, in part, answer such questions as, "What should be the curriculum of the school, particularly for education which is (and most is) occupational related? What does the applied mathematician need to know? The physician? The bricklayer, the bellboy, the housewife? Most particularly, what does the teacher need to know?"

The Department of Employment Security, under provisions of the Vocational Education Act of 1963, has entered into a cooperative agreement with the State Department of Education to provide occupational information for education planning. A study is under way to update the occupational information in the 1960 Census, to show the present employment and projected growth of 84 occupations for which vocational education is needed or desirable. A General Aptitude Test Battery, used by Employment Services nationally as an aid in job placement, is also under study at the University of Minnesota,[1] to define the norms for purposes of education planning. The Minneapolis-St. Paul Metropolitan Area Shortage Occupation Study completed in October 1967 was the first effort to relate employment data to vocational education program categories. The United States Office of Education and the Labor Department are developing a cross-indexed occupational reference guide which should be helpful in collecting and using occupational data. From the beginning of vocational education, statewide advisory committees have assisted in curriculum planning as well as in identifying needs for new program offerings. Some present examples of this are programs in Appliance Service, Farm Equipment Mechanics, Food Service Occupations, Data Processing, Food Merchandising, and Printed Circuit Technology.

Large changes will occur in the occupational mix of Minnesota's employed labor force between 1960 and 1975. Occupations requiring the most extensive education and training will grow rapidly while those requiring little or no education will grow less rapidly or even decline in numbers.

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[1] "Area School Student Selection Project," College of Education, University of Minnesota.

The employment in the occupational group of managers, officials and proprietors, which increased only 5.5 percent during the 1950's, is expected to increase 29.0 percent between 1960 and 1975. It will rise to almost 138,000 employees. The rise in salaried managers is accelerating as independently operated business enterprises are supplanted by corporations which manufacture on a large scale or sell to consumers through many branch stores or agencies.

The clerical and kindred workers occupational group, which includes such common occupations as bookkeeper, office machine operator, secretary, and typist was the third largest occupational group in 1960. It will become the largest occupational group in 1975 by growing 41.7 percent, adding 74,000 employees. The number of women workers in this group amounts to more than two-thirds of the total. Despite advances in the automation of record keeping, the increased volume of records and correspondence will create a steady demand for more clerical workers throughout the industry.

As the economy expands and people earn more money, there will be a greater demand for sales workers. Over 123,000 persons will be employed as sales workers in 1975, 29,200 more than in 1960. The projection takes into account that the increased use of automatic vending machines and self-service techniques could replace some type of sales clerks.

Employment of craftsmen, foremen and kindred workers will grow somewhat faster than total employment, 27.1 percent compared to 24.5 percent. This occupational group is made up almost entirely of men; women constitute less than five percent of its total employment. The occupation with the largest employment in this group is carpenter. Other specific occupations are electrician, foreman, machinist, mechanic, painter, plumber, stationary engineer, etc.

In 1950 and 1960 the largest amount of employment in any non-agricultural occupational group was in operatives and kindred workers. By 1975 it will be the third largest. It is expected to increase only 15.3 percent between 1960 and 1975. The largest occupation in this group is truck driver and deliveryman. Other semi-skilled workers included are workers who operate machinery and equipment; assemble parts to make a final product; inspect finished products; help work as gas station attendants; work in mines; etc. Automatic machinery can take over some of these tasks and its effect may be apparent by 1975.

Service is an occupational group which includes a variety of jobs requiring completely different backgrounds and personal qualifications. Some of the occupations in this group require a high degree of skill or training while others require comparatively little. Employment in this group, which increased

36.1 percent adding 37,500 workers between the decade of the 1950's, is expected to increase by 47.6 percent or 67,300 workers between 1960 and 1975. These increases can be attibuted to a growing population combined with higher personal incomes. There are not only more people but, on the whole, people are in the financial position to buy more services. Some of the occupations in this group that employ a substantial number include private household worker, hospital attendant, cook, hairdresser, practical nurse, waitress, fireman, and policeman.

Employment in the laborers occupational group will continue to decline. Mechanical innovations in material handling, new plant facilities, and an over-all trend toward automating routine activities will result in a loss of 1,100 employees between 1960 and 1975. During the 1960's employment declined by 6,100, a loss of 11.0 percent.

MINNESOTA EMPLOYMENT BY OCCUPATIONAL GROUP 1950 to 1975[4]
(In Thousands)

Occupational Group	1950	1960	1975	Change 1950-1960 No.	%	Change 1960-1975 No.	%
TOTAL EMPLOYED.....	1,143.4	1,233.4	1,536.0	90.0	7.9	302.6	24.5
Professional, Technical and Kindred Workers...	99.9	146.8	236.7	46.9	46.9	89.9	61.2
Managers, Officials and Proprietors.....	101.3	106.9	137.9	5.6	5.5	31.0	29.0
Clerical and Kindred Workers.....	137.7	177.4	251.4	39.7	28.8	74.0	41.7
Sales Workers.....	82.2	94.3	123.5	12.1	14.7	29.2	31.0
Craftsmen, Foremen and Kindred Workers.....	143.5	155.2	197.2	11.7	8.2	42.0	27.1
Operatives and Kindred Workers.....	160.3	181.6	209.4	21.3	13.3	27.8	15.3
Service Workers.....	104.0	141.5	208.8	37.5	36.1	67.3	47.6
Laborers.....	55.4	49.3	48.2	-6.1	-11.0	-1.1	-2.2
Farmers, Farm Managers, Laborers and Foremen.	259.1	180.3	122.9	-78.8	-30.4	-57.4	-31.8

[4]Minnesota's Manpower 1960 - 1975, Pages 29, 31, and 32.

The emphasis of vocational technical education is being focused on the people it serves. The following material presents information regarding student characteristics, highlighting such groups as the working women, youth and adults with special needs, and college transfers.

THE TREND OF WORKING WOMEN[1]

The proportion of working women is expected to rise substantially during the 1960 to 1975 period. The participation rates in the under 65 age groups will increase, especially the 45 to 64 age group. The 45 to 64 age group, which is expected to have a labor force participation rate of 52.3 percent in 1975, contains not only women re-entering the labor force but also some who are entering for the first time. Labor saving home equipment, packaged foods and commercial services have released time from household tasks. The rising level of education has not only prepared women for outside employment but has motivated many to work in order to finance a better education for their children. Many of these women seek and find jobs, often part time, in the trade and service industries.

During the 25-year period from 1950 to 1975 it is expected that women in the labor force will increase by 244,200 while men increase only 157,000. This represents an 18.1 percent increase for men during the two and one-half decades compared to a 77.2 percent increase for women. Over 89,000 women between the ages of 45 and 64 will be added to the labor force.

Apart from economic matters, a woman's decision whether to seek work is determined by personal factors such as her age, marital status and family duties. These also influence plans concerning duration in the work force, whether to re-enter the labor force when family duties are lessened, and when to retire.

Married women made up less than one-third of the female work force in the United States in 1940, reaching half by 1950, and exceeded half of all women workers by 1962.[2] This increase was due primarily to entry by mature women; between 1947 and 1962 the number of working women 45 and over doubled in the United States. In 1962 the average age of employed women was 41 compared to 37 in 1950.[3]

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[1] Minnesota's Manpower, 1960 - 1975, Minnesota Department of Employment Security, Research and Planning.

[2] American Women, Report of the President's Commission on the Status of Women, page 66, 1963.

[3] Ibid., page 66.

The work pattern of women is more complex than that of men due to the varying effects of marriage, children, and widowhood. Most women work sometime during their lives, whether they marry or not. Marriage and children at home tend to reduce their employment, while widowhood, divorce, and decrease of family duties tend to bring them back to the labor force.

The work pattern for women who stay single resembles closely that for men. These women work most of their lives. Those entering the labor force before age 20 will probably remain in the work force for about 40 years, compared to the 43-year average for men.[1]

Because of the likelihood that they will be working several years, it is essential that girls as well as boys give serious thought to the type of work that they will be equipped to perform in the future. Education and training will increase in importance for women as they compete with men for jobs.

LABOR FORCE PARTICIPATION RATES* FOR MEN AND WOMEN IN MINNESOTA 1960 TO 1975

Age Group	1960 Male	1960 Female	1975 Male	1975 Female
14 Years and Over.....	77.3%	34.4%	78.0%	40.0%
14-19 Years.....	43.9	34.3	50.6	37.2
20-24 Years.....	84.2	48.4	92.9	53.8
25-44 Years.....	95.6	34.1	98.0	40.6
45-64 Years.....	90.7	42.3	91.2	52.3
65 Years and Over.....	31.1	11.7	23.9	10.8

*A labor force participation rate is a percent representing the number of persons in a certain age group of the labor force compared to the number of persons in the same age group of the population.

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[1]U. S. Department of Labor, 1960 Handbook on Women Workers, page 48, 1960.

