

1977

A study of vocational-technical education in Iran (Tehran)

Khosrow Lotfipour
Iowa State University

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A study of vocational-technical education
in Iran (Tehran)

by

Khosrow Lotfipour

A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of
The Requirements for the Degree of
DOCTOR OF PHILOSOPHY

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CHAPTER I. INTRODUCTION

In 1976, more than 300,000 Iranian students were interested in entering colleges and universities, but there were only vacancies for about 20,000. Most of the 280,000 who were not accepted for higher education were concerned about other educational opportunities. The problem was complicated by the rapidly changing social, economic and industrial developments in Iran. The national income of Iran has increased as the result of increased revenue from oil and gas. This development has changed the local economic situation as well as the Iranian society and industry as a whole.

The government has increased the imports of automobiles, tractors, combines, television sets, radios and other industrial products. As a result, farmers and other workers have started using the equipment without adequate skill and knowledge. Simultaneously, the number of industries has increased. This situation has caused a shortage of the technicians and skilled workers needed to manufacture, repair, and maintain the new products: radios, television sets and stations, automobiles, refrigerators, and other industrial equipment and agricultural machines now available in rural and urban areas.

One of the basic problems in Iran is the lack of planning for the education of trained manpower--technicians and skilled workers. The economy and industries of Iran have expanded and

changed without adequate governmental planning and without the necessary investment in vocational-technical education which would support the imported technology. With these important changes in the economy of Iran, vocational-technical schools cannot sufficiently meet the need for trained workers at this time.

There is little or no relationship between supply and demand among the occupations involving business, skilled work, industry and agriculture. These new developments have created a large demand for people with skills and at the same time reduced the demand for those without skills or with obsolete skills. The increase in the pace of technological advancement has influenced many people to leave the villages and come to the cities, but because of a lack of skill they cannot be efficiently used by industries. This situation creates new problems in the villages and cities. These are the logical results of technological advancement that has been going on for at least the last ten years.

Also, there is a question concerning what the Ministry of Education, the Ministry of Science of Higher Education and the Ministry of Labor and Social Affairs in Iran must do to provide adequately and sufficiently skilled workers and technicians and what the vocational-technical schools should do to meet the industrial, social, and individual needs of the society.

Background Information

The population of Iran in 1968 was 27,578,000. About 11,000,000 of the total lived in urban areas. The ratio between men and women was 108 men to 100 women. By 1976 the population of Iran was 33,581,000. About 14,687,000 of the total population lived in the urban areas. The literacy level in 1968 was 33.4%. The literacy level according to sex was 44.6% for men and 21.4% for women. The literacy level in urban areas was 55.6% while in rural areas it was 18.3%. The number of employed persons in 1975 was 9,545,000 or 29.7% of the total population. The rate of population increase has been about 3.2% per year. If no controlling measures are adopted, Iran's population in the year 2000 could reach 75 million.

Table 1 shows the population actually employed by major sector. Until a decade ago, the number of foreign nationals

Table 1. Population actually employed by major sector, percentages, 1956-1966

Sector	1956	1966
Agriculture	56 ^a	47
Industry, construction, transport	24	30
Trade and services	<u>20</u>	<u>23</u>
	100	100

^aFigures: from Iran Almanac, 1973, pp. 361-374, and Iran Almanac, 1976, published by the Echo of Iran.

employed in Iran did not exceed 4,000, but the number has now risen to 45,000. Each year the number of foreign nationals employed in Iran can be expected to increase because of the lack of native skilled workers and experts.

Education

In 1747 because of the efforts of Amir Kabir, a poly-technic institute was started, which included: an infantry department, an artillery department, a cavalry department, an engineering corps, a medical and surgical department, a mine engineering school, a pharmacy and foreign language department. A total of 16 Iranian teachers and 26 European teachers were employed for the education of the 270 students (17, p. 541).

In the 19th century an effort was made to introduce a change in the educational system of Iran (17, p. 541). In the reign of Fatehalishah a few students from Iran were sent to Europe for higher education. In 1851 the government of Iran established Darolfonon College in Tehran, the first of its modern educational institutions. Darolfonon College, along with private modern schools and foreign missionary schools, gradually created a new Iranian elite, which was marked by its modern and Western ideas of social and political reform. A nationalist and constitutional movement emerged, and in 1906 Iran established a parliament and a constitution. In 1911 the

parliament ratified the Fundamental Law of Education and established a Ministry of Education to enforce it. The supplementary constitutional law of 1907 and the Fundamental Law of Education set the pattern for modern education in Iran. According to the law (39, p. 66), the State would assume responsibility for and control of education at all levels. The Ministry of Education would establish schools, employ teachers and approve all curricula, and primary education would be compulsory and free (by the 1930's) for all Iranians. Also, the Ministry of Education would be responsible for primary and secondary education.

The first High Council of Education was created in 1922 by an act of parliament. Its function was to advise the Ministry of Education and to make decisions on educational matters.

Education: The Ministry of Science and Higher Education founded in 1967 set forth the following goals:

1. To define the goals and objectives for higher education and specify policies and priorities of national educational and scientific institutions;
2. To plan and establish policies for national education, incorporate with the Ministry of Education and other related organizations;
3. To coordinate, guide and evaluate universities and higher education institutions.

In order to develop a better understanding of vocational-technical education in Iran, a composite of general information concerning the number of students enrolled in Iranian education programs is presented in Table 2. More than 7,760,000 students were enrolled in educational programs in 1975-1976.

Table 2. Educational statistics of Ministry of Education in Iran 1975-1976^a

Type of education	Female	Male & female
I. Number of students		
A. Kindergartens	79978	175424
B. Primary schools		
1. Ordinary primary schools	1491431	3812520
2. Education corps schools	193933	655779
Total	1685364	4468299
C. Guidance cycle schools	459416	1283661
D. General secondary schools		
1. Ordinary secondary schools	268042	705009
2. Night secondary schools	49537	178714
E. Iranian schools abroad	3347	8464
F. Special education	2314	6077
G. Technical and vocational education		
1. Industrial technical education	2030	86187
2. Rural technical and vocational education	550	15902
3. Services technical education	26485	48420
Total	29065	150509
H. Special vocational courses	36	1079
I. Colleges, normal schools and technical training (T.T.) centers		
1. Senior technician institutes, technical training centers (T.T.C.) for arts and T.T.C. for school health workers	4030	20131
2. Guidance T.T.C.		
a. Day T.T.C.	5809	14989
b. Summer T.T.C.	880	3765
3. Teacher training normal schools	11459	20094
4. Tribal normal schools	134	1000
5. T.T.C. for children	3966	3966
6. T.T.C. for special education	104	144

^aAll figures from Ministry of Education (27).

