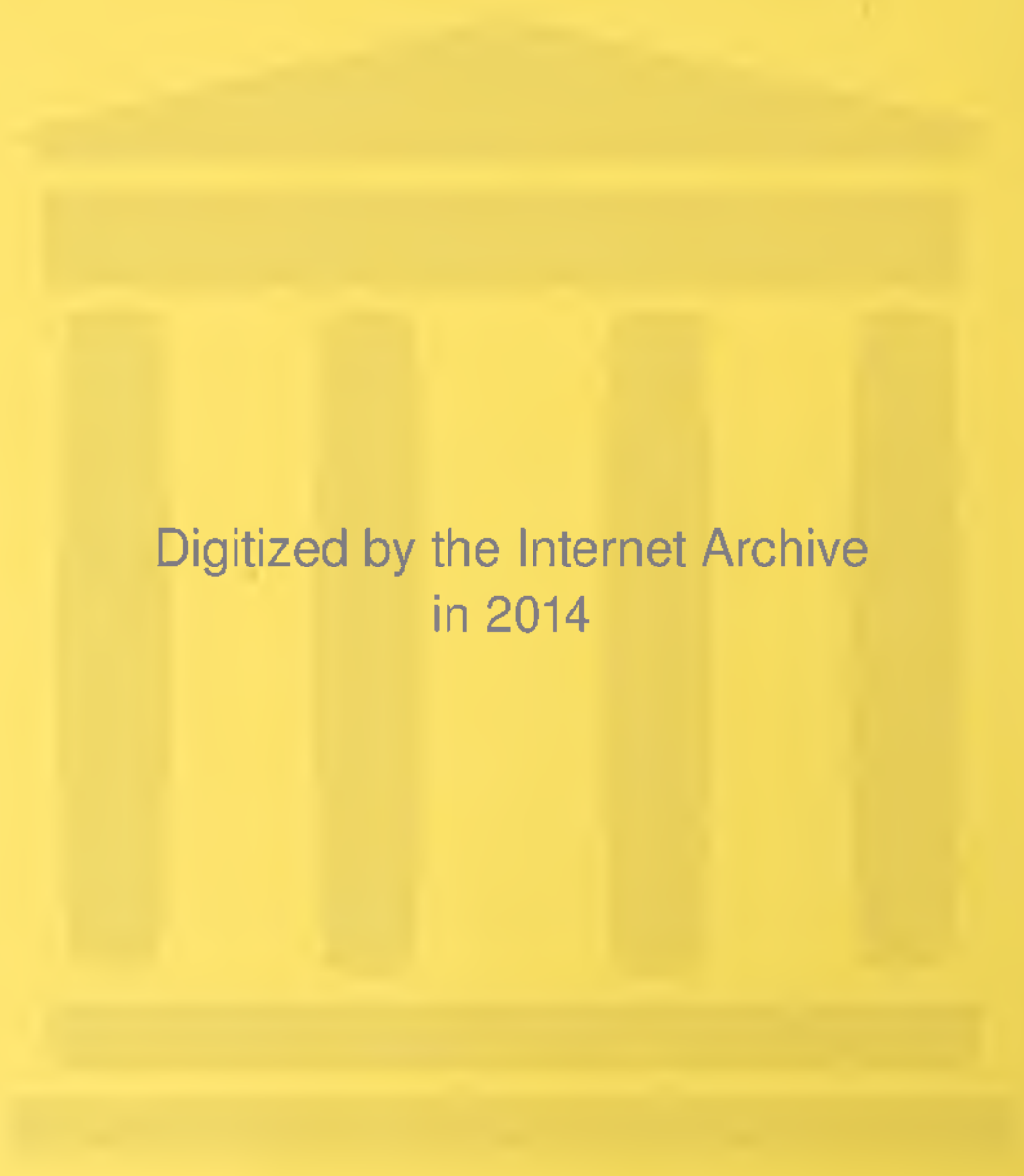
VOCATIONAL EDUCATION AND WORKFORCE PLANNING INFORMATION REPORT 1980 FITCHBURG-LEOMINSTER SMSA

LABOR AREA RESEARCH PUBLICATION

Job Market Research Massachusetts Division of Employment Security



VOCATIONAL EDUCATION PLANNING

AND

WORKFORCE INFORMATION REPORT

1980

FITCHBURG-LEOMINSTER, MASSACHUSETTS

STANDARD METROPOLITAN STATISTICAL AREA

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Table of Contents

I. Introduction

A vocational education system provides a community with one of its most valuable resources. A well-staffed, properly equipped, and efficiently run vocational school supplies its community employers with a skilled, trainable, and resourceful labor force.

A shared goal among local employers and schools alike is to ensure that this work force meets the needs of local business and industry. School Advisory Boards, comprised of area employers, are the pulse of the industrial community: they give the school a sense of industry growth, change, and demand. The school coordinators and placement officers who keep in touch constantly with employers, provide another guarantee that vocational schools operate timely programs and turn out well-prepared students.

These school agencies and personnel are invaluable for the advice and guidance they offer their students. But they can be even more effective in achieving their goals insofar as they supplement their first-hand observations with collected labor market information.

This is where this planning report comes in. It is hoped that it can provide yet another source of planning and advising. Its broad objective is to provide guidance counselors, community planners, employers, students, and parents with occupational data that will help them to anticipate future trends and demands. Specifically, it covers: (1) descriptive material on the four major vocational training centers in the Fitchburg-Leominster SMSA, (2) a review of current and future occupational demands, (3) summary of the labor supply for these jobs, (4) a list of vocational-technical jobs that promise the most stability, (5) general report summary and recommendations, and (6) job requirements and training for selected vocational-technical occupations.

This report is constructed from various types of data: interviews with vocational school guidance counselors and placement officers; federal statistics and publications: newspapers articles; economic journals; and the Division of Employment Security's own statistical data and reports. The hope here is that this cross section of data will offer a more balanced planning picture than any single source of data.

A final clarification before the report begins. This study constantly employs the phrase, "vocational-technical job". This report concentrates on these jobs that are appropriate for graduates of vocational-technical schools, high schools, special post-high school training programs, and community colleges. The educational degrees range from high school diplomas to associate arts degrees. It is generally assumed that no more than two years of post high school training is required. Consequently, professional jobs requiring four years of college are not included under the heading of vocational-technical job. On the other hand, unskilled jobs must also be eliminated; vocational-technical clearly implies some degree of skill and training.