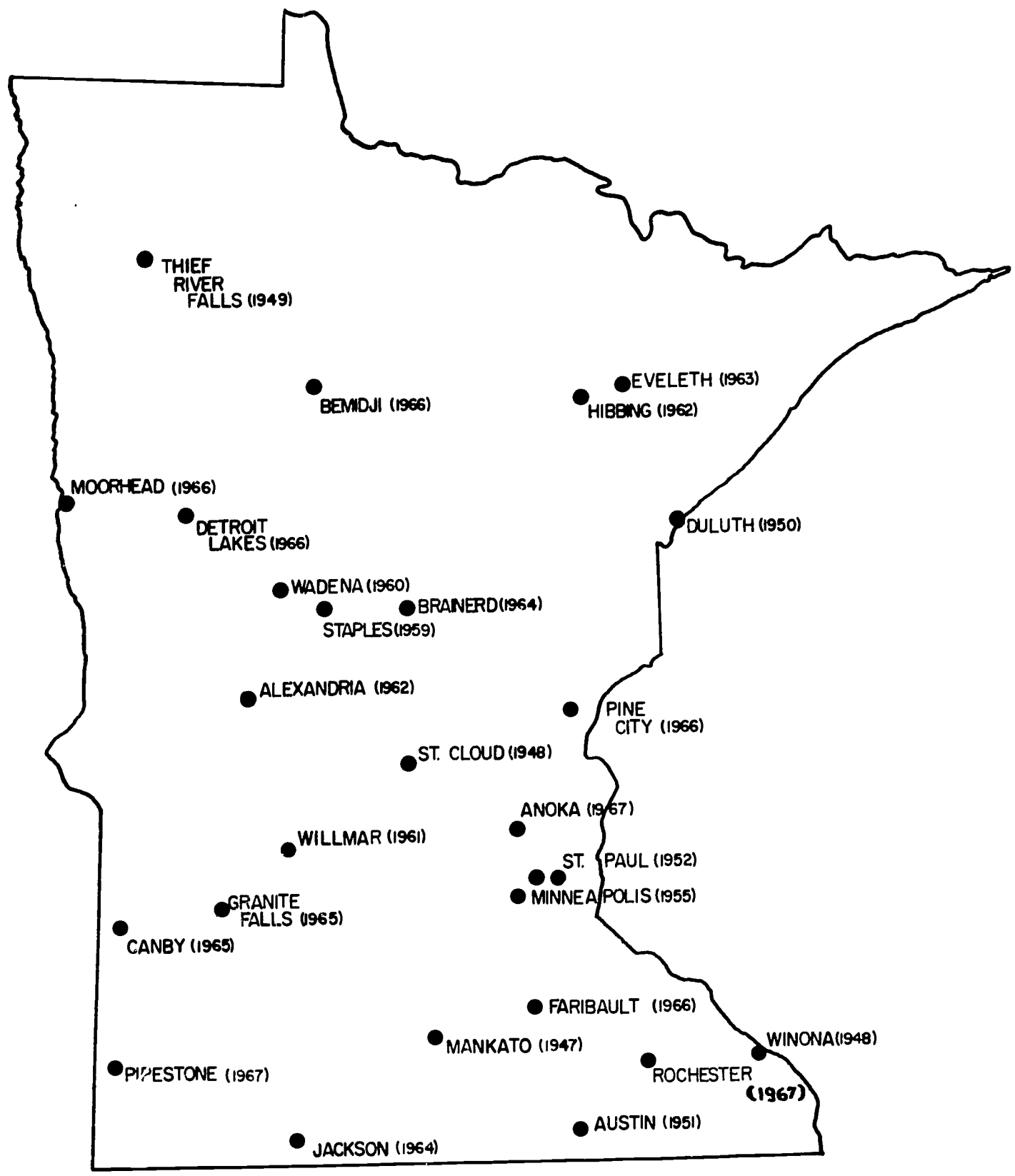
SECTION FIVE

DISTRIBUTION OF AREA VOCATIONAL TECHNICAL SCHOOLS

GEOGRAPHIC - POPULATION

DISTRIBUTION of AREA VOCATIONAL TECHNICAL SCHOOLS

LOCATIONS AND OPENING DATES OF AREA VOCATIONAL–TECHNICAL SCHOOLS IN MINNESOTA



CRITERIA FOR SELECTION OF AREA VOCATIONAL TECHNICAL SCHOOL SITES

In general, an effort is made to establish the area vocational technical schools where the potential number of students is relatively high. More students can avail themselves of educational opportunities when commuting distance enables them to live at home.

The following chart shows distances from students' homes to the area vocational technical schools they are attending.

Mileage	Number of Students	Percentage of Students
Under 10 miles	2031	25.79
10 - 20 miles	2138	27.15
20 - 30 miles	1006	12.77
30 - 40 miles	788	10.01
Over 40 miles	1912	24.28

Some area vocational technical schools offer highly specialized courses. These schools draw students from all parts of Minnesota. For example, Staples Area Vocational Technical School offers a course in the operation and repair of heavy construction equipment, Thief River Falls Area Vocational Technical Institute and Minneapolis offer a course in aviation mechanics and St. Paul Area Technical Vocational Institute offers a course in truck mechanics. Many of these courses require costly facilities and equipment. This illustrates the present policy of having all area schools open to all students of the state, not just to students of their own school districts of in their own area.[1]

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[1] *Education 1967* (Domian Report), page 153.

The following school districts have made formal application for designation as area vocational technical schools:

Albert Lea
Blue Earth
East Grand Forks
Fairfax
Hutchinson
Little Falls
New Ulm
St. James
Wells

One of the questions being raised in connection with additional area vocational technical school designations is whether these schools should be located where there are people to be served or where industry providing employment is located. The objective of the state vocational technical education program should be to serve both people and industry.

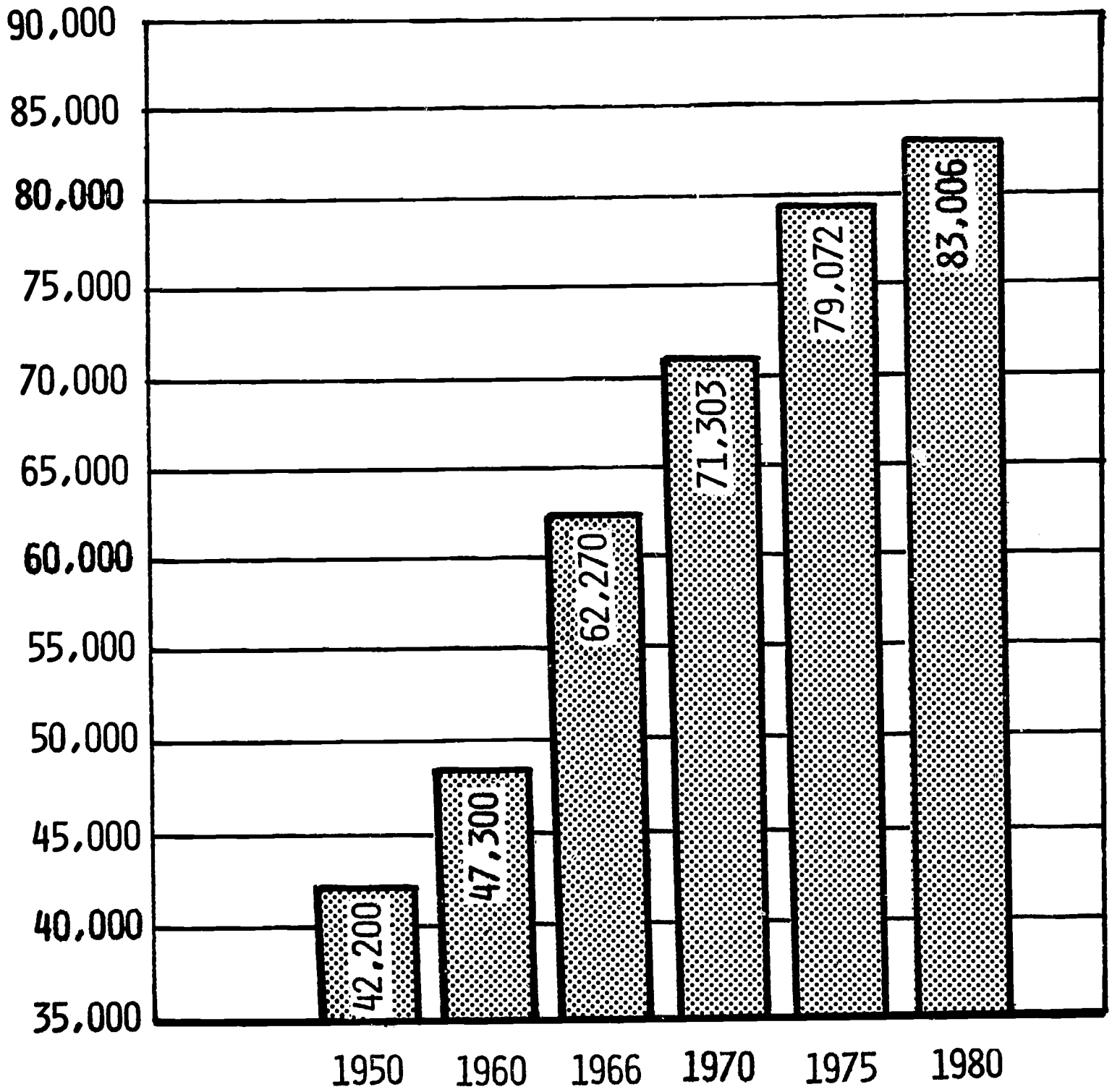
The area school is intended to serve people from a wide area and wherever industry exists and is in need of services. There is some indication now that services to industry may be even more important than in the past and that the existence of a vocational technical school in an area may spell the difference between locating or not locating new industry.

A four lane highway costs approximately one million dollars a mile and Minnesota's network of such roads has been designed to draw communities closer together and provide for economic development of the entire state. The area vocational technical school network of the state is designed for the same purpose and represents the equivalent investment of about 50 miles of four lane highway. The area vocational technical school is designed to serve people the full knowledge that in a state such as Minnesota these persons may have to travel after training to where jobs exist.

The Coordinating Commission on Higher Education recommendation that a master plan be formed for location of all types of institutions in Minnesota is a sound one as is The Domian Report recommendation in Education 1967 that priority be given to developing facilities for vocational education in the metropolitan area.

The Domian Report further recommends, "That, except in the Twin Cities metropolitan area, efforts to expand post-high school vocational technical education be directed toward expansion of programs and facilities in existing area schools rather than establishing additional schools."