Table 2 (Continued)

Type of education	Female	Male & female
J. Literacy corps and adult education		
1. Literacy corps		
a. 6-12 years of age	122366	202562
b. 13-35 years of age	70797	204168
2. Functional education	29273	52761
3. General course for adult education	27452	133970
4. Correspondence courses	1261	4704
5. Adult education under education corps	41249	126612
II. Number of teaching staff in:		
1. Primary schools and kindergartens	72864	129769
2. Education corps	7971	22287
3. Guidance cycle	23513	49917
4. General secondary schools	6184	21162
5. Normal schools and T.T.C.	485	1733
6. Technical and vocational schools and institutes	1299	7059
7. Special education	512	695
III. Administration staff		
1. Education offices	3240	20168
2. Supervisory staff and Iranian schools abroad	154	440
Total number of janitors	27043	

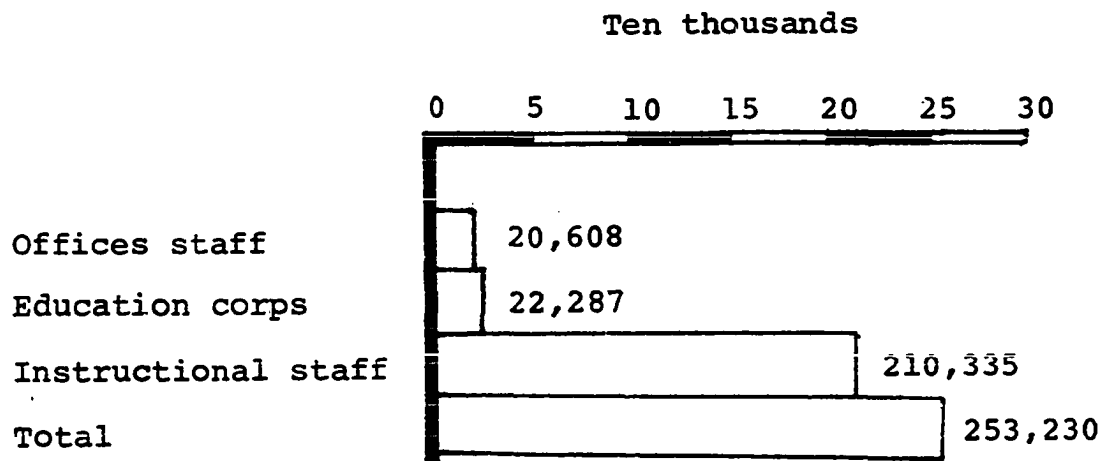


Figure 1. Distribution of employees of the Ministry of Education in the academic year of 1975-76

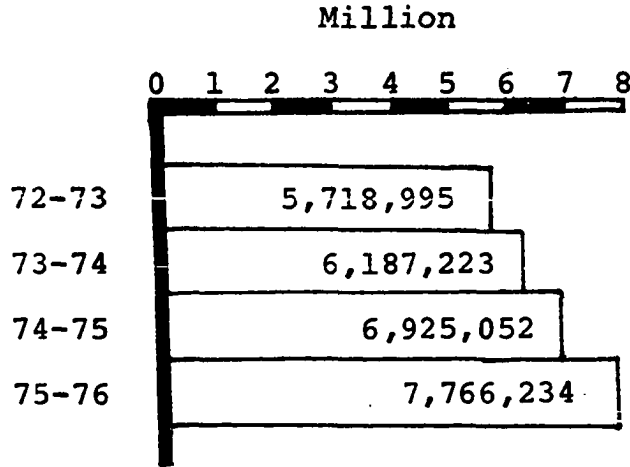


Figure 2. Number of students in the academic years of 72-73, 73-74, 74-75, and 75-76

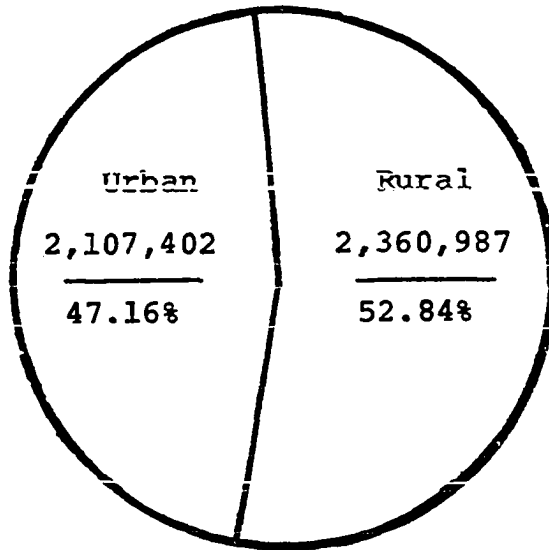


Figure 3. Number of rural and urban primary schools' students in the academic year of 1975-76

The total number of students at various levels of education (kindergarten, primary school, education guidance, secondary schools, vocational and technical schools, technical institutes and teachers' training schools) has been growing at the rate of 14% per annum during the last decade. The number of students rose from 2,159,135 in the academic year 1962-63 to 7,760,000 in the academic year 1975-76.

The New System of Education

At the beginning of the 1965-66 academic year, there was a major change in the educational structure in the country. The school cycle, instead of comprising two six-year periods of primary and secondary education, was divided into three periods consisting of five years of primary school, three years of academic guidance, and four years of secondary education. Until all children of school age are actually attending school, the period of compulsory free education will be temporarily reduced to five years. At the second stage, when the country can financially afford to have all children of school age enrolled in the five-year primary school, the three-year guidance period will be made compulsory and free so that primary education up to the age of 14 will become nationwide, as it is in many advanced countries of the world.

Under the new plan, see Figure 4 page 12, the three-year guidance program which has been established as an intermediate period between the five-year primary and four-year secondary schools is a stage in which the benefits from education in different fields are identified. From the four-year secondary school, a one-year period has been designed to prepare students entering colleges, universities, or the job market. The students will also be guided in selecting a job in keeping with their talents and the various specialized requirements of the country. For this reason the curriculum of the four years of secondary school will include technical and vocational courses in addition to theoretical courses, so that conditions conducive to the development of the pupils' interests in technical and vocational fields will be created, and more of the students will be directed toward the technical and vocational fields especially required for economic development.