II. Information on Area Training Centers

The Fitchburg-Leominster labor area contains a number of schools that train their students for entry into technical-vocational jobs. The bulk of the training, however, is shouldered by four training centers: Leominster Trade High, Montachusett Regional Vocational-Technical School, Mount Wachusett Community College, and the CETA training program.

Leominster Trade High has an enrollment of about 300 students from grade nine to grade twelve. In the last couple of years, Leominster Trade has had to limit the number of applicants to the program. The Freshman class is selected according to the following criteria: (1) attitude toward school and peers, (2) aptitude as judged by Home Economics, Industrial Arts, and T.E.R.M. teachers, (3) attendance (7th and 8th grade), (4) past and present grades and achievement, and (5) Vocational Planning Inventory Test.

Leominster Trade currently offers these Vocational-technical courses:

Auto body repair	Machine and Tool
Auto mechanics	Design Drafting
Carpentry	Welding
Industrial Electronics	Graphic Communications
	Computer Technician

Leominster Trade participated in the Cooperative Education program. This means that any senior (exceptional juniors during their second semester) in the Trade High School may elect to work in industry on alternate weeks; the student attends regular school shop classes the weeks he is not working. This gives the student an opportunity to earn a full week's pay every other week and at the same time obtain graduation shop credits.

Students are placed in their respective trade occupations and periodically checked on the job by the school coordinator. Many students stay with their co-op employer when they graduate.

Montachusett Regional Vocational-Technical School offers students from the communities of Ashby, Barre, Fitchburg, Gardner, Harvard, Hubbardston, Lunenburg, Royalston, Sterling and Winchendon, an opportunity to receive training in 20 vocational-technical areas:

Air Conditioning/Heating/ Refrigeration Repair	Diesel Mechanics
Auto Body	Drafting
Auto Mechanics	Early Child Care
Building & Grounds Maintenance	Electricity
Cabinetmaking	Electronics
Carpentry	Food Trades
Commercial Art	Graphic Arts
Data Processing	Machine Shop
Dietary Aide	Metal Fabrication
	Plumbing
	Welding

"Monty Tech" also offers six post-high school programs in health fields:

Rehabilitation Nursing Assistant
Practical Nursing
Medical Laboratory Technician
Medical Assistant
Dental Assistant
Dental Technician

The school enrolls 1,145 students in its undergraduate programs (grades 9-12), and 118 students in post graduate programs.

Like Leominster Trade High, Monty Tech participates in the Co-op program. Counselors at both schools agree that this program provides the student with a good sense of the responsibilities and obligations required of an employee in a vocational-technical job.

The third major center for training those headed for vocational-technical jobs is Mount Wachusett Community College. Its graduating class in 1978 was 483. Mount Wachusett offers area high school graduates a varied curriculum of vocational courses that lead to a two-year associate arts degree:

Business Administration	Human Services
Business Technology	Public Communication
Data Processing	Nursing
Executive Secretarial	Art
Engineering Technology	Law Enforcement

Many of its two-year graduates transfer to four-year schools to further their training.

CETA classroom training in Gardner represents the fourth major training program to serve the Fitchburg-Leominster area. It currently boasts a staff of 12 teachers and two counselors, and offers vocational-technical programs to those who are CETA eligible, a population generally considered as economically disadvantaged. Trainees received a stipend for the training time they put in, which is a maximum of 25 hours per week.

Summary Of CETA Three Vocational-Technical Programs

Course	Average Size	Length Of Course	Placement In Field
Computer Testing Technician	25	9 Months	70%
Computer Operator	10	2 Months	80%
Secretarial	30	6 Months	60%

III. Occupational Demand and Growth

The demand for vocational-technical jobs in the Fitchburg-Leominster labor area can be assessed in a number of ways. One can begin to get a rough idea of what is available by looking at the group of hard-to-fill jobs listed with the local Division of Employment Security. Table 1 is comprised of vocational-technical jobs that had at least 30 openings for 1979 fiscal year: they are listed in order of most difficult to fill, as measured by percent unfilled of total openings (column 4).

Table 1
Rank Order of Vocational-Technical Jobs
By
Difficulty of Filling
Fitchburg-Leominister SMSA

DOT Code	Occupational Title	Total Openings	Total Unfilled Openings	Unfilled As Percent Of Total	Rank Order By Percent Unfilled
828	Fabrication, installation, and repair of electronic devices	53	50	94.3	1
899	Miscellaneous structural work	47	27	57.4	2
211	Cashiers and tellers	40	16	40.0	3
840	Painters	32	12	37.5	4
556	Casting and molding	239	65	27.2	5
726	Repair and assembly of electronic components	37	10	27.0	6
313	Chefs and cooks	33	7	21.2	7
201	Secretaries	34	5	14.7	8
222	Clerical - shipping and receiving	85	12	14.1	9
869	Miscellaneous construction	137	15	10.9	10
209	Stenography and related occupations	80	8	10.0	11
187	Managers: lodging, personal services, amusement	31	3	9.7	12
219	Account recording occupations	66	6	9.1	13
203	Clerk-typists	75	6	8.0	14

Source: Division of Employment Security - ESARS, Table 96, SMSA 2600, Year to date, 9/30/1979: Applicants and Nonagricultural Job Openings by Occupation.

Presumably those jobs ranked as most difficult to fill would also be those most in demand. But experience tells us to interpret data in Table 1 cautiously. The data are severly limited in their general application to employment demand. Note first that jobs with federal contracts require mandatory listing with the employment office. Remember also that a low percentage of private employers list their job openings with the Division of Employment Security. Finally, consider that one often does not know how many of the unfilled jobs are actually unfilled or why they go unfilled. In short, the data in Table 1 offer only a crude index of vocational job demand. One must turn to other indicators for a more complete picture.

Interviews with vocational school and community college placement officers revealed a good deal of first-hand information about the vocational-technical jobs that are most in demand.

Guidance personnel at Leominster Trade mentioned that machinist, auto body repairer, auto mechanic, computer technician, welder, and those in electronics/electrical courses were all in strong demand. The only trade in which they found it difficult to place graduates was drafting.

The supervisor of cooperative education and job placement at the Montachusett Regional Vocational-Technical School maintained that there was good demand for the trades offered there with the exception of commercial art. He singled out those highest in demand as: machinist, auto mechanic, electrician, and electronic worker, food service worker, welder, and cabinet maker. He found that those most in demand for co-op placements were machinist, auto mechanic, electrician, electronics worker, and those in metal fabrication. Monty Tech's post-graduate programs in health are in good demand, although there is some concern that the market for medical and dental assistants may become flooded.