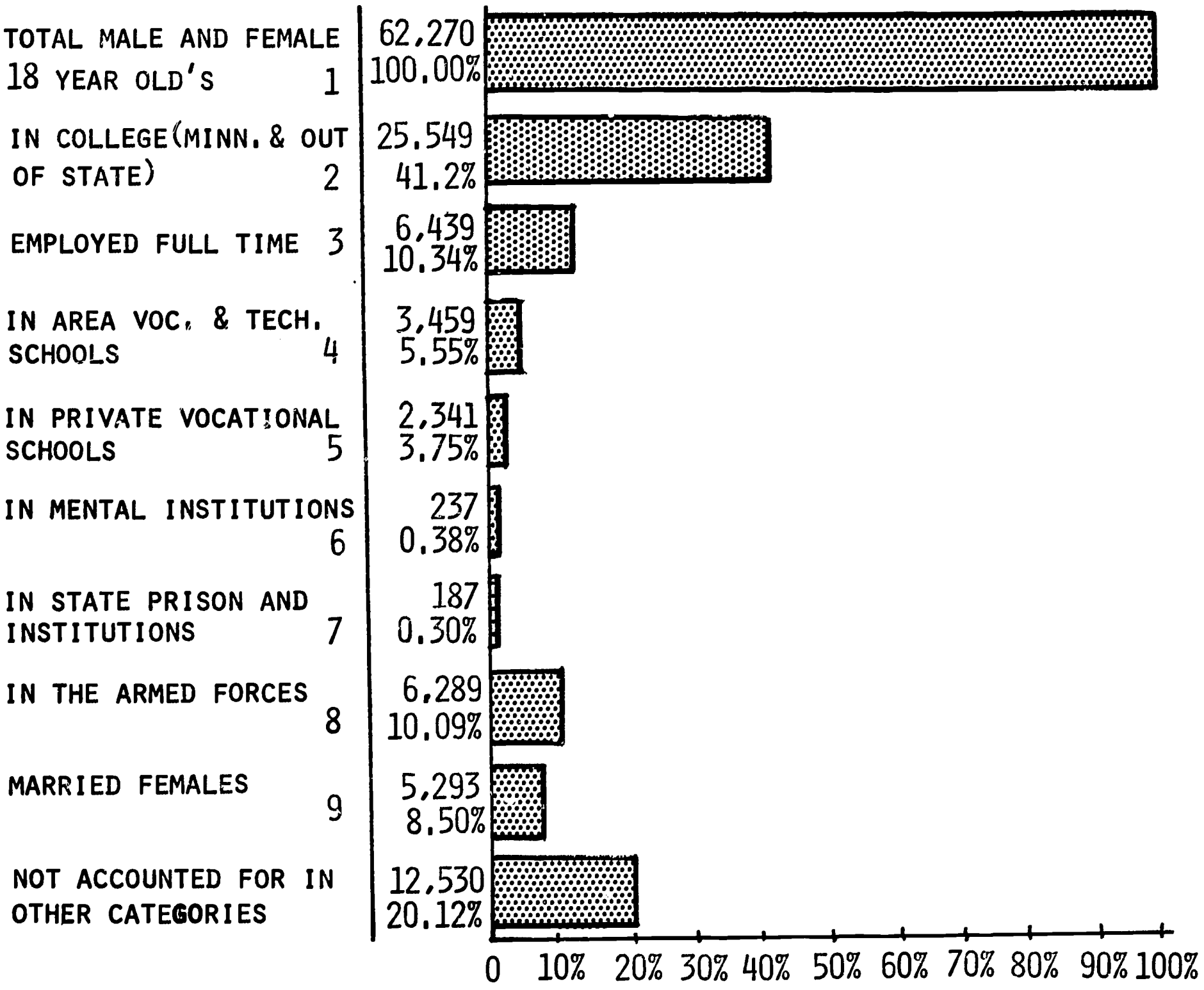
YOUNG PERSONS REACHING 18 ANNUALLY



Population growth will be especially rapid among youth reaching working age. As can be seen by the table above a subtantial growth was experienced in the early sixties. By the year 1975, 79,072 young people will reach the age of eighteen annually. Over 1 million will reach 18 years of age between 1960 and 1975. The large increase in 1964 and 1965 is directly related to the jump in the birth rate following the end of World War II. The high number of young people reaching 18 during the remainder of the period is the result of the high birth rate which persisted through the 1950's.[1]

[1]Minnesota's Manpower 1960 to 1975, Minnesota Department of Employment Security, October, 1966.

CATEGORIES OF EIGHTEEN YEAR OLD PERSONS IN THE STATE OF MINNESOTA IN THE YEAR 1966/1967



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[1] Dr. N. G. Mandell, Director of Research for the Minnesota Higher Education Coordinating Commission.

[2] Walter S. Harvey, Director of Research, State Department of Education.

[3] U. S. Census 1960, Projected against population growth and factors.

[4] Department of Education, Division of Vocational Technical Education.

[5] Mr. Charles Shubat, State Supervisor of Private Trade Schools.

[6] Department of Public Welfare.

[7] State Corrections Department.

[8] Selective Service, Colonel E. P. Barrows.

[9] U. S. Census 1960, Projected against population growth and factors.

Eighteen year olds considered for this study were classified as follows:

a. Employed full time
b. College entrants
c. Area vocational technical school enrollees
d. Private vocational school enrollees
e. Members of the armed forces
f. Imprisoned
g. Institutionalized
h. Married women
i. Not accounted for in the above categories

A large number of 18 year olds will defer their decisions to enroll in vocational technical programs. There may be a sizable number of veterans who enter the vocational school upon discharge. Also, a number of adults will enroll for additional training to update their skills or to retrain to meet the changing nature of the world of work. A number of college students will transfer to area vocational technical schools.

The projected number of eighteen year olds in Minnesota for the years 1966 through 1980 reveals a decrease in 24 counties. It shows a significant increase in 8 counties: Anoka, Dakota, Hennepin, Olmsted, Ramsey, St. Louis, Stearns, and Washington.

EIGHTEEN TO TWENTY-ONE YEAR OLD POPULATION CHANGE
1966 to 1980[1]

AGE	1966	1980	GROWTH
18-year olds	62,270	83,006	20,736
19-year olds	65,916	86,378	20,462
20-year olds	49,486	81,353	31,867
21-year olds	47,691	81,349	33,658
Total	225,363	332,086	106,723

[1]Minnesota Higher Education Coordinating Commission, Research Section, September 1967.

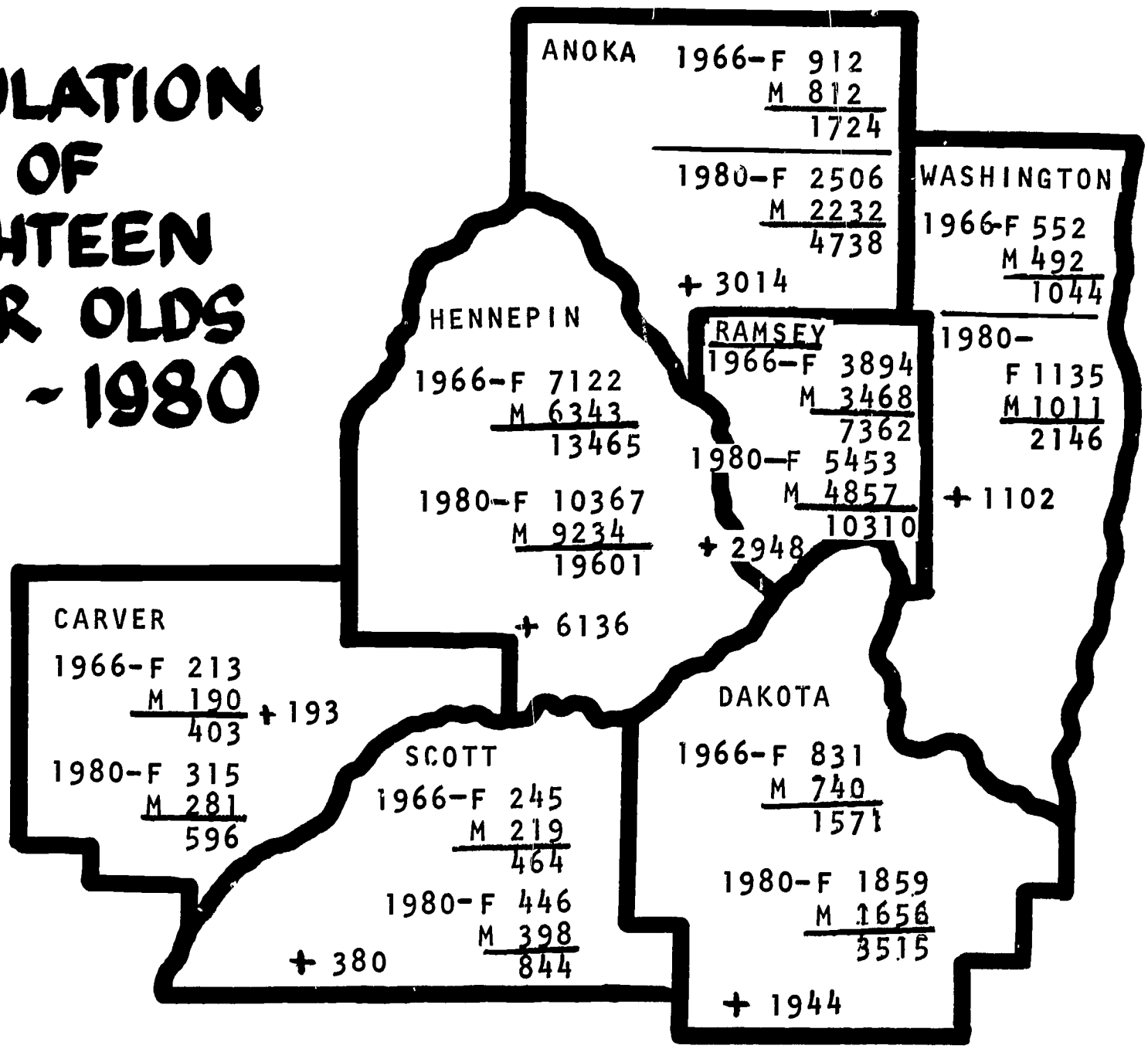
S E C T I O N S I X

ENROLLMENT
PRESENT - PROJECTED

STUDENT CHARACTERISTICS

MINNEAPOLIS and ST. PAUL METRO. AREA

POPULATION OF EIGHTEEN YEAR OLDS 1966 - 1980



1966 - 26,033 41.2%

1980 - 41,750 50.1%

ENROLLMENT
PRESENT - PROJECTED

Although vocational technical education is offered at the high school, post-secondary, and adult levels, this post-secondary study was given priority. However, a study of vocational education at the high school level is presently being conducted.