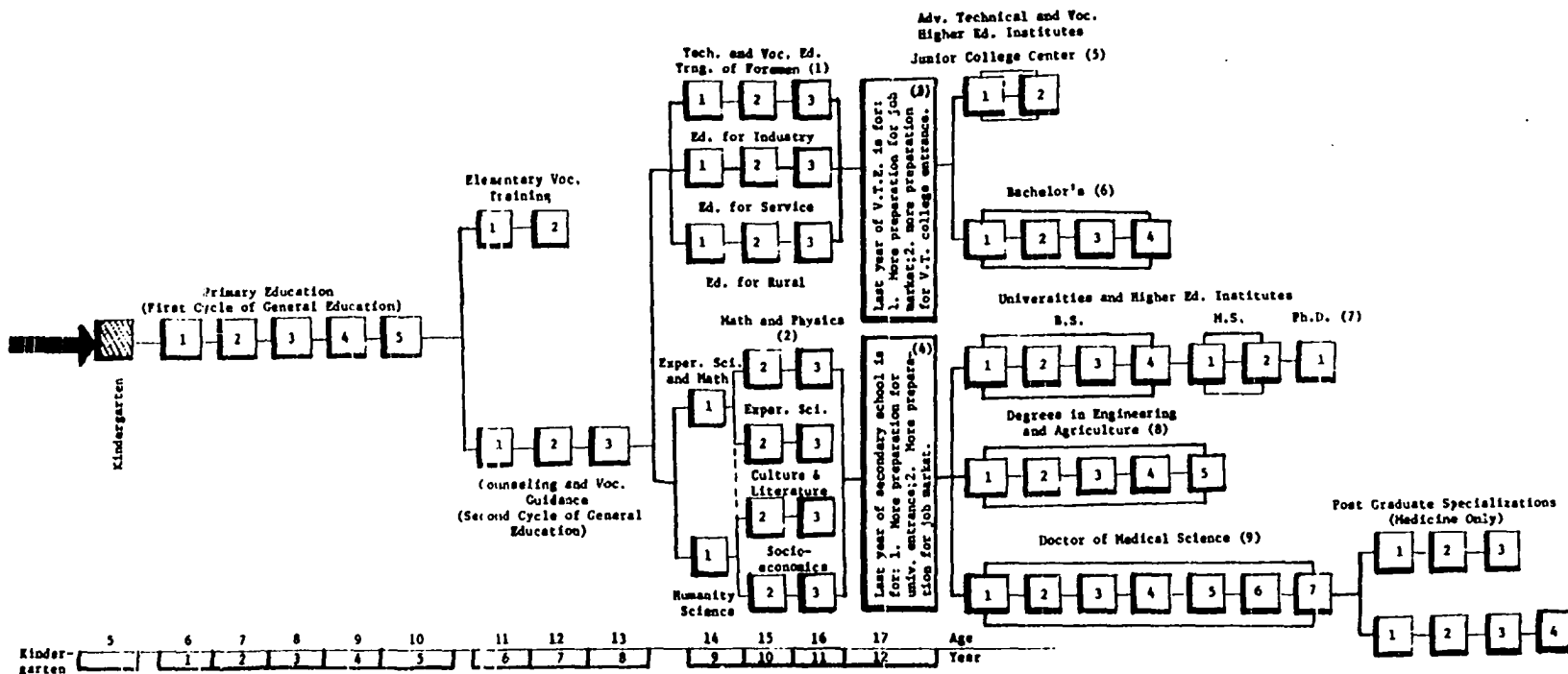
The Ministry of Education introduced the first year of a new five-year primary program in 1965. Because complete implementation of this stage required a relatively long period, it became necessary to introduce the first year of the guidance program (6-7-8) throughout the country even before the revised five-year primary program had been completed. The new academic guidance program was introduced throughout the country during the 1968-1969 academic year.

On the following page (Figure 4) a diagram is presented of the New System of formal education presented in June of 1965.

History of Vocational-Technical Schools in Iran

An agreement between Iran and Germany for training students in vocational and technical education was made in 1907. In this year the first school, at its present location called Honarestan Sanaty Tehran, was started between Iran and Germany. The main objective was to train and prepare the best Iranian students for technical higher education. Two hundred-fifty students were admitted free; two-thirds of the instructors were from Germany. The decision was made to have branches of this type of school in the large cities of Iran, but the First World War stopped the plan.

In 1922, the first vocational-technical school called Honarestan Sanaty again began courses in metals and carpentry. By 1928 students who completed a four-year period were graduating. In 1934 the first group of students who passed the six-year period of the Honarestan were graduated. Until 1941, all German specialists were hired as temporary employees of the government in Tehran, Shiraz and Tabriz. With the start of the Second World War, the cooperation between Iran and Germany ended. However, in 1950 Germany donated 4 million Marks for new equipment in vocational-technical education for Tehran Honarestan and Tabriz Honarestan. Also 27 German



- (1) This is equivalent to 2nd Degree Technicians (Assistant-Technicians)
- (2) At present, 12 fields of specialization are offered. These are: Mathematics; Natural Sciences; Literature and Humanities; Foreign Languages; Education; Economics; Sociology and Social Studies; Statistics; Nutrition and Home Economics; and Art. These fields are subject to changes as decisions are not finalized.
- (3) One-year preparation in vocational-technical courses, for entrance to the vocational-technical college or job market.
- (4) One-year course preparation for college and university or job market.
- (5) This is equivalent to highest degree technician (technician grade One).

- (6) Four-year study for Bachelor's in vocational-technical education. These durations sometimes vary between higher education establishments.
- (7) Doctorate requires minimum period of 1 year and maximum period of 2 years.
- (8) Possible to obtain degree equivalent to B.Sc. after 4 years and M. Sc. after 5 years at higher education institutions.
- (9) Doctorate for Pharmacy, Dentistry and Veterinary Medicine usually requires a minimum period of 6 years.

Figure 4. The new system of formal education in Iran (1965)

specialists came to Iran to teach.

In 1962, the decision was made by the Iranian and German governments to send one to three of the best Iranian students to Germany for specialization with expenses paid by Germany. At this time all books and equipment were sent from Germany. In 1970 the contract between Iran and Germany was again terminated.

From that time Iranian instructors had the responsibility for teaching in technical schools. In 1971 another contract was made between Iran and Germany with Germany sending another group of experts to Iran. These German specialists helped Iranian experts in the planning of vocational-technical programs.

During the last ten years vocational-technical schools have been expanding. Now there are 150 vocational-technical schools and 42 junior college vocational-technical schools in Iran. But because of the demand for semiskilled workers, skilled workers and technicians, these schools still cannot meet the needs of the country. More importantly, the industries cannot efficiently use the manpower of the country.

Vocational and Technical Education

There are three levels of vocational-technical education in Iran. The first level is a postprimary trade school program corresponding to the first cycle of secondary school. This is a terminal program aimed at training students to be artisans

and skilled workers. The second level corresponds to the second cycle of the secondary schools; students who have passed the first cycle of general academic school may be admitted to these secondary technical schools. The school's objectives are to train technicians and industrial foremen. The third level is the technical college, which admits students who have completed the academic secondary school program or who have graduated from technical secondary schools. These technical colleges are intended to train practical engineers and advanced technicians.

In the school year 1969-70, slightly more than 25,000 pupils were enrolled in technical education at the secondary level; of those enrolled more than 80 percent were boys.¹ The total of 25,000 is about 2.5 percent of the number of students enrolled in general secondary education at the same period. Because of the technological change in Iran the number of students in vocational-technical schools has increased rapidly. The total number of students, male and female, in technical and vocational education in 1975-76 was 150,509 (Table 3).

In 1970 less than 5 percent of the total public expenditure on education was devoted to vocational-technical education.

¹Employment and Income Policies for Iran, published by International Labour Office, Geneva, 1973.

Table 3. Distribution of technical and vocational education students in Iran (1975-1976)

Technical and vocational education ^a	Female	Male & female
1. Industrial technical education	2,030	86,187
2. Rural technical and vocational education	550	15,902
3. Services technical education	26,485	48,420
Total	29,065	150,509

^aEducational Statistics of Ministry of Education in Iran, 1975-1976.

Some people question the quality of teaching in vocational-technical schools mainly because of the lack of a qualified teaching staff and poor or inadequate machinery, tools and supplies. In addition, some of the courses offered in vocational-technical schools do not correspond to current industrial needs, and young people who complete such courses have difficulty in their first jobs.