In sum, interview data from the two major vocational schools in the Fitchburg-Leominster area support the same conclusion: the vocational-technical jobs most in demand at the moment are auto body repairer, auto mechanic, electrician, electronics technician, machinist, welder, and those in the health occupations.

The person in charge of placement at Mount Wachusett Community College thought that jobs most in demand by employers are engineer technologist (two-year degree), secretary, nurse, and those in data processing. She noted that the one area where graduates have a conspicuously hard time finding a job is law enforcement. Job openings received by the school placement office from 1976-1979 (Table 2) confirm her impressions: those in secretarial, engineering technology, business technology, and data processing head the list when a four-year average is taken of openings.

Table 2
Annual Job Openings (1976-1979) Received
At
Mount Wachusett Community College
By
Vocational Area

Rank	Vocational Area	Average No. Of Openings	Openings 1979	Openings 1978	Openings 1977	Openings 1976
1	Secretarial	145	266	150	101	64
2	Engineering Technology	47	24	124	35	3
3	Business Technology	34	35	55	26	19
4	Data Processing	20	26	13	29	12
5	Human Services*	18	29	16	9	NA
6	Nursing	8	12	12	2	7
7	Law Enforcement	8	7	7	14	4
8	Public Communication	5	14	0	5	2

* Three-year average

Source: Placement office, Mount Wachusett Community College

Table 3
Rank Order Of Vocational Occupations
By
Total Demand, 1974-1985
Fitchburg-Leominster SMSA

Occupation	Rank	1974-1985 Total Demand	Due To Growth	Due To Separations
Secretaries other than legal, medical	1	1,306	294	1,012
Bookkeepers	2	509	14	495
Typists	3	353	45	308
Practical Nurses	3	353	122	231
Nursing Aides & Attendants	5	345	103	242
Cooks, except private	6	316	85	231
Shipping & Receiving Clerks	7	224	70	154
Sewers & Stitchers	8	196	-101	297
Bank Tellers	9	192	5	187
Electrical and Electronics Tech's	10	160	116	44
Carpenters & Apprentices	11	158	48	110
Semiskilled metal working	12	156	- 53	209
Receptionist	13	150	18	132
Hairdresser, Cosmetologist	14	145	13	132
Health Aides, except Nursing	15	130	31	99
Heavy Equipment Mechanics	16	120	21	99
Electricians & Apprentices	17	100	34	66
Computer Programmers	18	94	39	55
Machinists & Apprentices	19	85	19	66
Dental Assistants	19	85	19	66
Photographic Process Workers	21	84	29	55
Auto Mechanics & Apprentices	22	81	26	55
Clinical Lab Technologists & Technicians	23	78	12	66
Statistical Clerks	24	74	8	66
Welders and Flamecutters	25	70	26	44

Prepared by Occupation/Industry Research Department, DES, 1978

Source: Employment Requirements for the Fitchburg-Leominster Labor Market Area, By Occupation, By Industry, 1974-1985.

DES data on hard-to-fill jobs and interview data from schools measure the current demand for vocational-technical jobs; but they tell us little about future trends and growth. The Occupation/Industry Research Group of the Division of Employment Security has prepared a report (June, 1978) on Occupation Projections for the Fitchburg-Leominster labor area for 1975-1985. These projections provide students and guidance counselors of area vocational-technical schools with some idea of what they can expect from the job market in the next few years. Table 3 rank orders 25 vocational jobs in terms of projected growth over an 11-year period.

It should be noted that even though the projections take into account special proposed circumstances that will modify the directions of the past (i.e. known closings, new developments), the projections should still be viewed as essentially a continuation of past trends. Put differently, the data should be used as indicators of probable direction rather than as forecasts. One should remember, too, that since it is already 1980, only five more years remain in this projection.

The data in Table 3 offer us a picture of rather long-range demand -- from 1974 to 1985. One might, however, also be interested in seeing what demand growth is over shorter intervals, say for a year. Table 4 gives us this information. It lists those vocational occupations that experienced an annual net demand growth of 25 or more employees over the period from 1970-1985.

Table 4
Vocational Occupations In Which Annual Net Demand
Is Greater Than Or Equal To 25, From 1970-1985

Vocational Occupations
Sales Representative
Secretaries
Bookkeepers
Misc. Clerical Workers
Misc. Machine Operatives
Operatives n.e.c.
Cooks, exc. private
Practical Nurses

Source: Selected High Net Demand Occupations in the F-L Labor Market area prepared by DES.

IV. Occupational Supply

The graduating classes of area vocational schools and community colleges offer one measure of the available supply for the vocational-technical jobs in the Fitchburg-Leominster area. Mount Wachusett Community College, which supplies this area with graduates from a two year post-high school vocational program, graduated 483 in 1978: the day division accounted for 378 of these. Many of these graduates, of course, are not readily available to the employment market because they transfer to other colleges to pursue their education further. Table 5 breaks out graduating class of the Day Division into technical-vocational subject areas and shows what happened to the graduates in each of the areas.

Table 5 (particularly the column of total graduates) is meant chiefly to be an index of the supply of graduates with a two-year associate arts degree. However, a specific comparison of the first two columns also gives us a clue as to demand. Note, for example, that 12 out of 23 in law enforcement cannot find fulltime jobs in their field. This clearly tell us that there is a low demand for those in law enforcement. Contrast this to nursing, where all 23 are employed in their fields: this confirms other data which indicate that nurses are in huge demand.

Montachusett Regional Vocational-Technical School graduates over 1,000 students each year; their graduates account for a significant portion of the skilled labor supply in the Fitchburg-Leominster area.

Table 5
Follow-up Of the 1978 Graduating Class
Of
Mount Wachusett College

Subjects	Employed Fulltime In Field	Employed Fulltime Not In Field	Total Employed	Transfer #	Armed Services	Unemployed	Unknown	Total Graduates
Business Administration	5	0	5	10	0	0	10	25
Business Education	0	0	0	1	0	0	0	1
Business Technology	26	4	30	16	0	2	7	55
Data Processing	12	0	12	1	0	0	0	13
Secretarial	37	1	38	0	0	0	5	43
Engineering Technician	10	1	11	2	0	0	2	15
Industrial Management*	1	0	1	0	0	1	1	3
Law Enforcement	11	12	23	12	1	2	7	45
Human Services	9	3	12	15	0	1	5	33
Nursing	23	0	23	3	0	1	4	31
Public Communication	3	2	5	13	0	0	1	19
Others	0	0	18	52	0	3	22	95
TOTAL	132	23	178	125	1	10	64	378

* No longer offered
Source: Documents from Mount Wachusett Placement Office
Continued Education

Table 6 gives us the total number of graduates in each trade for the period of 1974-1978, and shows what has happened to them since they have graduated.