Technology has been advancing rapidly and all jobs are more complex even though they carry the same job title they did in former years. For example, a man may have entered an occupation as a relatively unskilled worker 30 years ago. At his work he has added one additional skill or operation at a time until presently he is a highly skilled person. As he approaches retirement, industry is faced with the decision to replace him with an employee trained to perform all of the necessary tasks and skills or fractionalize the occupation and employ a number of people to perform these skills separately. The latter course of action is often not economically possible.

Equipment used by today's workers is becoming more complex. Additional technology requires that employees exercise more mature judgment. Higher minimum wages, coupled with greater economic competition from other firms both in the United States and abroad, require greater employee productivity. A time lapse between the time the employee is hired and the time he is producing profitably may spell the difference between success and failure for a company.

Large numbers of Minnesota's secondary school pupils do not have vocational education available to them. Post-secondary vocational education could provide an opportunity for these young people to compete effectively in the labor market.

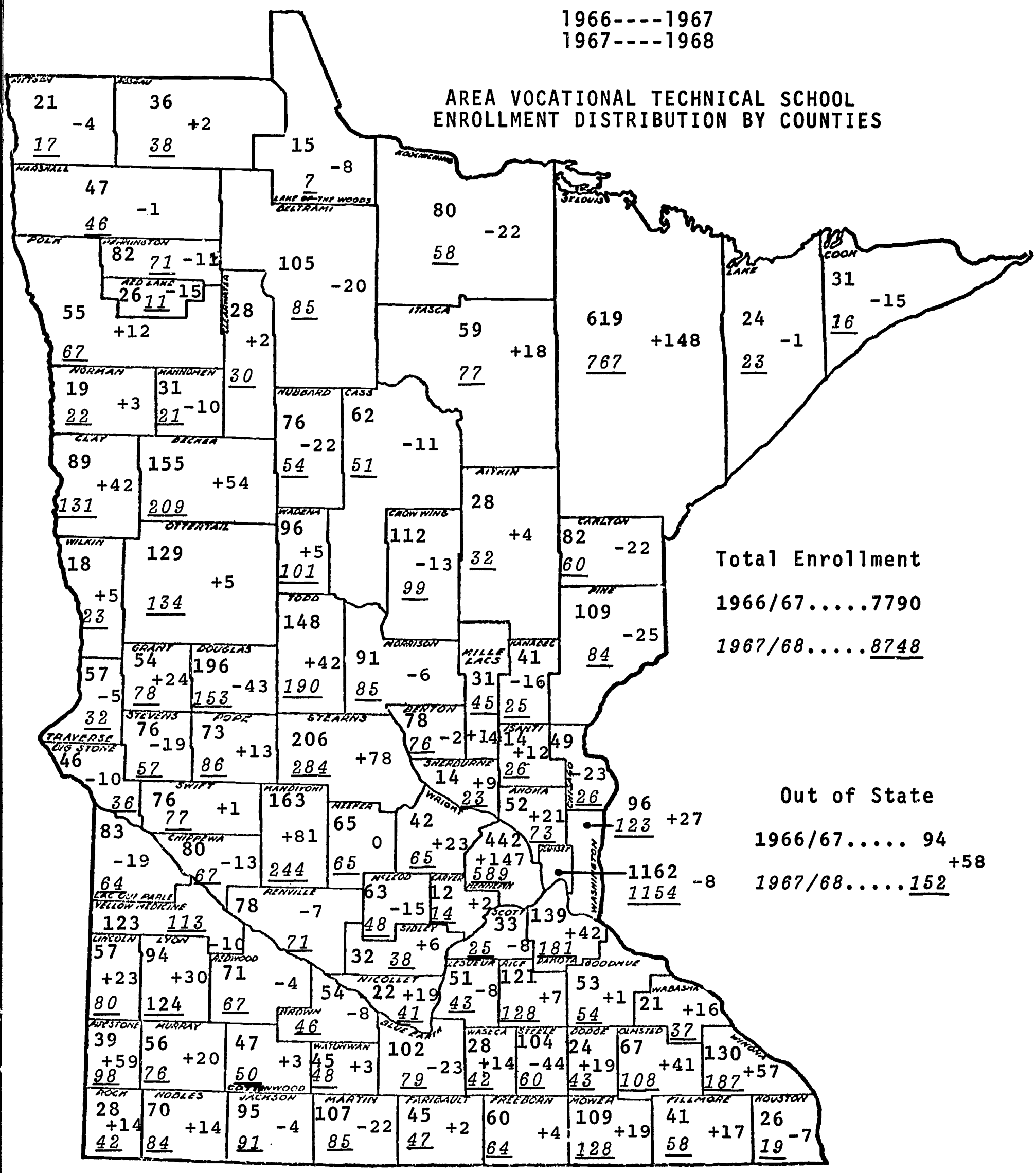
POST-SECONDARY AREA VOCATIONAL TECHNICAL SCHOOL ENROLLMENTS 1965 - 1969

SCHOOL	ESTABLISHED	1965/66	1966/67	1967/68	1968/69*
Alexandria	1961	413	572	657	1011
Anoka	1967	--	--	38	622
Austin	1951	302	271	327	347
Bemidji	1966	--	109	136	225
Brainerd	1964	76	128	153	303
Canby	1965	186	271	231	270
Detroit Lakes	1966	--	182	229	243
Duluth	1950	440	588	632	832
Eveleth	1963	83	112	106	126
Faribault	1966	117	334	222	325
Granite Falls	1965	168	301	187	273
Hibbing	1962	78	119	166	311
Jackson	1964	204	360	362	451
Mankato	1947	167	252	236	612
Minneapolis	1955	733	598	762	853
Moorhead	1966	--	205	244	425
Pine City	1966	--	178	134	135
Pipestone	1967	--	--	191	293
Rochester	1967	--	--	112	30
St. Cloud	1948	138	313	444	780
St. Paul	1952	719	1395	1458	1753
Staples	1960	294	310	355	453
Thief River Falls	1949	340	343	280	418
Wadena	1960	254	272	216	260
Willmar	1961	479	508	554	723
Winona	1948	188	269	316	453
Totals		5379	7990	8748	12527
Total Increase		--	+2611	+758	+3779

*Projection

1966----1967
1967----1968

AREA VOCATIONAL TECHNICAL SCHOOL ENROLLMENT DISTRIBUTION BY COUNTIES



Total Enrollment

1966/67.....7790

1967/68.....8748

Out of State

1966/67..... 94

1967/68.....152

+58

ENROLLMENT BY AGE IN AREA VOCATIONAL TECHNICAL SCHOOLS

Age	1966/67 Percentage of Students	1966/67 Number of Students	1967/68 Percentage of Students	1967/68 Number of Students
17.....	12.8	1023	14.3	1251
18.....	43.3	3459	43.1	3770
19.....	19.6	1566	19.5	1707
20.....	9.5	759	8.6	752
21 and over.....	14.8	1183	14.5	1268
Total.....	100.0	7990	100.0	8748

ONE DAY ENROLLMENT REPORT OCTOBER 1967

	Male	% of Total Enrollment	Female	% of Total Enrollment	Total Male & Female	% of Total Enrollment
First Year Entering Students.	3670	41.95	1967	22.49	5637	64.44
First Year Continuing Students..	576	6.58	161	1.84	737	8.42
Second Year Continuing Students..	1430	16.35	89	1.02	1519	17.36
Total Manpower, Rehabilitation, etc. First Year Continuing Students.....	642	7.33	213	2.43	855	9.78
Total	6318		2430		8748	

STUDENT ENROLLMENT BY COUNTY IN AREA VOCATIONAL TECHNICAL SCHOOLS

School	1966/67 Number of Counties Represented	1966/67 Rank By County Enrollment	1967/68 Number of Counties Represented	1967/68 Rank By County Enrollment
Alexandria	57	1.5	58	1
Anoka*	--	--	9	25
Austin	25	18.5	22	18
Bemidji	10	22	16	24
Brainerd	34	9.5	35	7.5
Canby	40	7.5	24	17
Detroit Lakes	16	21	17	23
Duluth	42	6	26	13.5
Eveleth	5	23	4	26
Faribault	40	7.5	32	10
Granite Falls	30	14	26	13.5
Hibbing	22	20	26	13.5
Jackson	34	11	30	11
Mankato	25	18.5	25	16
Minneapolis	57	1.5	57	2
Moorhead	43	5	34	9
Pine City	28	15	20	21.5
Pipestone*	--	--	21	19.5
Rochester*	--	--	21	19.5
St. Cloud	27	16	38	5
St. Paul	26	17	36	6
Staples	48	3	51	3
Thief River Falls	31	13	35	7.5
Wadena	32	12	26	13.5
Willmar	46	4	49	4
Winona	34	9.5	20	21.5
Median	32.6		29.1	

*Area Vocational Technical Schools Opening Fall 1967

COMPREHENSIVE VOCATIONAL PROGRAM

The passage of the Vocational Education Act of 1963 provided a new benchmark for vocational educational planning and a transfer point in occupational education for the following reasons:

1. The emphasis of vocational program planning was changed from that of building programs based on the needs or competencies required in an occupation, with pre-enrollment student selection based on potential for success, to that of the identification of the resources needed to prepare an individual to perform satisfactorily in an occupation of his choice while considering the changing and shifting job market.