Vocational Training

The Ministry of Social Affairs operates seven vocational training centers with capacities of 2,450 trainees per year. Three of the seven training centers are in Isfahan, Mashad and Tabriz, one in Karaj and three in Tehran. According to the

plan, the vocational training centers will increase to 150 in the next few years.

Courses of about 4 to 6 months duration are provided for trainees with a minimum age of 16 years who have completed at least a primary education. Courses are offered in electrical training, metals, woodworking, auto mechanics, textiles, construction, foods, chemicals, wood, mining, and plastics. One of the centers offers courses in dressmaking and women's hair-dressing (13).

Industrial training board: The Industrial Training Law of 1970 made provisions for training entrants to the labor market and in-service training for workers who change their jobs.¹

Among the available training activities are instructor and supervisor training; training, updating and up-grading skilled and semiskilled workers through the centers of the industrial training board; and training by mobile instructors in textiles, construction, metal working, food industries and vocational training. From 1972 to 1976, about 70,000 workers and 1,450 supervisors and instructors were trained by the industrial training board.

¹Ministry of Labor and Social Affairs. Report. Tehran, Iran: Industrial Training Board, 1975, pages 1 and 18.

Some of the technical content of required military training has a vocational-technical value for future civilian employment. The army provides three months' vocational training for at least 5,000 conscripts at the end of their two-year period of compulsory military service.

Organizations providing special training for their own employees are the railways (1200 skilled workers trained in 1970) and the National Tourist Organization (1,000 persons given in-service training in 1970). The iron and steel industry and other government and nongovernment organizations and some factories also train workers (13). It has been estimated that some 170,000 persons were undergoing some form of technical education or vocational training during 1973.

Statement of the Problem

As a result of economic and industrial change in Iran, demand for skilled workers and technicians has increased. Iran has had to hire thousands of skilled workers, technicians and specialists from other countries.

In the last year more than 280,000 Iranian students were interested in continuing their education by taking advanced programs, but there were not enough higher educational facilities, especially in vocational-technical education, for them to do so. Although vocational-technical and other central technical training is available in Iran, the schools

can not meet the technical labor needs of the country.

The government has increased the imports of automobiles, tractors, combines, television sets, radios and other industrial products and has distributed them in the country without adequate plans for educating the technicians who will maintain and repair them.

In general, there is little or no relationship between supply and demand of trained personnel among business, skilled workers, industry and agriculture.

The purpose of this study is to investigate the present situation of vocational-technical education in Iran, to obtain data directly from personnel officers in the selected areas concerning the need for semiskilled, skilled and technician level workers and to determine the interests and attitudes of 12th grade students and administrators of education toward changing the vocational-technical programs in Iran (Tehran).

Objectives of this Study

The objectives of this study are in six major parts:

1. To determine the interests and attitudes of 12th grade students toward vocational-technical programs.
2. To determine the interests and attitudes of adults (employed) for training and retraining in vocational-technical schools.
3. To determine the attitude of personnel officers and agents toward the need for adequately qualified semi-skilled, skilled and technician level workers.

4. To study present educational opportunities for requested training through the study of curricula offerings and enrollment in vocational-technical schools
5. To elicit the opinions of vocational-technical 12th grade students about curriculums of vocational-technical education.
6. To make recommendations for the development of vocational-technical programs based upon the findings of this study.

Basic Assumptions of the Study

The researcher assumes that the curriculum and manpower in vocational-technical education in Iran is and will be constantly updated to meet the needs of the present and the future economic, industrial, and social conditions in Iran. Also, it is assumed more programs need to be established in Iran's area vocational-technical schools. It is further assumed that 12th grade high school students, 12th grade vocational-technical schools, personnel or hiring officers and employees of selected businesses, catalogs, and administrators of vocational-technical schools are among the best sources of data that can be used to develop a program for training semiskilled and skilled workers and technicians to meet the needs of the country through the vocational-technical schools. It is also assumed that the rising economic level of Iran will result in a demand for more vocational-technical education for all citizens on all levels.

Delimitation or Scope of Investigation

The data for this study were collected by the survey method, using both questionnaires and interviews. The individuals to whom the questionnaires were sent were the 1976 12th grade high school students and 12th grade vocational-technical school students in Tehran. The survey was to determine actual or potential needs and the assessment and interest in vocational-technical education programs as well as to provide an evaluation of vocational-technical programs in Tehran.

Another questionnaire was sent to the personnel or hiring officers of television, radio, automobile, tractor, refrigerator, and telephone firms in Tehran to determine if they had adequately qualified skilled workers and technicians and what they planned to do to expand their production.

The researcher also sought to determine with the questionnaire the interests and desires of employed adults for training and retraining in the vocational-technical areas.

Finally, the researcher interviewed administrators of vocational-technical schools to determine what they thought about vocational-technical schools, and what their plans were for improving vocational-technical schools in Iran.

Definition of Terms

In order to better understand and clarify the meaning of the various terms used in this study, the following definitions are made:

1. Semiskilled workers: Those individuals who are required to have 1 or 2 years of basic and general technical education beyond 5 years elementary education.
2. Skilled workers: Those individuals who are required to have two years of technical education beyond 2 years of basic technical education.
3. Technicians: Those individuals who require 4 years of education in vocational-technical schools beyond the 2 years of basic technical education.
4. Advanced technicians: Those individuals who have completed the 2-year junior college beyond their secondary education.
5. Administrators: Those individuals who can make planning decisions in vocational-technical education.
6. Personnel or hiring officers of the firms: Those individuals who have the most responsibility for hiring, firing, retiring and other personnel duties of a firm.
7. Honarestan-i-sanati: High school of vocational-technical training.
8. Homarjoo: A student of high school vocational-technical training.

9. V.T.E. - vocational-technical education.
10. V.T.P. - vocational-technical program.
11. V.T.C. - vocational-technical center.
12. T.T. - technical training.
13. T.P. - technical program.
14. V.T.S. - vocational-technical school.
15. χ^2 - chi-square.
16. \underline{x}^2 - the number at the bottom of χ^2 shows degree of freedom of chi-square.

Organization of the Study

The material presented in this study is divided into six chapters and appendices. The first chapter includes an introduction, background information, education (primary and secondary education), educational statistics, a description of the new system of education, a history of vocational-technical schools, a diagram of the new system of formal education, vocational and technical education, vocational training, the statement of the problem, objectives of this study, basic assumptions of the study, delimitation or scope of investigation and definition of terms. The second chapter contains a summary and analysis of literature related to vocational-technical education in Iran and the United States. In chapter three, the methodology and design of this study are presented. Chapter four includes a presentation and discussion of data

collected from 12th grade high school students in mathematics, natural science and literature, 12th grade vocational-technical students, workers, hiring personnel of ten factories and administrators of vocational-technical schools in Tehran. The fifth chapter includes discussion. The summary, conclusion and recommendations of this study, for improving vocational-technical education in Iran are presented in chapter six.

Finally the appendices include a list of the high schools, vocational-technical schools, factories and population surveyed, questionnaires and interview of the 12th grade high school and 12th grade vocational-technical students, workers and hiring personnel of ten factories, and administrators of vocational-technical education. The names of organizations involved in vocational-technical training are also listed and finally the letters to the Minister of Ministry Education, Minister of Ministry Science and Higher Education and vice minister of Ministry of Education who is in charge as president of vocational-technical education in Iran.