The labor supply for the various trades is crudely represented by the total number of graduates, minus those who have entered the military continued their education, or become homemakers.

Again, although this table is meant to give us an idea of labor supply, it does also provide us with data that give us some insight into the problem of labor demand. For any given trade, compare the column of those working in related fields to the column of those working in an unrelated field. This gives us an idea of job demand, because one can infer that those trades that show a large number working in related fields are the ones most in demand.

One must be reminded that using graduating classes of vocational schools as a measure of labor supply is only roughly accurate. For one, they do not represent the total skilled labor supply in an area: many people are available for work who are not vocational school graduates.

A second limitation of this data is that they do not tell us how many graduates are competing for each job opening. In other words, how does one know whether the supply is glutting the market, providing it with just enough workers, or starving it? Table 7 can help us answer this question.

Table 7 uses data from the local employment office: for each occupational group, it gives a ratio of the number of applicants to job openings. A very large ratio indicates that many people are applying for each job: this suggests a glutted market and poor employment prospects. A small ratio means few people are competing for each opening: this implies a starved market and good employment possibilities.

Bear in mind the strengths and weaknesses of the data in Table 7. The advantage of the data is that they cover the whole labor supply, not just recent graduates. Moreover, they provide a ratio of applicants to jobs, as opposed to just the number of available applicants.

However, the data also pose several problems. First, those who fill out job applications at the employment office may not be qualified for the job they list on the application: many applicants misjudge their qualifications or else are imprecise in defining them. Further, many people are required to register for work at the local office (e.g. to collect unemployment insurance or welfare benefits) and thus do not represent a serious, qualified supply of labor. One must remember,too, that the openings themselves may misrepresent the availability of work: many firms, because of federal contracts, are legally required to advertise job openings at the local office, but they may not always intend to hire through the office. In a word, one must interpret the data in Table 7 with a healthy skepticism.

Table 6
Follow-up 1974-1978 Graduating Classes
Of
Montachusett Regional Vocational-Technical School

	Vocational Area	Total No. Of Graduates	Working		Continued Education	Military	Homemaker	TNA
			Related Field	Unrelated Field				
	Undergraduate							
	Air Conditioning, Heating	31	20	1	0	1	0	9
	Auto Body	43	20	7	1	5	0	10
	Auto Mechanics	44	21	6	0	8	0	9
75-78*	Cabinet Making	17	4	0	0	0	0	13
	Carpentry	40	10	1	3	2	0	24
	Commercial Art	31	9	6	4	0	1	11
	Data Processing	54	29	6	5	3	3	8
	Health Care	36	13	1	8	1	11	2
	Dietary Aide	45	14	11	6	0	11	7
	Early Child Care	34	13	7	5	1	5	3
	Electricity	82	42	14	2	12	0	12
	Electronics	60	42	3	4	3	0	5
	Food Trades	61	24	6	0	4	13	14
	Graphic Arts	33	12	1	0	2	0	18
	Machine Drafting	24	14	4	0	3	0	3
	Machine Shop	55	40	4	3	3	0	5
75-78*	Metal Fabrication	20	14	0	0	4	0	2
	Welding	38	24	6	0	3	0	5
	Post Graduate							
	Dental Assistant	80	41	4	2	0	12	21
	Dental Technician	27	24	0	0	0	1	2
	Medical Assistant	84	45	0	1	0	9	29
**	Medical Lab. Technician	42	28	1	4	0	3	6
	Practical Nurse	133	108	1	6	0	1	17
	Rehab. Nursing Assistant	59	27	1	12	1	1	17

Source: Follow-up survey and statistical data and summaries for Montachusett Regional Vocational-Technical School, prepared by Helga Eastein.

* Graduating classes of 1975-1978 only. ** Instructor resigned; information available 1972-1974

Table 7
Ratio Of Applicants to Job Openings
In The
Fitchburg-Leominster Labor Area
Fiscal Year 1979

2-Digit DOT Code	Occupational Group	Cumulative Active Applicants	Total Openings Received	Ratio Of Applicants To Openings
	Professional, Technical and Managerial Occupations			
00-01	Architecture, Engineering	119	34	3.5/1
02	Mathmetics and Physical Science	63	22	2.9/1
04	Life Sciences	127	36	3.5/1
07	Medicine and Health	236	35	6.7/1
09	Education	325	32	10.2/1
11	Law and Jurisprudence	11	1	11.0/1
14	Art	40	3	13.3/1
15	Entertainment & Recreation	31	0	0
16	Administrative Specializations	328	28	11.7/1
	Clerical and Sales Occupations			
20	Stenography, Typing, Related	1,064	413	2.6/1
21	Computing; Account Recording	1,199	278	4.3/1
22	Stock Clerks	241	125	1.9/1
25	Sales, Service	47	6	7.8/1
26	Sales, Commodities	60	2	30.0/1
29	Miscellaneous Sales	169	46	3.7/1
	Service Occupations			
31	Food & Beverage Preparation	888	259	3.4/1
33	Barbering,Cosmetology	56	1	56.0/1
34	Amusement, Recreation	10	1	10.0/1
36	Apparel, Furnishings	27	7	3.9/1
37	Protective Services	221	75	2.9/1
	Processing Occupations			
50	Metal Processing	11	12	0.9/1
51	Ore Refining and Foundry	7	0	0
52	Food Processing	38	31	1.2/1
53	Paper Processing	36	6	6.0/1
55	Chemical Processing	425	287	1.5/1
57	Stone, Clay Processing	3	0	0
58	Leather Processing	14	21	0.7/1
	Machine Trade Occupations			
60	Metal Machining	175	38	4.6/1
61	Metalworking	39	2	18.0/1
62/63	Mechanics/Machinery Repairers	251	46	5.4/1
64	Paperworking	28	23	1.2/1
65	Printing	37	12	3.1/1
66	Wood Machining	43	26	1.7/1
67	Machining of Stone, Clay	1	2	0.5/1
68	Textiles	101	11	9.2/1
69	Machine Trades, n.e.c.	62	32	1.9/1

Table 7
Ratio of Applicants to Job Openings
In The
Fitchburg-Leominster Labor Area
Fiscal Year 1979
(continued)

2-Digit DOT Code	Occupational Group	Cumulative Active Applicants	Total Openings Received	Ratio Of Applicants To Openings
	Benchwork Occupations			
70	Assembly, Fabrication, Repair of Metal Products	99	12	8.3/1
71	Assembly of Scientific, Medical Instr.	32	1	32.0/1
72	Electrical Equipment	136	46	3.0/1
74	Painting, Related Occupatinns	40	3	13.3/1
75	Plastics, Repair & Assembly	15	20	0.8/1
76	Wood Plastics & Assembly	48	24	2.0/1
78	Textile, Leather & Assembly	172	89	1.9/1
	Structural Work Occupations			
80	Metal Fabricating	84	31	2.7/1
81	Welders, Cutters	90	40	2.3/1
82	Electrical Assembling	132	92	1.4/1
84	Painting & Plastering	87	68	1.3/1
86	Construction, n.e.c.	827	356	2.3/1
89	Structural Work, n.e.c.	144	71	2.0/1
	Miscellaneous Occupations			
90	Motor Freight	362	105	3.4/1
91	Transportation	130	74	1.8/1
92	Packaging	2,142	803	2.7/1
97	Graphic Art Work	49	9	5.4/1

Source: Division of Employment Security ESARS data; Table 96
Fiscal Year 1979, Year-to-date.