2. The inter-relationships of vocational programs at all levels was recognized and the purposes of vocational education were changed to programs for secondary students, post-secondary full-time students, and supplementary training for persons presently employed to up-date their skills to maintain employability, or to upgrade skills so that they might be eligible for advancement. Provision was made to provide for people with special educational needs. Funds are also provided for research in vocational education.

3. The broadened purposes of the Act made possible the development of programs to serve people in occupations which did not conform to traditional organizational patterns in vocational education.

Probably the most important and least understood implication of the changing directions of vocational education is the application of computer technology to educational planning. This technology provides us for the first time with a capability of evaluating the effectiveness of educational programs quickly enough and with sufficient data to make valid management decisions concerning the allocation of educational resources.

The planning process involves the continuing review of the objectives and planned accomplishments established for vocational technical education, the analysis of possible alternative objectives and of alternative programs for meeting these objectives, and the recommendation of courses of action. Activities conducted within the framework of the planning process include identifying needs, stimulating initiatory activities to meet the needs iden-

tified, coordinating efforts, and recommending alternative procedures and programs.

A brief resume of the activities appears below:

1. What are we trying to do?

2. What are the alternative ways of doing it?

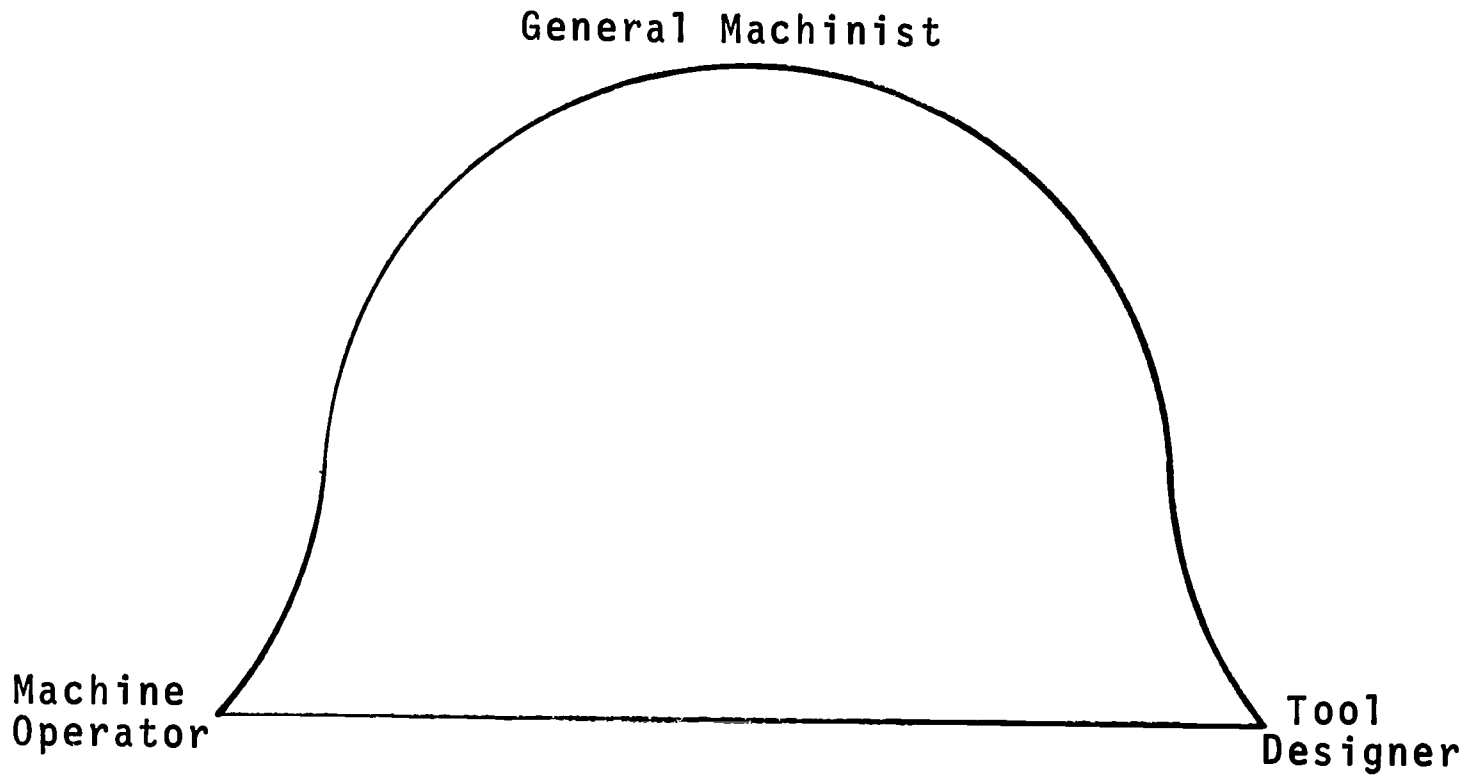
3. What would they cost?

4. How effective are they?

5. What does the decision-maker need to know to make a decision?

Those in education are familiar with the bell-shaped curve of ability. Vocational educators are familiar with another diagram called the "shape of the labor force", which is represented as a diamond with the less skilled jobs on the base, a large number of semi-skilled and skilled positions in the center, and the highly skilled at the top. A look at the two figures indicates that they represent the same thing.

A look at one occupational area serves as an illustration. In the machine trades there are three highly skilled occupations: the tool designer, the industrial draftsman, and the tool and die maker. These are relatively few in number and represent the extremity of the bell-shaped curve or the apex of the diamond. The center group or the large number are machinists, and the base are the single skill machine operators. The employment opportunities for these people at the bottom are limited. Also, as we look at the bell-shaped curve, so are the numbers of people available.



COMPREHENSIVE VOCATIONAL PROGRAM OUTLINE

I. Applications--Open Door (Choice)

II. Screening--Four Categories of Students

1. No Machine Shop Experience
2. With Machine Shop Experience
3. No Machine Shop Special Needs
4. With Machine Shop Experience (Special Needs)

III. Programs

	PREREQUISITE	SELECTIVE CRITERIA
1. Machine Shop I	None	Choice
2. Machine Shop II	Machine Shop I	Choice or High School Equivalent
3. Machine Operator	None	Choice or High School Equivalent
4. Tool & Die & Mold Making	Machine Shop II	Choice or High School Equivalent
5. Tool Design	Machine Shop I or II	Choice or High School Equivalent
6. Industrial Drafting I & II	None	High School Drafting

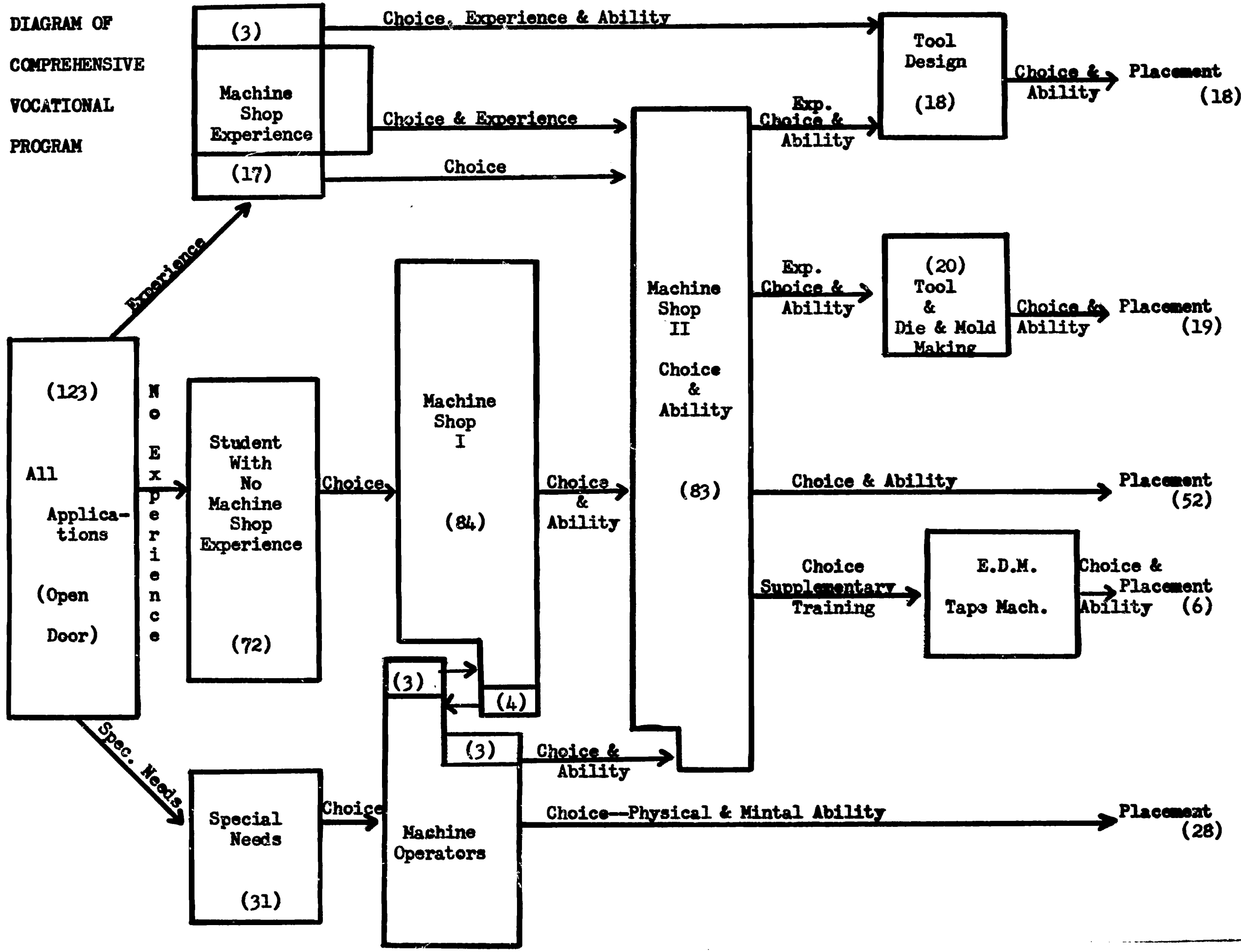
IV. Student Acceleration and Upgrading Based On:

1. Choice and Ability
2. Time and Ability

V. Placement

1. Choice and Ability

DIAGRAM OF COMPREHENSIVE VOCATIONAL PROGRAM



The diagram shows a comprehensive vocational program where students may enter the program at a number of levels. Employment is available to students at many points. Also, upward mobility is possible after the person is employed as well as in the training program.