CHAPTER II. REVIEW OF LITERATURE

Introduction

Status of investigation in the field of this study

To the author's knowledge, no research on vocational-technical education programs in Iran has been conducted in an American university to determine the need and assessment of vocational-technical education in Iran. However, two studies are somewhat related to the writer's research. One is the investigation and development of a technical curriculum for the preparation of technicians in agricultural mechanics in Iran. This study was done at Michigan State University by Soleiman-Zarein (44).

The purpose of Soleiman-Zarein's study was to formulate a curriculum, using data and information obtained through a survey and review of literature, for a two-year post-high school agricultural mechanization technician training program in Iran.

The findings of the Zarein study were:

The qualifications of a technician were identified as to the necessary competencies to adjust, service, and maintain all agricultural machinery and equipment in the shop and/or in the field:

(1) The technician should have the ability to perform minor repair jobs for all agricultural machinery.

(2) He should be able to make major repairs in some sub-areas such as small engines,

which do not require skilled mechanics.

(3) He should not be required to overhaul gas engines, diesel engines, or harvest machinery.

(4) He should have some background in basic and elementary science, including applied electricity, mechanics, and mathematics.

All of the above competencies (except those in number 4) were identified as being essential to the performance of agricultural machinery activities by a technician. Using the data and the findings of the study, a curriculum for a two-year post-high school agricultural mechanization technician training program in Iran was developed. The curriculum consisted of thirteen courses as follows: (1) applied mathematics; (2) applied electricity; (3) applied mechanics; (4) service shop; (5) small engines; (6) farm tractors; (7) gas engines; (8) diesel engines; (9) planting and tillage equipment; (10) harvesting machinery; (11) hydraulic systems; (12) power testing unit and (13) seminar (44).

Another somewhat related research project is a study of the development and administration of vocational and technical education in Iran conducted by Firouz Khoshzamir of the University of Wisconsin (22).

The main objective of the Khoshzamir study was to examine the administrative structure of vocational education in Iran. Further objectives were: 1) to identify the success or failure in using Iranian human resources in economics, and general education and to identify professional, skilled and semiskilled workers' needs in Iran; 2) to describe the quality and quantity of vocational education programs in Iran; 3) to

describe administrative patterns of vocational education programs in Iran, and 4) to compare the Iranian findings with Turkish studies.

The methodology Khoshzamir used was a historical-descriptive type of research using the techniques of historical criticism, and documenting both primary and secondary sources-- government reports, bulletins, journals and other primary resources available and related to vocational education and human resource development plans in Iran, Turkey and the Middle East.

Research from his study determined that an apparent lack of awareness exists in Iran and that many individuals were unaware of the need for a formal and systematic organizational and administrative structure for vocational education. He suggested that developing countries should improve educational programs that are functional in terms of maximizing the use of the limited sources of professional, skilled and semiskilled manpower available to them. Increased numbers of vocational-technical schools and training-retraining programs are needed to supply the ever-changing manpower demands in Iran. He found that Turkey, a neighboring country of Iran, which has a very similar pattern of historical development as far as education, social structure, cultural background, and economic development plans, treated manpower demands in the same fashion as Iran. The following recommendations were made by

Khoshzamid to improve the organization and administrative structure of the educational system in Iran, especially in the field of vocational and technical education.

(1) An organized structure for the administration of vocational and technical education on the secondary and postsecondary levels in Iran should be initiated.

(2) A Board of Vocational and Technical Education should be created for each of the 13 provinces in order to establish, foster, and maintain vocational education programs in each area.

(3) Advisory committees should be organized on local levels in order to bring together education, labor, management, industry, employment services, professional people and representatives from other groups who are interested in the welfare of the students, the needs of industry and national economic development.

(4) A limited decentralization should be implemented at the provincial level in the educational system for both general and vocational education in order to encourage directors of schools, teachers and local citizens to assume a greater role in initiating programs related to solving problems of vocational and academic education.

(5) Continuing vocational and technical education should be developed as an integral function of the whole education system.

(6) The budget for expansion and improvement of instructional facilities of the vocational and technical schools should be increased in order to expand and upgrade the quality of vocational education programs.

(7) Equal opportunities should be provided for girls in vocational and technical education; facilities for females should be equal to those provided for males.

(8) The curriculum content in vocational and technical education should be functional in the sense that it is responsive to the economic and social demands of the nation and individual.

(9) New and improved post-high school programs in vocational and technical education should be developed to train highly skilled workers in emerging semiprofessional occupations based on the current occupational requirements brought about by technological change.

(10) A program of counseling and guidance service should be developed in all schools including vocational and technical schools in order to assist all students in their educational and vocational choices.

(11) Vocational training of young school drop-outs should be initiated in order to equip them with skills that will enable them to join the work force.

(12) A close coordination between training institutions of vocational and technical education and business and industry should be established in order to gear the supply of trained personnel to employer demand (22, p. 239).

Two other studies have been conducted in Iran. The Plan and Budget Organization did research on vocational-technical education in Iran (29), using the survey method. The questionnaires were sent to 16,000 3rd year students of vocational-technical schools. Out of this number only about 12,000 completed the questionnaires, which were returned to the Population and Manpower Bureau. Of the 12,000 questionnaires, only 9,984 were used in the final report.

The purpose of the Budget Organization's study was to determine the occupational expectations of graduating students

of technical and vocational schools in industrial, agro-industrial and service sector institutions.

Of the 9,984 responses 8,785 (88%) indicated interest as their motive for having chosen a technical field; 9,058 (91%) expressed their satisfaction in having chosen a technical field; and 449 (4.5%) felt ready to enter the job market. Seven thousand four hundred eighty-eight (75%) of the students were interested in continuing at universities for advanced education, but only 1,317 (13.2%) of the students will be able to continue their education with an advanced educational program. At the present time, there are not enough facilities for advanced vocational-technical education in Iran for all the students who want to continue their education. The study also indicated that students are interested in earning the degree rather than getting an education. An important fact showed that 4,992 (50%) of 3rd grade students of vocational-technical schools were over 20 years of age, which indicates repeated years of schooling. Most students in vocational-technical schools were from low income families. Educational opportunities for women were still few (about one fifth) compared with opportunities available for men. Central cities, particularly Tehran, were the focus of most educational activities. Furthermore, the figures indicate that 5,790 (58%) of the student's fathers were either illiterate or unqualified literates. Thus, the analyses of

the Plan and Budget Organization data indicates that the future of vocational-technical education has many problems (29, p. 14).

Kazem Kazeroni studied the development of high level manpower in Iran in April of 1975. This report was published under the direction of the Population and Manpower Bureau Plan and Budget Organization. Kazeroni stated: in the period 1973-1978 there will be a shortage of 32,100 engineers and architects, construction, electric, chemical and mining engineers, 22,600 medical personnel, 1,300 high level medical groups and 21,400 other medical personnel. Finally, 57,000 educational personnel will be needed to meet the country's demands (21, p. 28).