Table 8
Occupations in Recession-Resistant Industries
In The
Fitchburg-Leominster SMSA

3-Digit SIC Code	Recession-Resistant Industry	Vocational-Technical Occupations Within the Industry
275	Commercial Printing	Secretaries Computer Equipment Operators Bookkeepers Shipping/Receiving Clerks Compositors/Typesetters Photoengravers Lithographers Press and Plate Printers
596	Nonstore Retailers	Cooks Stock Clerks Sales Clerks Secretaries/Typists Bookkeepers Shipping/Receiving Clerks Mechanics and Repairers
541	Grocery Stores	Stock Clerks Sales Clerks
806	Hospitals	Engineering Technicians Electrical/electronics Technician Nurses Nursing Assistants Medical Laboratory Assistants Medical Laboratory Technicians X-ray Technicians Computer Programmers Secretaries/typists Receptionist Maintenace Mechanics, Repairers Food Workers Cooks
271	Newspapers, Publishing & Printing	Press and Plate Printers Photographers Secretaries, Typists, Stenographers Bookkeepers Accounting Clerks Typesetter/Compositor Electrotypers Lithographers
701	Hotels and Motels	Baker Cooks Maintenance Repairers Secretary Stock Clerk Receptionist
801	Offices of Physicians	Nurses Health Technicians Medical Laboratory Technicians Medical Laboratory Assistants X-ray Technicians Secretaries, Typists Office-machine Operators Bookkeepers File Clerks Receptionist Medical Insurance Clerk

Table 8
Occupations in Recession-Resistant Industries
In The
Pitchburg-Leominster SMSA
(continued)

3-Digit SIC Code	Recession-Resistant Industry	Vocational-Technical Occupations Within The Industry
554	Gasoline Stations	Automobile Body Repairers Automobile Mechanics
385	Manufacturer of Opthalmic Lenses and Sunglasses	Engineering/science technician Maintenance Mechanic Lens Grinder Machinist Tool and Die Maker Compression/Injector Molder Office-Machine Operator Secretary Shipping/receiving clerk
411	Local Passenger Transportation	Automobile Mechanic Diesel Mechanic General Clerk Secretary
239	Miscellaneous Fabricated Textiles	Maintenance Mechanic General Clerk Shipping/receiving clerk
769	Miscellaneous Repair Shops	Engineer Technicians Secretaries/Typists Bookkeepers Machinists Automobile Mechanics Mechanics, Repairers, Installers Electric Motors Repairers Musical Instrument Repairers
653	Real Estate	Bookkeepers Receptionists General Clerks Real Estate Clerks Construction Workers Carpenters Painters Mechanics and Repairers
612	Savings and Loans	Teller Miscellaneous Clerical

Source: Division of Employment Security's 202 Reports of Nonagricultural Wage and Salary Industries.

Table 9
Occupations in Recession-Resilient Industries
In The
Fitchburg-Leominster SMSA

3-Digit SIC Code	Industry	Vocational-Technical Occupation Within The Industry
249	Miscellaneous Wood Products	General Machinists Wood Machinists Welders and Flame Cutters Painters
238	Miscellaneous Apparel and Accessories	Tailors
225	Knitting Mills	Bookkeepers Shipping/Receiving Clerks Heavy Equipment Mechanics Knitting Machine Repairers Mechanics, Repairers, Installers
265	Manufacture of paperboard containers and boxes	Secretaries Bookkeepers General Clerks Machinists Toolmakers and Diemakers Mechanics, Repairers, Installers Heavy Equipment Mechanics Construction Crafts Machine Setters
421	Trucking: Local and Long Distance	Automotive Mechanic Diesel Mechanic Bookkeeper Secretary Shipping/Receiving Clerks
641	Insurance Agents, Brokers, Service	Bookkeeping Stenographer Claims Clerk General Clerk Receptionist Secretary/Typist
289	Manufacture of Chemical Products	Engineering and Science Technicians Secretaries Bookkeepers Pipefitters/Plumbers Mechanics, Repairers, Installers Heavy Equipment Mechanics
553	Automobile and Home Supply	Bookkeepers Stock Clerks General Clerks Mechanics, Repairers, Installers Automotive Mechanics

Source: Division of Employment Security's 202 Reports of Nonagricultural Wage and Salary Industries.

V. Job Stability

Students and guidance counselors need to know more than how many jobs are available and how many people are applying for them. They also need to know which jobs are the most stable. Some jobs seem to do well regardless of economic conditions; others are very sensitive to them. Table 8 lists occupations within industries that were "Recession resistant" for the period 1974-1977. Recession resistant means that the industry maintained steady growth from 1974 to 1977, despite the 1974-1975 recession. Jobs are listed in order of most growth.

Another index of job stability is provided by Table 9. It lists occupations with the "recession resilient" industries for the Fitchburg-Leominster area for 1974-1977. A Recession resilient industry is one that lost employees during the 1975 recession, but then bounced back to the prerecession levels of employment by 1977. While these industries did not exhibit steady growth during the period of 1974-1977, they still did recover their recessionary losses and to that extent represent stable, or resilient, industries.

The listing of recession resistant and resilient industries in Tables 8 and 9 offers a tabular measure of job stability for the Fitchburg-Leominster area. However, some descriptive material on job stability is needed to round out the picture offered by the tabular presentation of data. What follows is a brief descriptive analysis of job stability or resilience for selected vocational-technical occupations. These brief analyses apply more to occupation generalities than to specific job outlooks in the Fitchburg-Leominster labor area; they certainly by themselves are not enough to predict employment prospects for a specific area.