Traditionally, in education it has been assumed that time is a constant and achievement a variable. New educational programming is reversing the emphasis and in the program illustrated it is possible for achievement to be considered as a constant and time as a variable.

In summary, effective educational management in the future will require the identification of the inputs, processes, and outputs of the educational system.

1. The student input: who are they, where are they, and what are their characteristics?

2. What are the material resource inputs available?

3. What is the process of education that has been applied to this student?

4. What is the performance record of the employee prepared for work through vocational education?

When sufficient data involving all four areas are collected and stored and are quickly retrievable, it will then be possible to look into the process of education and identify those specific activities which have a direct bearing on performance of like groups of students. With this information available, one will be able to more effectively design programs of instruction in both vocational and general educational subjects. It should be noted that equality of educational opportunity is not to be equated with equalization of resource input.

MINNESOTA PLANNING AREAS

AREA VOCATIONAL TECHNICAL SCHOOL LEARNING STATIONS PER DISTRICT[1]

The figures gathered are used to determine the ratio of learning stations available to the total population and to the 18 through 21-year-old population.

Districts	Total Population[2]	18/21[3]
District 1	1:211	1:16
District 2	1:323	1:26
District 3	1:212	1:15
District 4	1:125	1:9
District 5	1:155	1:11
District 6	1:182	1:13
District 7	1:509	1:34
District 8	1:233	1:18
District 9	1:242	1:15
District 10	1:248	1:16
District 11	1:357	1:20

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[1]Learning stations and population projected to 1970.

[2]Figures on population from "Minnesota Economic Data Counties & Regions," June 1967.

[3]18/21 population from Minnesota Higher Education Coordinating Commission, September 1967.

18 THROUGH 21-YEAR-OLD POPULATION BY ECONOMIC DEVELOPMENT PLANNING AREAS AND REGIONS

Assuming that 10, 15, or 20 percent of the 1980 population of eighteen through twenty-one year olds will be served by the area vocational technical schools, a desirable base should range from a minimum of 400 to in excess of 1000 students per school.

On this assumption, the area vocational technical schools are grouped by Economic Development Planning Areas and Regions as recommended by Executive Order No. 9, dated November 13, 1967, to determine if this base exists.

It was felt that no real significance could be developed for establishing pro rata assignments of a population base on areas covered by the area vocational technical school and that the Economic Planning Area would afford the best foundation.

Student preference and mobility, unique curriculum offerings, and aggressive student recruitment are factors that involve social and other variables not predictable over a twelve-year period.

A summary of the figures gathered to determine whether a population base exists is as follows:

18 THROUGH 21-YEAR-OLD POPULATION BY ECONOMIC DEVELOPMENT PLANNING AREAS AND REGIONS

Planning Regions	Area Vocational Technical School In Planning Areas	18/21 Year Old Population In 1980*	18/21 Year Old Population In 1980 10%	18/21 Year Old Population In 1980 15%	Learning Stations 1968/69	Learning Stations Needed in 1980** 10%	Learning Stations Needed in 1980** 15%	Learning Stations Needed in 1980** 20%	Enrollment 1967/68	Enrollment 1968/69
I & II	Thief River Falls	13,699	1,370	2,055	443	550	844	1,191	280	418
	Bemidji				196	546	800	1,000	136	225
	TOTAL	13,699	1,370	2,055	639	1,096	1,644	2,191	416	643
III	Duluth				1,000	1,296	2,094	2,993	632	832
	Eveleth	27,453	2,745	4,118	149	400	400	400	106	126
	Hibbing				256	500	800	1,000	166	311
	TOTAL	27,453	2,745	4,118	1,405	2,196	3,294	4,393	904	1,269
IV	Moorhead				325	--	500	600	244	425
	Detroit Lakes	16,070	1,607	2,411	340	--	400	500	229	243
	Alexandria				900	--	1,029	1,471	657	1,011
	TOTAL	16,070	1,607	2,411	1,565	1,285 -280	1,929	2,571	1,130	1,679
V & VII	Brainerd				150	400	600	800	153	303
	Wadena				340	400	400	500	216	260
	Staples	33,689	3,369	5,053	323	400	600	800	355	453
	Pine City				140	400	400	400	134	135
	St. Cloud				340	1,095	2,042	2,890	444	780
	TOTAL	33,689	3,369	5,053	1,293	2,695	4,042	5,390	1,302	1,931
VI & VIII	Willmar				400	400	900	1,200	554	723
	Canby				220	400	400	400	231	270
	Granite Falls	24,357	2,436	3,654	160	348	500	600	187	273
	Jackson				435	400	600	900	362	451
	Pipestone				200	400	500	797	191	293
	TOTAL	24,357	2,436	3,654	1,415	1,948	2,923	3,897	1,525	2,010

Planning Regions	Area Vocational Technical School In Planning Areas	18/21 Year Old Population In 1980*	18/21 Year Old Population In 1980 10%	18/21 Year Old Population In 1980 15%	Learning Stations 1968/69	Learning Stations Needed in 1980** 10%	Learning Stations Needed in 1980** 15%	Learning Stations Needed in 1980** 20%	Enrollment 1967/68	Enrollment 1968/69
IX & X	Mankato				1,000	1,200	2,000	2,750	236	612
	Austin				354	800	900	1,100	327	347
	Winona	51,704	5,170	7,756	360	600	704	972	316	453
	Rochester				612	1,000	2,000	2,750	112	30
	Faribault				260	536	600	700	222	325
	TOTAL	51,704	5,170	7,756	2,586	4,136	6,204	8,272	1,213	1,767
XI	Anoka				1,500	2,500	2,500	2,500	38	622
	Minneapolis	165,114	16,511	24,767	1,250	1,250	1,250	1,250	762	853
	St. Paul				1,800	2,600	2,600	2,600	1,458	1,753
	Other				--	6,859	13,464	20,067		
	TOTAL	165,114	16,511	24,767	4,450	13,209	19,814	26,417	2,258	3,228
	GRAND TOTAL	332,086	33,208	49,814	13,453	26,565	39,850	53,131	8,748	12,527

*Minnesota Higher Education Coordinating Commission Research Section - September, 1967.

**Based on 125% utilization of area vocational technical school facilities.

In summary it would appear, with one minor exception in Regions VI and VIII, that there is ample population base to support the existing area vocational technical schools as outlined previously.

There is a notable lack of adequate facilities in Region XI.

SPECIAL NEEDS

There is the need for an awakening on the part of educators to their role and the magnitude of the task of adequately providing a satisfactory training service to those persons who may have special needs.

Vocational educators need to implement many new services in their new role of meeting the needs of persons with special needs. Elements and patterns for success are to be found in the related services dealing with persons with special needs. Well-trained instructors and especially selected and sized groups are important but there is the need to provide many other services ancillary in nature geared to the assessment of the potential of the individual. In addition, motivation, personal development, placement, and follow-up should round out the services for those with special needs. Never before has attention to the individual as a person been so imperative.

The expansion of guidance and counseling activities within the state should strengthen the various programs designed to provide not only training to persons with special needs but also to meet effectively many additional auxiliary needs important to successful adjustment to the world of work and the community in which the individual must function as a contributing citizen. The effectiveness of vocational education is to a large degree dependent upon the instructional staff. Both the quality and the quantity of teachers available determines how well vocational education will be maintained, expanded, and extended. The continuous growth in the number of vocational teachers needed has been nowhere more evident than in the field of special needs.

In addition to guidance, counseling, vocational instruction, placement, and follow-up, persons with special needs may need one or several of the following supportive kinds of services:

1. Provide remedial education for children of illiterate parents and for victims of deficient schools.

2. Seek the discouraged and under-motivated and encourage them to take advantage of available services.

3. Provide adult basic education to remedy the academic deficiencies of those left behind by rising educational attainment.

4. Develop pre-vocational orientation to expose those of limited experience to possible occupational choices.

5. Provide training for entry-level skills for those unable to take advantage of advanced training because of a lack of basic educational skills.

6. Form a subsidized training to induce employers to accept less able employees for on-the-job training.

7. Supply training allowance to allow supportive and incentive programs for those undergoing training and residential facilities for those use whose home environment precludes successful rehabilitation.

8. Provide work experiences for those unaccustomed to the discipline of a work situation.

9. Create public service jobs tailored to the needs of job seekers not absorbed in the competitive job market.

10. Provide supportive services such as medical aid for those who need corrective measures to enter or resume positions in the world of work, and day-care centers for mothers with small children.

These are but a few of the many suggestions that could be offered for the help of those people with special needs.

In further pursuit of the above points Senator Wayne L. Morse recently reported in an article of Compact, June 1968, the following:

SPECIAL NEEDS OF INDIVIDUAL STUDENTS

There are two groups of students which, unless given special attention, will never fulfill their maximum potential: (1) the physically and mentally handicapped, and (2) children who are disadvantaged by socio-economic circumstances.

The 1963 Act recognized the important role vocational or occupational education should play in the education of children with special needs. In the specified uses of federal funds in the Act, a special category was provided for special needs.

However, of more than $800 million spent for vocational education under the Act, only $5 million--or less than one percent of the federal funds appropriated--was spent for special needs programs. Those figures indicate that more attention will have to be given to this area.

Vocational education, if properly adapted, could serve as a valuable means to prevent high school dropouts. Some reports have indicated that vocational education has a poorer retention rate than general

education. It is generally suggested the reason is that many vocational programs are unrealistic in the modern world--that the vocational programs are training for jobs in which there is no future.