The French Mission studied the system of vocational training in Iran from September to December 1975 (3). The main objectives of this study were:

1. to draw up a general description of the system of vocational training in Iran.
2. to present to the Iranian government observations and recommendations concerning the general idea of the vocational training action now in use.
3. to encourage French firms, responsible for the performance of workers or the supply of plants, to formally propose and install training facilities for Iranian operative and constructional staff.

4. to explore a certain number of fields in which French training firms, because of their experience and competence, could take a useful part in the Iranian effort to upgrade their training programs.

French Mission discovered that a lack of qualified instructors, classrooms and workshops and equipment to train workers exists and that sufficient investment in vocational-technical training in Iran is absent.

The following recommendations were stated by the French Mission:

- Vocational training must take place
- An industrial training board must be created
- A National Industrial Education Center must be established
- Alteration in the process of the Honarestans program must occur (3, p. 91).

There are many research articles and books on vocational-technical education in the United States. Also, some research has been done in special fields such as service occupations, tractor repair, radio and television repair, refrigerators, agricultural mechanics, and household appliance service technician training, all of which were very helpful to the researcher.

In developing questionnaires and procedures for this study two research studies dealing with the vocational-technical education in Iowa were reviewed. One was conducted by Langerman (24), the other by Howe (15).

Philip Duane Langerman (24) did research concerning a skilled needs survey with implications for vocational-technical education in central Iowa. The purpose of the Langerman study was to obtain, from employers, first hand data concerning the need for semiskilled, skilled and technician-level workers in the Area XI Community College District. Additional purposes were:

- (1) To provide a systematic and reliable method of projecting the need for various vocational and technical education programs to be offered by the Area XI Community College.
- (2) To compile statistics concerning employer's needs and make these statistics available to the Department of Public Instruction and the State Board of Public Instruction upon which they may base approval of course offerings of the Area XI Community College.
- (3) To provide a systematic method of determining the need for trained workers as projected by employers.
- (4) To secure sufficient information to be able to develop priorities in determining the need to offer specific full-time vocational and technical education programs.
- (5) To serve as a feasibility study to provide data and establish procedures for a proposed master plan for Iowa (24, pp. 7-8).

The researcher used the survey method for collecting data. A total of 1,137 (30.31%) of 3,751 employers responded to the mailed questionnaires. The data which were collected indicated that there was a great need for semiskilled, skilled and technician-level workers for 1967-1970 in different job descriptions. The projected need for trained workers in semi-skilled, skilled and technician-level jobs was 6,849 by

September 1968 and 16,383 by September 1970. The increased need for trained workers was substantial. Finally, the Langerman data concluded that more vocational and technical education programs were needed to train sufficient workers to meet the expanding demands of industry.

In another study, Howe (15) did a pilot study in twelve North Iowa counties. The primary purpose of this study was to determine the need for, and interest in, vocational-technical education. Additional objectives were: to explore the extent to which students would be willing to participate in area vocational programs; to obtain current opinions from former students concerning the adequacy of their high school program; to determine the preparatory vocational programs needed in secondary schools and the technical training needed by high school graduates; to gather data on drop-outs and determine their need and desire for training; to determine the post-high school educational needs of adults; and to classify respondent's present occupation and to study employment and migration patterns.

The ninth grade enrollment lists for the school years 1952-53, 1954-55 and 1956-57 were used to select the sample. Students who had completed their high school education and were out of school for one, three and five years were included in the sample. From a population of approximately 10,000, questionnaires were mailed to a sample of 2,440 former students

in 12 North Iowa counties who had attended 88 different schools. Questionnaires were returned by 1,836 persons for a response rate of 75%.

The responses indicated the percentages of students who were interested in different technical and vocational courses. Male adults indicated they would take technical courses, if offered as a two-year post-high school program. They also indicated a willingness to enroll in post-high school courses in technical, trade or vocational training for a period of one-half to two years at a center within 30-60 miles of their home. Fifty-seven percent of the students preferred that tuition be paid by the school district and other costs paid by the students, although 28.2% indicated that they would enroll in further training programs if all costs were paid by the student.

The guidance and counseling services, as they appeared to exist at the time of the survey, were judged very inadequate by the former students. Responses indicated that 40% felt that high schools provided an opportunity to make an adequate study of vocations, but 58% felt they were not given an opportunity. More than 72% of the male drop-outs replied they were not provided an opportunity to study vocations. Howe also determined the number of drop-outs, class size, sex, military service, employment, residence and migration of the former students (15, p. 148).

Jacobson conducted a survey of technical needs of industry in 1966. The major purpose of his study was to survey and identify technological manpower needs of industry and to relate these needs to curriculum development in higher education. A questionnaire using the survey method was employed for the investigation. Approximately 11,000 companies were selected for saturation mailings. Three kinds of information were requested: (1) general information about the company, (2) technological characteristics of the company, and (3) information about the technological needs of the company. Jacobson found two reasons for an inverse relationship between company size and number of technicians and/or engineers. The first was economic. The largest companies were more likely to have a continuous demand for engineering services and were more likely to be able to afford highly trained personnel than the smaller companies. Secondly, the larger companies were more likely to hire engineers to do technician's work for the purpose of obtaining the confidence of their customers. This suggests that larger companies tend to have a larger proportion of their engineers doing technician's work (20).

McDowell in the Adam's book (2) reviewed the trend toward state-level support in the area vocational school approach in Kentucky, and suggested seven advantages of the area-type specialized organization.

1) Quality programs in all types of occupational training can be made available to more citizens.

2) A broader range of occupational programs can be provided.

3) There is more flexibility in starting new programs and stopping old ones.

4) Training needs in remote parts of the state can be met.

5) A more industrial atmosphere can be provided in the area school.

6) Emergency training programs are easier to initiate.

7) Singleness of purpose can be provided in the area school (2, p. 41).

Haghaug (14) in his research in technical education for Michigan made the following suggestions:

(1) It is necessary to provide possible training for the drop-out and the housewife who are returning to the labor market and others who have had some training or have possessed skills.

(2) A state or city that has not developed vocational education institutions will be unable to carry out special training programs in an adequate fashion, because of a shortage of manpower establishing enough vocational technical schools.

(4) Emergency training programs are worth expanding.

(5) A training program should do four things for a youth before he or she leaves the program: 1) prepare him to work and attain satisfaction from work, 2) make sure that he is functionally literate and is thereby ready to receive training for a skill, 3) acquaint him with both national and local job markets, and show him how to look for a job, and 4) graduate

him into a job or training for a job.

(6) Business and industries should train semiskilled workers so that they meet their needs.

(7) Improvement of guidance service is necessary for both students and their parents.

(8) Vocational education needs to be recognized and treated as an integral part of total education (14, pp. 6-7).

The panel of consultants on vocational education (28) which was appointed on October 5, 1961, by John F. Kennedy, President of the United States, for reviewing and evaluating national vocational education recommended the following general guidelines for improving vocational technical education.

1. Offer training opportunities to the 21 million non-college graduates who will enter the labor market in the 1960's.

2. Provide training or retraining for the millions of workers whose skills and technical knowledge must be updated, as well as those whose jobs will disappear due to increasing efficiency, automation, or economic change.