Vocational Occupation	Stability Outlook
1. Machining Occupation	These jobs are very vulnerable during recessions; joblessness is higher for machine tool operators whose work requires less skill.
2. Printing Occupation	Unemployment increases only slightly during recessions, because the demand for printing is fairly steady.
3. Welding	Welding is hard hit during recessions.

Vocational Occupation	Stability Outlook
4. Clerical Occupation	These occupations are generally billed as slump proof; however, shipping and stock clerks suffer substantial unemployment when business is bad because their work is closely tied to volume of merchandise being sold; current job opportunities are excellent.
5. Keypunching	New techmology is making keypunch machinery obsolete.
6. Computer Programmer and Analyst	Computer operating personnel suffer less from recessions than workers in many other occupations.
7. Teller	Like many clerical workers, tellers are not greatly affected by changes in level of economic activity.
8. Cook Or Chef	In food services, high turnover, or frictional unemployment, swells the number of jobless workers in these areas: restaurants are much harder hit by recessions than supermarkets or other retail establishments.
9. Construction Occupations	These jobs are very hard hit by the declines in building that accompanies recession; occupations faring best.... electricians and plumbers....are those whose skills can be readily transferred to work outside of construction.
10. Drafters	Drafters are ususally hard hit when construction declines.
11. Mechanics and Repairers	Air-conditioning, heating, and refrigeration mechanics are hurt by recessions because many are involved in construction.
12. Nursing, Medical Technicians, and Other Health Occupations	Recessions have very little effect on these jobs. Higher rates of unemployment among some occupations reflect frictional unemployment, not difficulty in finding a job. Current employment prospects are very good.
13. Parks, Recreation and Leisure Service Workers	These service workers experience much higher levels of unemployment than do other social service workers, because many of the jobs are seasonal.

In summary, what can one infer from tabular and descriptive material on job stability? Graduates who want job security and stability should consider looking for jobs in these industries: health and related fields, clerical area, printing, computer related, insurance, transportation, and banking. They should be especially cautious about jobs that are very sensitive to changes in levels of economic activity, such as: construction trades, low-skilled machining operatons, and drafting.

Section VI. Conclusion

Material from the three major sections of this study --- occupational demand, occupational supply, and job stability --- collectively summon certain conclusions. First, the trades offered by vocational-technical schools in the Fitchburg-Leominster labor area are generally in good demand. But several stand out. Secretaries, registered nurses (general health related), machinists, auto body workers, auto mechanics, welders and those in electronics -- all are in particularly strong demand. Past experience and current market conditions recommend that schools continue and strengthen their vocational-technical programs in these areas.

On a negative note, limited job openings in commercial art and drafting caution against expansion in these programs. Students in vocational programs also ought to be warned about the general vulnerability of jobs that are especially sensitive to changes in levels of economic activity, namely the construction-related trades , so that they may make informed choices.

For the future. Analysis of current trends suggests a promising outlook for those in health occupations, electronics, and mechanical repair. Health care is a basic need and is receiving more and more attention in our society. The specific occupations of registered nursing and respiratory technician/therapist show the most promise.

In a society increasingly and enormously dependent on computers and electronic processing, it comes as no surprise that those in the electronics fields have bright futures. Finally, with our heavy reliance on mechanical equipment in our homes and industry, there will be increasing need for mechanics in many fields.

Final Recommendations

The most conclusive finding of the report is that graduates of area vocational-technical schools are in strong demand: the Fitchburg-Leominster area is experiencing a severe shortage of skilled labor. Local industry is searching for nurses, mechanics, welders, electronics technicians, and others in the skilled trades. Vocational-technical training centers can do their share to match the area's needs to their programs by:

1. Continuing to listen to the suggestions of advisory boards;

   As I mentioned in the introduction to this study, the advisory boards are the pulse of the community; the local employers on these boards are in tune with, indeed part of, the latest industrial developments and changes; they are concerned with and aware of the most up-to-date technology; and have a good sense of future trends. In short, they have a lot of valuable advice to offer the school. The schools have needed this advice in the past and must continue to do so.

2. incorporating the most up-to-date trade equipment and techniques into their programs;

   Vocational-technical school students must be trained on the most up-to-date equipment using modern techniques. The schools should not hesitate to call upon local industry for assistance in providing this often expensive, sophisticated equipment. It would be to a firm's advantange to lend its spare equipment for training purposes, because they would be getting graduates trained on equipment that is currently being used in industry. Some firms have already demonstrated the mutual benefit of such exchanges; industry and training schools should continue to team up and follow these examples.

3. maintaining and expanding ties with local industry;

   Co-op work programs between local employers and training school help cement the ties between the business and academic communities. Moreover, these programs are the single best way to prepare the student for the reality of the working world. Schools should continue to emphasize the role of Co-op in their programs.

4. assessing their curriculum and suggesting new courses to meet industry's needs;

Vocational-technical schools must be able to look hard at their course offerings to see whether they meet the needs of the community. Certain leaders in the area's extensive plastics industry think that a course in plastic technology should be added to the trade's school's curriculum. Indeed, a vocational schol in Framingham has already done so, and several area employers argue that their example could be profitably followed by schools in the Fitchburg-Leominster area.

Also, Fitchburg-Leominster hospitals are experiencing a shortage of trained respiratory technicians and therapists. At this time no area vocational school offers training in this occupation; it seems that the possibility of adding such a program should at least be explored with the hospitals.

5. stressing the value of good work habits;

Finally, perhaps even more important than the trades a school offers is its ability to instill in its trainees the value of good work habits. Every employer interviewed emphasized the need for solid, dependable workers; they rank dependability above all else. It is this responsible attitude to work that schools need to inculcate into their students.

A final note. Job demand is not synonymous with job quality. This report has dealt chiefly with job demand in vocational-technical occupations: it did not speak to the issues of wages, working conditions, and advancement. It cannot be assumed that the jobs most in demand are also the "best" jobs. To the contrary, many jobs remain unfilled and in demand precisely because they have unattractive wages and conditions. Put another way, career planning and placement offices advise students not only on what jobs will be awaiting them, but also on what the jobs awaiting them have to offer.

To site locators and employers considering expansion, the quality of the vocational-technical schools in the Fitchburg-Leominster area should be a positive consideration. CETA and WIN planners can work with the Vocational-technical schools to provide training in those occupations for which short-term institutional training or on-the-job training is appropriate.