Changing manpower needs have made many training programs obsolete. The answer to this problem may not be to put in new training programs but to change the focus of these programs from training to education--occupational education.

Occupational education programs designed to familiarize students with the world of work ahead of them and with the various occupations which will be available for them would seem to be more realistic than job training. Such programs should be very effective in holding those children who need special programs in school. Occupational familiarization programs would show them the necessity of staying in school and hold their interest while they are there.

Occupational education--as opposed to vocational training--should be instituted at the junior high school level. The Act of 1963 provides the flexibility for non-job training programs at the 8th, 9th and 10th grades which bring the employment world outside the school into the classroom. Such programs could provide a means for making school more relevant to the lives of disadvantaged youth, inspire them with the ambition to continue in school and instill in them greater aspirations than they receive from their environment.

Vocational programs for handicapped students and disadvantaged youth can, if properly planned and administered, be a valuable tool in bridging the great chasm which often separates them from full participation in our society.[1]

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[1] Morse, op. cit., page 4.

It has become almost axiomatic to equate poverty with urban slums. But poverty is relatively more prevalent on the farms and in rural non-farm areas.

Two factors contribute to the low income of rural Minnesota. First, the mix of the elements which affect earning capacity--education, age, sex, work availability--is less favorable. Second, and more important, income opportunities are less favorable in rural areas, so that rural residents earn less than they might reasonably expect on the basis of their earning capacity.

The Elementary and Secondary Education Act indicates the following distribution of Minnesota's disadvantaged children:

CHILDREN 5 THROUGH 17 YEARS OF AGE, 1967

Income Threshold	State Total	7 County Metro Area	Percent	Outstate Area	Percent
$2,000	106,605	30,784	28.87	75,821	71.13
$3,000	154,203	34,019	22.06	120,184	77.94

Larger vocational schools are in a position to provide services more efficiently than a large number of small schools. Also, there is a great shortage of trained personnel for the special services. This should be taken into consideration when recommendations are made regarding size and location of schools.

Sixty Manpower Development and Training programs are being conducted in area vocational technical schools and 12 in other institutions. In 1967 the Manpower Development and Training Act set a mandate that at least 65% of the persons served by Manpower Development and Training Act programs should be recruited from the disadvantaged category. "The Minnesota Department of Employment Security reports that 76% of the Manpower Development and Training Act trainees in classroom or institutional programs were disadvantaged, while 48% of those in on-the-job training were disadvantaged."[1]

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[1]1966-67 Annual Report of the Division of Vocational Technical Education.

SECTION SEVEN

UTILIZATION
OF
AREA VOCATIONAL TECHNICAL SCHOOLS

PROJECTED NEEDS - COSTS

UTILIZATION OF THE AREA VOCATIONAL TECHNICAL SCHOOL POST SECONDARY

	1966-1967 Enrollment	1966-1967 Learning Stations	Percent of Utilization	1966-1967 Rank by % of Use	1967-1968 Enrollment	1967-1968 Learning Stations	Percent of Utilization	1967-1968 Rank by % of Use
Alexandria	572	359	159.33%	3	657	900	73.00%	19
Anoka	--	--	--	--	38	100	38.00%	26
Austin	271	314	86.30%	18	327	354	92.37%	13
Bemidji	109	136	80.14%	19	136	196	69.38%	21
Brainerd	128	130	98.46%	14	153	130	117.69%	6
Canby	271	180	150.55%	5	231	180	128.33%	5
Detroit Lakes	182	340	53.52%	22	229	340	67.35%	22
Duluth	588	365	161.04%	2	632	365	173.15%	1
Eveleth	112	129	86.82%	17	106	149	71.14%	20
Faribault	334	260	128.46%	9	222	260	85.38%	14
Granite Falls	301	120	250.83%	1	187	160	116.87%	7
Hibbing	119	102	116.66%	13	166	256	64.84%	23
Jackson	360	255	141.17%	7	362	435	83.21%	16
Mankato	252	175	144.00%	6	236	175	134.85%	3
Minneapolis	598	1250	47.84%	23	762	1250	60.96%	25
Moorhead	205	130	157.69%	4	244	325	75.07%	18
Pine City	178	140	127.14%	10	134	140	95.71%	11
Pipestone	--	--	--	--	191	200	95.50%	12
Rochester	--	--	--	--	112	112	100.00%	9
St. Cloud	313	340	92.05%	16	444	340	130.58%	4
St. Paul	1395	1800	77.50%	21	1458	1800	81.00%	17
Staples	310	323	95.97%	15	355	323	109.90%	8
Thief River Falls	343	288	119.09%	12	280	328	85.36%	15
Wadena	272	340	80.00%	20	216	340	63.52%	24
Willmar	508	400	127.00%	11	554	400	138.50%	2
Winona	269	196	137.24%	8	316	320	98.75%	10
Total	7990	8072	98.98%		8748	9878	88.56%	

1966/67 UTILIZATION OF AREA VOCATIONAL TECHNICAL SCHOOLS POST SECONDARY, ADULT EDUCATION, SECONDARY

School	Post Secondary Enrollment	Adult Education	Secondary	Learning Stations	Utilization
Alexandria	572	2012	--	359	271.30%
Anoka*	--	--	--	--	--
Austin	271	216	--	314	100.00%
Bemidji	109	197	--	136	108.82%
Brainerd	128	450	--	130	167.69%
Canby	271	241	--	180	177.22%
Detroit Lakes	182	33	--	340	55.58%
Duluth	588	2542	--	365	300.27%
Eveleth	112	87	--	129	100.00%
Faribault	334	560	--	260	171.53%
Granite Falls	301	108	--	120	269.16%
Hibbing	119	443	--	102	175.63%
Jackson	360	282	--	255	163.13%
Mankato	252	993	--	175	257.71%
Minneapolis	598	9700	888	1250	250.40%
Moorhead	205	136	--	130	178.46%
Pine City	178	85	--	140	139.28%
Pipestone*	--	--	--	--	--
Rochester*	--	--	--	--	--
St. Cloud	313	610	--	340	127.94%
St. Paul	1395	8800	--	1800	175.27%
Staples	310	526	--	323	128.48%
Thief River Falls	343	67	--	288	123.61%
Wadena	272	487	--	340	108.52%
Willmar	508	763	--	400	165.25%
Winona	269	851	--	196	223.97%
TOTAL	7990	30,189**	888***	8072	181.11%

* Area Vocational Technical Schools Opening Fall 1967

Total utilization of the area vocational technical school is determined by calculating the post-secondary enrollment on a full-time basis. Secondary enrollment (***) is 2/3 of full-time and adult (**) is 1/5 full-time. Many area vocational technical schools enroll high school students in the same facilities as post-secondary students. Minneapolis Area Vocational Technical School is the only school where high school vocational education has been developed to a major extent.

1967/68 UTILIZATION OF AREA VOCATIONAL TECHNICAL SCHOOLS POST SECONDARY, ADULT EDUCATION, SECONDARY

School	Post Secondary Enrollment	Adult Education	Secondary	Learning Stations	Utilization
Alexandria	657	2,631	--	900	130%
Anoka	38	1,000	--	100	238%
Austin	327	691	--	354	131%
Bemidji	136	400	--	196	110%
Brainerd	153	236	--	130	153%
Canby	231	332	--	180	165%
Detroit Lakes	229	100	--	340	73%
Duluth	632	3,000	--	365	338%
Eveleth	106	50	--	149	78%
Faribault	222	1,000	--	260	162%
Granite Falls	187	124	--	160	132%
Hibbing	166	1,050	--	256	146%
Jackson	362	305	--	435	97%
Mankato	236	1,568	--	175	314%
Minneapolis	762	10,000	947	1,250	286%
Moorhead	244	186	--	325	86%
Pine City	134	300	--	140	138%
Pipestone	191	150	--	200	110%
Rochester	112	3,594	--	112	741%
St. Cloud	444	3,000	--	340	300%
St. Paul	1,458	10,000	--	1,800	136%
Staples	355	540	--	323	143%
Thief River Falls	280	138	--	328	93%
Wadena	216	250	--	340	78%
Willmar	554	700	--	400	173%
Winona	316	1,200	--	320	173%
TOTAL	8,748	42,545	947	9,878	181%

ADDITIONAL CONSTRUCTION
NECESSARY TO MEET ENROLLMENT PROJECTIONS

Any analysis of construction costs is difficult even with a time as short as two to five years. To undertake a projection of twelve years is to attempt an educated guess on a whole set of variables which are not necessarily going to behave as we might expect.

However, good planning demands the establishment of probable parameters if adequate funds and other tools are going to be available to accomplish the goal of the vocational system by 1980.

On this projection, it is assumed that the number of stations needed is a function of a percentage of the 18 through 21-year age group in the year 1980.

It is assumed that the space per student is approximately 180 square feet in schools built or planned in the last year. This includes the total square footage of halls, service and boiler areas, etc. It does not include any recreational or other unusual areas. It assumes a 1968 cost of $20 per square foot, which is about the 1968 cost experience both metro and outstate.

The cost of $3,600 per learning station is the product of these two ($20 x 180 square feet).

Architects planning the Rochester Area Vocational Technical School suggested a 5 percent per year cost increase figure. Earlier planners have used a 4 percent per year figure, but 1968 costs jumped 7 to 8 percent.

Industry sources feel that the only hope of reducing this cost or offsetting it lies in improved construction technology. An example offered was the use of the modular mechanical systems at the Rochester school, which resulted in a saving of $90,000 on a $2 million total plant cost.

The accompanying chart is intended only to develop a projection of gross costs under the described conditions.

Another variable influencing construction costs is the curriculum, which can lower costs if office or technically orientated. It will raise them if machine and heavy floor stress trades are a major part of the curriculum.

The projection assumes a 125 percent utilization of stations for post-secondary day students.