3. Meet the critical need for highly skilled craftsmen and technicians through education during and after the high school years.

4. Expand vocational and technical training programs consistent with employment possibilities and national economic needs.

5. Make educational opportunities equally available to all, regardless of race, sex, scholastic aptitude, or place of residence.

The panel also recommended the continuing of the local-state-federal partnership which increases support of vocational and technical education for:

1. High school students preparing to enter the labor market or to become homemakers.

2. Youth with special needs who have academic, socio-economic, or other handicaps that prevent them from succeeding in the usual high school vocational education program.

3. Youth and adults who have completed or left high school and are full-time students preparing to enter the labor market.

4. Youth and adults unemployed or at work who need training or retraining to achieve employment stability.

5. Adequate services and facilities to assure quality in all vocational and technical education programs.

For services required to assure quality in all vocational and technical education programs, the panel recommended that:

1. Teacher and leadership training programs be improved and enlarged. Institutions of higher education, especially land-grant colleges and state universities, should provide for the professional growth of vocational and technical teachers.

2. Basic education material oriented to specific occupations be available for all programs. For this purpose, instructional materials laboratories should be established in appropriate institutions and financed and coordinated by the Division of Vocational and Technical Education, U.S. Office of Education.

3. Occupational information and guidance services be available for all students. State and national leadership for these programs should be supported and coordinated by the Division of Vocational and Technical Education, U.S. Office of Education.

4. Research and development in vocational and technical education be encouraged, supported, and coordinated at the national level. The results of this research and development should be made available on a nationwide basis (28, summary of report, pp. XVII-XVIII).

Summary

In summary, a strong need for research in vocational-technical training in Iran is evident as no research on vocational-technical education programs in Iran has been conducted in an American University. Although two somewhat related American studies and three studies have been done in Iran, little pertinent research has been conducted in this area. The results of the previously discussed studies indicate a

lack of investments, training programs, equipment, guidance service, manpower, and adequate planning for vocational-technical training in Iran. A relationship between the demand and supply of skilled workers and technicians is also lacking.

In each survey, a shortage of qualified skilled workers and technicians was indicated, no firms surveyed had a surplus of such personnel. From the various sources reviewed and investigated a strong need for occupational training programs was indicated as necessary to meet the needs of the country.

The panel of consultants (23) appointed by President Kennedy in 1961 recommended more investment, more training and retraining opportunities, expansion of vocational-technical programs and more educational opportunities for all, regardless of race or sex. The panel also felt that more teacher training and research in V.T.E. should be done in the United States.

These facts show that developing countries, such as Iran which face changing technology in agriculture, industry and instructional media, need more qualified skilled and semi-skilled workers and technicians. In order to achieve a balanced work force, more research, planning and investment in vocational-technical programs must be conducted as indicated by the research of the more developed countries.

CHAPTER III. METHODS AND PROCEDURES (DESIGN)

In order to achieve the objectives of this study, this chapter describes the methods and procedures that were used for gathering and treating the necessary data.

The population that was chosen includes five different groups from Tehran. Group I is 12th grade students from three different curriculum areas; Group II, 12th grade students from vocational-technical schools; Group III, workers from ten factories; Group IV, hiring personnel; and Group V, administrators of vocational-technical education in Tehran, capital of Iran.

Group I, Surveyed by Questionnaire

This group includes all 12th grade boys and girls from three different academic areas (mathematics, natural science and literature) from seventeen districts in Tehran. The total of 12th grade boys and girls in mathematics, natural science and literature was 33,248. They were enrolled in 786 classes in the seventeen districts in Tehran in 1975.

The researcher selected a sample of 38 classes which included 2,062 students from the total 786 classes. These 38 classes included: eleven boys' natural science classes and ten girls' natural science classes; nine boys' mathematics classes and four girls' mathematics classes; two boys' literature classes and two girls' literature classes.

The 2,062 students were chosen randomly from seventeen districts in the north, south, west and east sections of Tehran. The main objective was to determine interest and attitude of 12th grade students toward vocational-technical programs.

Group II, Surveyed by Questionnaire

This group includes 12th grade vocational-technical education students. The researcher randomly chose all 12th grade students from seven schools among 40 vocational-technical schools in Tehran. The total of 12th grade students enrolled in vocational-technical education in the new and old cycle in 1975 was about 21,615. The researcher randomly chose seven schools which included 1,140 students from the total 40 schools.

The main objective of surveying this group was to indicate the students' opinions regarding job preparation of vocational-technical education in Tehran.

Group III, Surveyed by Questionnaire and Interview

A total of 443 workers comprise this group of unskilled, semiskilled, skilled workers and technicians. They were randomly chosen from ten factories (two automobile, two tractor, two refrigerator, two radio and TV and two telephone factories). The number of workers in each group was dependent

on the size of the factory and the number of workers available at that time. The researcher gave the questionnaire to the workers and explained the questions to them. In addition, he interviewed them.

The main objective of choosing this group was to determine the interest and attitude of the workers toward training and retraining in vocational-technical education.

Group IV, Surveyed by Questionnaire

People chosen for this group were hiring personnel from ten factories: two automobile, two tractor, two radio and TV, two refrigerator and finally two telephone factories. The largest two of each factory type were chosen. The researcher wanted to choose only factories in Tehran but because there were only two tractor factories in Iran, one in Tabris and one in Arac were also used. Also, there were only two telephone factories, one in Tehran and one in Shiraz. Both of these factories were chosen even though one was not in Tehran. The reason for choosing factories in Tehran was the large population and the number of factories.

The main objective in choosing hiring personnel was to determine their estimate of the need for qualified semiskilled, skilled and technician-level workers in the future and to determine their present situation.

Group V, Using Personal Interview

This group is made up of 30 administrators of vocational-technical schools in Tehran. They are administrators of the Ministry of Education, Ministry of Science and Higher Education, Ministry of Labor and Social Affairs, Industrial Training Board, Planning and Budget Organization and other sources listed on the Appendix I (page 204) that are involved with training in vocational-technical programs. The main objectives of choosing this group were to determine:

- (1) The problems and issues of vocational-technical education;
- (2) Future plans to improve vocational-technical education in Iran;
- (3) Suggestions regarding needs and assessments of vocational-technical education in Iran; and
- (4) The responsible agencies for training manpower (unskilled, semiskilled, skilled workers, and technicians) in Iran.

Coding

The language used for the study is SPSS (Statistical Package for the Social Science). It is an integrated system of computer programs designed for analysis of social science data.

The questionnaires were coded for punching on I.B.M. cards with the following important points specified through the coding:

- 1) type of questionnaire
- 2) type of factory worker
- 3) type of factory (factory one or factory two)
- 4) type of field (mathematics, natural science and literature)
- 5) name of vocational technical schools
- 6) coding and classification of open-end questions
- 7) number of responses to the questions
- 8) number of nonresponses or not applicable to the questions.

The researcher used chi-square to test if there was any significant relation between categories.