A P P E N D I X

Job Requirements and Training For Selected Vocational-Technical Occupations

Auto Body Repairers
Auto Mechnics
Carpenters
Electricians
Machinists
Welders
Computer Technicians
Air Conditioning & Refrigeration, and Heating Mechanics
Cooks and Chefs
Commercial Artists
Drafters
Dental Laboratory Technicians
Dental Assistants
Practical Nurses
Secretaries/Stenographers

A. Mechanics and Repairers

1. Automobile Body Repairers: most automobile body repairers learn the trade on the job. They generally start as helpers and pick up skills from experienced workers. Usually, three to four years of on-the-job training are needed to become skilled in all aspects of body repair. Most training authorities recommend a three or four-year formal apprenticeship program as the best way to learn the trade, but few of these programs are available. The apprenticeship includes both on-the-job and classroom instruction. Courses in automobile body repair by high schools, vocational schools, private trade schools provide helpful experience, as do courses in auto mechanics. Although completion of high schools is generally not a requirement. Many employers believe graduation indicates that a person at least has some of the qualities of a good worker. Automobile body repairers must buy hand tools, while employers usually furnish power tools. The usual pattern is for trainees to accumulate tools as they gain experience.

Source: Occupational Handbook, 1978-1979 Edition.
U. S. Department of Labor, Bureau of Labor Statistics
Bulletin 1955.

2. Automobile Mechanics: Most automobile mechanics learn the trade on the job. Although a beginner can make simple repairs after a few months' experience, it usually takes three to four years to become familiar with all types of repairs. In contrast, radiator mechanics, glass mechanics, and brake specialists, who do not need an all-around knowledge of automobile repairs,may learn their job in two years.

   Most training authorities recommend a three-or four year formal apprenticeship program, which includes both on-the-job training and classroom instruction.

   More typically, however, employers look for young persons with mechanical aptitude and knowledge of automobiles. Working on cars as a hobby is a valuable experience. Completion of high school is an advantage in obtaining an entry job because to most employers it indicates that young person has at least some traits of a good worker. Courses in automobile repair offered by high schools and trade schools are also helpful.

   The usual practice is for mechanics to buy their hand tools, and then accumulate tools as they gain experience. Many experienced mechanics have over several hundred dollars invested in tools.

   Employers sometimes send experienced mechanics to factory training centers to learn to repair new models or to receive special training in subjects such as automatic transmission or air-conditioning repair.

3. Computer Service Technicians: Most employers require applicants for technician trainee jobs to have one to two year's post high school training in basic electronics or electrical engineering. This training may be acquired from public vocational school, a college or junior college. Basic electronics training offered by the Armed Forces is excellent preparation for technician trainees.

   A high school student interested in becoming a computer service technician should take courses in math and physics; high school courses in electronics, electricity, and computer programming are also helpful.

   Technician trainees usually attend company training centers for three to six months to learn elementary computer theory, computer math, circuitry theory, and to further their knowledge of electronics.

In addition to formal instruction, trainees must complete six months to two year's of on-the-job training

Because manufacturers continually redesign equipment and develop new uses for computers, experienced technicians must frequently attend training sessions to keep up with these changes. Furthermore, most computer equipment operates on the same basic principles, but machines built by different companies may be unique in design and construction. For this reason, technicians may find it difficult to transfer between companies that maintain different brands of equipment.

4. Maintenance Electricians: Most maintenance electricians learn their trade on the job or through formal apprenticeship programs. Training authorities agree that apprenticeship gives trainees a more thorough knowledge of the trade and improved job opportunities during their working life. The apprenticeship usually lasts four years, and consists of on-the-job training and related classroom instruction in math, electrical and electronic theory, and blueprint reading. Training typically includes motor repair, wire splicing installation and repair of electronic controls and circuits and welding and brazing.

   Although apprenticeship is the preferred method of training, many people learn the job informally on the job, by serving as helpers to skilled maintenance electricians.

   Persons interested in becoming maintenance electricians can obtain a good background by taking high school or vocational school courses in electricity, electronics, algebra, mechanical drawing, shop, and science. To qualify for an apprenticeship program, an applicant must be 18 years old and usually must be a high school or vocational school graduate with one year of algebra.

5. Air Conditioning, Refrigeration, and Heating Mechanics: Most of these mechanics start as helpers and acquire skills by working for several years with experienced mechanics. All new workers in these trades receive similar on-the-job training lasting four to five years. They begin by doing simple tasks such as carrying materials and cleaning. Within a year they learn to cut, braze, and solder pipe and tubing; within three,to install fittings and work with sheet metal. By the end of the period, they are capable of checking circuits and installing burners and pumps.

When hiring helpers or apprenticers, employers prefer high school graduates with mechanical aptitude who have taken courses in math, blueprint reading, physics, electronics, and basic construction and engineering concepts.

B. Industrial Production and Related Occupations

1. Carpenters: Although training authorities recommend the completion of an apprenticeship program as the best way to learn carpentry, a large number of workers in the trade acquire their skills informally. The apprenticeship program usually consists of four years of on-the-job training, in addition to a minimum of 144 hours of related classroom instruction each year. Apprentices receive classroom instruction in drafting and blueprint reading, mathematics for lay out work, and the use of woodworking machines. Often other informal on-the-job programs are provided by local contractors and are normally shorter and less thorough than apprenticeships.

   Persons interested in carpentry should take the all-around training given in apprenticeship program. A high school or vocational school education is desirable, as are courses in carpentry shop, mechanical drawing, and general math. Applicants should also have manual dexterity, and the ability to solve arithmetic problems quickly and accurately.

2. All-Around Machinists: A four-year formal apprenticeship program is the best way to learn the machinist trade, although many machinists learn their trade informally on the job.

   Persons interested in becoming machinists should be mechanically inclined and tempermentally suited to do highly accurate work that figures concentration as well as physical effort.

   A high school or vocational school education stressing math, physics, and machine shop training is desirable. Some companies require experienced machinists to take additional courses in math and electronics at the company's expense so that they can service and operate numerically controlled machine tools.

   Typical machinist apprenticeship programs consist of approximately 8,000 hours of shop training and about 550 hours of related classroom instruction.

3. Welders: Generally, it takes several years of training to become a skilled welder. Some of the less skilled jobs, however, can be learned on the job in a few weeks or months.

   Many large companies conduct programs to train people as welders. After completing the course, individuals are offered a job. A few companies offer employees welder apprenticeship programs.

   Persons planning careers as welders need manual dexterity, good eyesight, and good hand-eye coordination. They should also be able to concentrate on detailed work for long periods.

   Most employers prefer applicants who have high school or vocational school training in welding. Courses in shop mathmetics, mechanical training, blueprint reading, physics, and chemistry are also helpful.