	At 5%/Yr Increase	Times 650 Stations Per Year[1]	Times 1,535 Stations Per Year[2]	Times 2,420 Stations Per Year[3]
1968	$3,600			
1969	3,780	$ 2,457,000	$ 5,802,300	$ 9,147,600
1970	3,969	2,579,850	6,092,415	9,604,980
1971	4,167	2,708,550	6,396,345	10,084,140
1972	4,373	2,842,450	6,712,555	10,582,660
1973	4,592	2,984,800	7,048,720	11,112,640
1974	4,822	3,134,300	7,401,770	11,669,240
1975	5,063	3,290,950	7,771,705	12,252,460
1976	5,316	3,455,400	8,160,060	12,864,720
1977	5,582	3,628,300	8,568,370	13,508,440
1978	5,862	3,810,300	8,998,170	14,186,040
1979	6,155	4,000,750	9,447,925	14,895,100
1980	6,463	4,200,950	9,920,705	15,640,460
TOTAL COST		$39,093,000	$92,320,040	$145,548,480

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[1]If 10 percent of the 18 through 21-year-old population is to be served in 1980, 7,800 additional stations will be needed.

[2]If 15 percent of the 18 through 21-year-old population is to be served in 1980, 18,420 additional stations will be needed.

[3]If 20 percent of the 18 through 21-year-old population is to be served in 1980, 29,040 additional stations will be needed.

SECTION EIGHT

STAFF

STAFFING

Teacher education is one of the essential elements of the expansion of vocational education. Complexities of the future program include commitments for vocational education far beyond any previous experience. These commitments call for a much higher degree of sophistication in all facets of vocational education and in relationship to the expanded environment. One of the key figures in this environment is the teacher. Contemporary teacher education views the competent teacher from a standpoint having three major aspects: (1) educational preparation in general, (2) technical or subject matter competencies, and (3) command of the practical application of the theory of teaching and learning.

Emerging practices in teacher education show a positive movement towards increased flexibility with maximum attention to individual teacher needs in an environment of modern instructional media. Extension of teacher education in the new areas of in-service education and special programs for teachers of special groups are among the new challenges facing teacher education.

Adjustments in teacher education must take into account a number of elements that have significant bearing on the development of vocational education. In some areas of vocational education prospective teachers are taught, in the baccalaureate program, the skills and knowledges appropriate for the occupational area. This program is frequently supplemented by some kind of work experience in the occupational area or in a related field. Teacher education programs of this type may need to search for persons who have already become established in the occupational field and encourage them to enter the field of teaching. In other areas of vocational education teachers are selected from an occupational area or areas, and are certified for service by the State upon completion of the professional educational requirements or on a postponement of requirements basis. The major criterion for selection is occupational competency based upon an analysis of the person's work experience or upon completion of a comprehensive occupation examination or both.

The practice of structuring teacher education along the traditional category lines perpetuates fragmentation of vocational education and hinders adaptation to labor market changes. What is needed is vocational teacher education with specialization at advanced levels, not separation by categories throughout.

The demand for teachers in the various fields of vocational technical education has usually been larger than the supply. Industry seeks persons with similar qualifications and are able to offer higher salaries than are available in the schools. This is especially true in the occupational fields that are expanding most rapidly.

Salary is one of the major factors in the recruitment of teachers. The tradesmen and technicians' salaries are often considerably higher than a teacher's salary. The person being employed is usually a superior worker in the industry and very valuable to his organization. The requirements for teacher preparation will often create an additional expense.

The year 1967-68 found a post-secondary enrollment of 8,748 students with 583 instructors, which gave a student-teacher ratio of 15 to 1 and a counselor ratio of 624 to 1 when the 14 counselors in the area schools were considered. Projected to 1980, there will be an anticipated need of approximately 2,700 instructors to maintain a 15 to 1 ratio and 133 counselors. These figures represent expansion of only the existing area vocational technical schools. Needless to say, more effort will have to be devoted to teacher recruitment and teacher training to meet the anticipated needs for vocational programs in the coming years. In a great many cases the availability of adequately trained teachers is the limiting factor of the area school program. Many schools could go on a two shift basis with the physical facilities that are now available if the teachers were available.

SECTION NINE

RECOMMENDATIONS AND IMPLICATIONS FOR THE FUTURE

RECOMMENDATIONS

GENERAL

1. The Department of Education, through the Program Evaluation Section of the Vocational Division, should recommend to the State Board that individual training programs operating in any institution be designated as "approved" or "accredited". The criteria established in the Policy Statement on Vocational Technical Education in Minnesota should provide the basis for such accreditation.

2. Course offerings should be expanded in all operating area vocational technical schools to include additional occupations, with special emphasis on programs designed to serve those with special educational needs.

3. A communications system should be developed among the various educational institutions so that students will have information about opportunities in all post-secondary institutions. For example, high academic ability students who apply for enrollment in area vocational technical schools should be informed of their capabilities and the opportunities available in baccalaureate programs. Also, students who might discontinue their college education should be counseled as to the opportunities in vocational programs before they leave college.

4. A more detailed system for follow-up of graduates of area vocational technical school programs should be initiated.

5. A single file of information should be developed showing the extent of public and private occupational training being offered in the state.

6. Vocational programs should be designed in such a way that students may be successfully employed at various times. Such course organization would provide for a wider range of abilities and interests and provide for more efficient use of educational facilities and student time.

7. All sources of funds available to support occupational education programs should be utilized and multiple funding of area vocational technical school programs be used whenever possible. Examples are programs using the Office of Economic Opportunity, Welfare, and Division of Vocational Rehabilitation, as well as participation of private business and labor.

SPECIFIC

The following recommendations are presented in order by sections.

SECTION FOUR

1. A coordinated file of employment data related to vocational programs should be compiled and updated regularly.

SECTION FIVE

1. The area vocational technical school in the Mower-Freeborn county area should be located midway between the two communities of Austin and Albert Lea and the school be operated by Independent School District No. 50-0492, Austin, Minnesota.

   Alternative: The area vocational technical school in the Mower-Freeborn county area should be located midway between the two communities of Albert Lea and Austin and the school be operated jointly by Independent School Districts No. 24-0241 and No. 50-0492.

2. The 15 districts who are currently planning for the development of an area vocational technical school should be encouraged to complete the planning for this school.

3. The communities of Dakota County should begin planning for the establishment of an area vocational technical school.

4. The suburban communities of northeastern Ramsey County and Washington County should begin planning for an area vocational technical school.

5. Minneapolis should continue to study the need for post-secondary vocational programs. The study should also include the effect of past emphasis on high school programs of vocational education housed in the central vocational school.

6. The organization and structure of the vocational center concept should be formalized.

7. The residential school concept should be explored. The study should include the need for residential facilities for post-secondary students with special needs and housing facilities for isolated students.

8. Continuous study should be given to the location of existing area vocational technical schools and their ability to meet the vocational technical education and employment needs of the areas and state. Such study would assess the desirability of establishing additional area vocational technical schools as well as the expansion and/or relocation of existing ones.

9. Area vocational technical schools with consistently low enrollment and substandard facilities should be encouraged to transfer their programs to a nearby area vocational technical school.

SECTION SIX

1. Ways should be explored to provide tuition-free training for adults not covered by existing programs. In many respects, the adult needing this service is less able to pay than is the youth now receiving these benefits. This proposal would need to be approached with caution since in our efforts to serve these needs we might penalize the state with respect to the availability of monies from federal programs.

2. Area vocational technical schools with computers should develop a follow-up file for the entire state keeping current information on high school dropouts, those entering the armed services, those discontinuing college education, and those who do not intend to pursue education beyond high school. This file could be made available to all schools for the purpose of sending reminder letters to such people periodically.

3. More vocational programs should be offered for women, especially for those who are re-entering the labor force. Many working women provide a second family income; however, a good number of women who re-enter the labor force are working heads of households. Educational programs should be offered in occupations which will provide sufficient income for a comfortable family living.

SECTION SEVEN

1. The utilization percentage of the area vocational technical schools should be increased by adding second shifts whenever employment needs dictate and students are available.

2. The area vocational technical schools should increase program offerings during the summer. When possible, regular programs should run on a 12-month basis. Programs should be offered

for high school students, both to prepare them for part-time employment and as pre-cooperative program skill training.

3. Construction funds on a matching basis for additional facilities should be considered when the utilization of space for post-secondary programs reaches 150 percent except in unusual circumstances, such as a heavy demand for a single occupational program, specific local employment needs, student availability, or availability of funds to provide for future population growth.

4. Where area vocational technical schools operate programs for nonresident high school students during the summer months, all aids should be paid directly to the area vocational technical school district.

5. Foundation aids should be paid area vocational technical schools on a current basis for all students.

SECTION EIGHT

1. Area vocational schools, in addition to resident counselors, should provide additional staff to articulate program offerings with high school students and to provide for placement and follow-up of graduates of the area vocational technical schools.

2. The Division of Vocational Education should have assigned responsibility for liaison between minority groups and the area vocational technical schools and these groups regarding the opportunities in the vocational programs of the state.

IMPLICATIONS FOR THE FUTURE

1. Because this study was largely limited to consideration of post-secondary vocational education, more information should be required regarding occupational education for high school students and working adults.

2. Occupational exploration programs at elementary and junior high school levels should be considered and developed.

3. The role and function of vocational education at the secondary school level should be studied.

4. A comprehensive study of the identification, recruitment, and education of vocational teachers should be made.

5. The educationally difficult to reach need to be given new opportunities by modification of programs and procedures which will make vocational education more relevant to their needs.

6. Para-professional occupations such as teacher aides, audio visual assistants, and research assistants should be investigated; and the role of the area vocational technical schools in preparing for such occupations should be determined.

7. Methods must be developed to assist educators in planning adequately for changes in the makeup of the labor force. Vocational technical education must develop ways of anticipating changes and predicting the life span of occupations as well as curricular content. Modern technology is posing a constant threat of obsolescence to many occupations.