4. Drafters: Persons interested in becoming drafters can acquire the necessary training in technical institutes , junior and community colleges, extension divisions of universities, and vocational and technical high schools. Others qualify through on-the-job training or three to four-year apprenticeship programs.

   Training for a career in drafting, whether in high school or post high school program, should include courses in math, physical sciences, mechanical drawing, and drafting. Shop practices and skills are also helpful since many higher level drafting jobs require knowledge of manufacturing or construction methods.

   Those planning careers in drafting should be able to do freehand drawing of three-dimensional objects and detailed work requiring a high degree of accuracy.

5. Commercial Artists: Artistic ability, imagination and a capacity to visualize ideas on paper are important qualifications for success in commercial art.

   Persons can prepare for a career in commercial art by attending a two-or four-year trade school, a junior college, college or university which offers a program in commercial art.

   Most artists who enter the field are graduates of trade schools. Admission to these schools is based on high school grades, a portfolio of art work and an interview. A growing number of colleges and universities, however, confer degrees in commercial art.

Limited training in commercial art may be obtained through public vocational high schools and practical experience on the job. There is no formal training program for the commercial art trainee, however.

C. Services

Cooks and Chefs: Most cooks start work in unskilled positions such as kitchen help and acquire their skills on the job. However, an increasing number of cooks are acquiring high school and post high school vocational training in food preparation. Occasionally they are trained in apprenticeship programs offered by professional associations and trade unions.

A high school diploma is not required for most beginning jobs, it is recommended, however, for those planning careers as cooks or chefs. High school or vocational school courses in business arithmetic and business administration are helpful in becoming a cook or chef.

Persons who have had courses in commercial food preparation will have an advantage when looking for jobs in large restaurants or hotels where hiring standards are often high. Some vocational programs in high schools offer this kind of training. More often, though, these courses, ranging from two months to two years or more, are open in some cases only to high school graduates, are given by trade schools, vocational centers, junior colleges, universities, professional associations, and trade unions.

D. Office Occupations

Secretaries and Stenographers: Generally, graduation from high school is required for a job as a secretary or stenographer. Many employers prefer applicants who have additional secretarial training at a college or private business school. Courses vary from a few month's instruction in basic shorthand and typing to longer programs teaching specialized skills such as shorthand reporting or legal or medical secretarial work.

An increasing number of private firms and governmental agencies have their own training facilities where employees can upgrade their skills.

Employers usually have no preference among the many different short hand methods. They are more interested in accuracy and speed. Secretaries and stenographers should also have a solid knowledge of spelling, punctuation, and English usuage.

E. Health Occupations:

1. Dental-Laboratory Technicians: Although no minimum formal education is needed to enter this occupation, a high school diploma is an asset. Among the personal qualifications that employers look for are a high degree of manual dexterity, patience and a liking for detailed work. High school students interested in a career as a dental technician are advised to take courses in arts, crafts, metal shop, metallurgy, and sciences.

   Many dental laboratory technicians learn their craft on the job, although more andmore are taking formal training programs before starting work on-the-job training ususally lasts four to five years.

   Dental laboratory technicians may become Certified Dental Technicians by passing written and practical examinations given by the National Board for Certification. This certification is becoming increasingly important as evidence of a technicians competence.

2. Dental Assistants : Most dental assistants learn their skills on on the job. An increasing number, however, are trained in formal post high school programs. Most post high school courses are offered by community colleges or vocational schools. More than three-fourths of these programs take one year to complete and lead to a certificate or diploma. Graduates of two-year programs offered in community colleges earn an associate degree.

Approved dental assisting programs include classroom and laboratory instruction in skills and related theory. Trainees get practical experience in affiliated dental schools, local clinics, or selected dental offices.

High school students interested in careers as dental assistants should take courses in biology, chemistry, health, typing, and office practices.

Graduates of accredited dental assistant programs, who successfully complete an examination administered by the Certifying Board of the American Dental Assistants Association become Certified Dental Assistants. This certification is acknowledgement of an assistant's qualifications but is not generally required for employment.

2. Licensed Practical Nurses:

All states regulate the preparation and licensing of practical nurses. To become licenses applicants must complete a course of instruction in practical nursing that has been approved by the State board of Nursing and pass a written examination. Some schools do not require completion of high school but they give preference to graduates. Volunteer hospital work can provide a useful background for practical nursing, but most applicants have no prior work experience.

Practical Nurse Training programs are usually one year long and include both classroom study and clinical practice.

Those who wish to become licensed practical nurses should have a concern for human welfare. They must be emotionally stable because working with sick and injured people can be upsetting. Good health is important, as is the physical stamina reached to work while standing a great deal.

Table 10
Energy and Nonenergy Intensive Industries

Industry	Occupations In the Industry For Which Vocational Education/ Technical Training Is Desirable
Nonenergy Intensive Industries	
Fabricated Metal Products	Drafter, Engineering Technician, Machinist, Machine Tool Operator, Electroplater, Tool and Die Maker, Punch-Press Operator, Drill-Press Operator, Lathe Operator, Grinding Machine Operator, Sheet Metal Worker, Welder, Filer/Grinder
Nonelectrical Machinery	Drafter, Electronic Technician, Tool and Die Maker, Machine Tool Operator, Machinist, Grinding Machine Operator, Drill-Press Operator, Lathe Machine Operator, Maintenance Mechanic, Welder, Filer/Grinder/Buffer, Secretary.
Electrical and Electronic Machinery	Machine Tool Operator, Machinist, Tool and Die Maker, Electroplater, Tester, Welder, Electronic Wirer, Electronic Assembler, Secretary, Typist
Instruments	Electrical/Electronic Technicians, Machinist, Machine Tool Operator, Machine Operator, Instrument Assembler, Accounting Clerk, Secretary, Typist
Energy Intensive Industries	
Paper and Allied Products	Industrial Truck Operator, Machine Setter, Paper Machine Winder, Slitting Machine Operator, Press Operator, Secretary
Chemical and Allied Products	Science Technicians, Maintenance Mechanics, Chemical Operator, Mixer/ Blender, Grinder Operator, Accounting Clerk, Secretary, Typist
Primary Metal Industries	Machine Tool Operator, Machinist, Filer/Grinder/Buffer, Molder, Inspector

Syllabus of Studies in the Vocational Education Field

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National Institute of Education
1200 19th Street N.W.
Washington, D.C. 20208

58. National Center for Research in Vocational Education
Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

This center contains an extensive Research Library and also the ERIC (see item 55 above) Clearinghouse on Adult, Career, and Vocational Education.

59. National Center for Education Statistics
400 Maryland Avenue S.W.
Washington, D.C. 20202