The following symbols are used to indicate level of significance:

1. *** = $p \leq .001$
2. ** = $p \leq .01$
3. * = $.01 < p \leq .05$
4. $p > .05$ not significant
5. if the number of cells in each table is less than five it will be shown as follows:
 χ^2 test was made, but the table contained small cells (i.e., number (n) less than 5).

CHAPTER FOUR. FINDINGS

The objectives of this study were to obtain specified information concerning vocational-technical education in Tehran (Iran). In order to satisfy the specific objective of the study, the data are reported in five sections: Section One includes information concerning 12th grade high school boys and girls in mathematics, natural science and literature in Tehran; Section Two presents information about 12th grade vocational technical students; Section Three concerns information about employees of ten factories; Section Four focuses on information supplied by personnel officers in those ten factories; and Section Five details information expressing the ideas of administrators concerning vocational-technical education.

Section One: Findings Related to the Attitudes of
12th Grade High School Students Towards
Vocational-Technical Education

This section is concerned with the attitudes of 12th grade boys and girls in mathematics, natural science, and literature. Two thousand sixty-two students were selected from a total of 33,248 students. Because the researcher visited the high schools and had personal contact with the students, all 2,062 questionnaires were returned. The main objective of collecting data was to determine the attitudes of students from three different fields of study towards the vocational-technical

program. The findings of this section are reported in a sequence similar to the order in which the questions were asked. The discussion begins with more general questions and proceeds to more specific questions. Questions were asked concerning part-time jobs, previous information about V.T.E., sources of that information, satisfaction with school, opinion of the high school, job interest, and future plans after graduation; more general questions such as type of job, age, education, and family income were also asked.

Data in Table 4 indicate 1118 (57.6%) were male and 874 (42.4%) female. Male students consist of 542 (68.3%) in mathematics, 556 (52.3%) in natural science and 90 (44.1%) in literature. Females consist of 252 (31.7%) in mathematics, 508 (47.7%) in natural science, and 114 (55.9%) in literature.

Table 4. Sex distribution of 12th grade high school students in sample by field of study

Field	Male		Female		Total	
	N ^a	%	N	%	N	%
Mathematics	542	68.3	252	31.7	794	38.5
Natural science	556	52.3	508	47.7	1064	51.6
Literature	90	44.1	114	55.9	204	9.9
Total	1188	57.6	874	42.4	2062	100.0

$\chi^2_2 = 64.59^{***}$

^aN = number.

*** = $p < .001$.

The distribution of the respondents' ages according to fields indicated that 1,916 (92.9%) of the students in the three fields were between the ages of 16-20 (Table 5).

Table 5. Distribution of high school students by age and field of study

Age	<u>Mathematics</u>		<u>Natural science</u>		<u>Literature</u>		<u>Total</u>	
	N							
Under 16 years	28	3.5	33	3.1	2	1.0	63	3.1
16-20 years	724	91.2	999	93.9	193	94.6	1916	92.9
21-24 years	31	3.9	32	3.0	9	4.4	72	3.5
25 and up	11	1.4	--	--	--	--	11	0.5
Total	794	38.5	1064	51.6	204	9.9	2062	100.0

$\chi^2_6 = 23.04^{***}$ χ^2 test was made but table contained small cells (i.e., N less than 5)

*** = $p < .001$.

What was your grade point average in the 11th grade?

The students' responses indicated that 713 (34.6%) had an "A" grade point average in the 11th grade; 708 (34.4%) had a B grade point average; 369 (17.9%) had a C grade point average; and 45 (2.2%) had a D grade point average. Two hundred twenty-three (10.8%) students did not remember their grade point average, and 4 did not respond to the question (Table 6).

Table 6. Distribution of high school students by field and grade point average

Field	Grade point average for 11th grade										Total	
	A		B		C		D		I don't know			
	N	%	N	%	N	%	N	%	N	%	N	%
Mathematics	340	42.8	302	38.0	79	9.9	14	1.8	59	7.4	794	38.6
Natural science	347	32.7	347	32.7	219	20.6	22	2.1	126	11.9	1061	51.6
Literature	26	12.8	59	29.1	71	35.0	9	4.4	38	18.7	203	9.9
Total	713	34.6	708	34.4	369	17.9	45	2.2	223	10.8	2058	100.0

$$\chi^2_8 = 142.07***$$

*** = $p < .001$.

Do you have a part-time job?

Only 149 (7.2%) from the total had a part-time job. Of the remaining students, 1912 (92.8%) did not have part-time work and one did not answer the question. The percent of students having a part-time job appeared to be similar in each curriculum (Table 7).

Table 7. Distribution of high school students by field of study and employment status

Field	<u>Part-time job</u>				<u>Total</u>	
	<u>Yes</u>		<u>No.</u>			
	N	%	N	%	N	%
Mathematics	66	8.3	728	91.7	794	38.5
Natural science	68	6.4	995	93.6	1063	51.6
Literature	15	7.4	189	92.6	204	9.9
Total	149	7.2	1912	92.8	2061	100.0

$$x_2^2 = 2.49 \text{ not significant}$$

If you have a job, how many hours do you work?

Data indicated that of the 149 students who had part-time jobs, only 135, as Table 8 shows, reported the amount of hours worked per week. Also, only 142 specified their job classifications as indicated in Table 9.

Table 8. Number of hours student's worked per week

Hours per week	Frequency	Percentage
1-10	44	32.6
11-20	40	29.6
21-30	15	11.1
31 and more	36	26.7
Total	135	100.0

Table 9. Number and classification of part-time jobs held by students

Job classification	Frequency	Percentage
1. Professional, technical, administrators, factory workers, operator, teacher, nurse, etc.	88	62.1
2. Agricultural workers	10	7.0
3. Service workers	33	23.2
4. Others	11	7.7
Total	142	100.0

The responses showed that most of the students, 88 (62.1%), work in group 1, professional, technical, administrative jobs. Service work ranked second with 33 (23.2%).

How much information do you have about vocational-technical education in Iran?

The responses indicated that 53 (2.6%) students felt they had much information about V.T.E.; 895 (43.4%) indicated they had a little information, and 1114 (54.0%) said they had no information about V.T.E. in Iran.

When the responses were combined, the data indicated that only 53 (2.6%) of the students in the traditional high school programs felt that they had sufficient information about V.T.E. opportunities in Iran (Table 10).

Table 10. Amount of information students possess about vocational-technical education by field of study

Field	<u>Much information</u>		<u>A little information</u>		<u>Almost no information</u>		<u>Total</u>	
	N	%	N	%	N	%	N	%
Mathematics	27	3.4	340	42.8	427	53.8	794	38.5
Natural science	23	2.2	468	44.0	573	53.9	1064	51.6
Literature	3	1.5	87	42.6	114	55.9	204	9.9
Total	53	2.6	895	43.4	1114	54.0	2062	100.0

$$\chi^2_4 = 4.09 \quad \text{not significant}$$

If you have information about vocational-technical education,
how did you get it?

Responses (Table 11) showed 15 (1.6%) students received information from their counselors; 106 (11.2%) received information from their teachers; and 378 (39.8%) received information by reading. Two hundred fifty students (26.3%) received information from their parents; 138 (14.5%) received information from their friends; and 63 (6.6%) received information about vocational-technical education from other sources.

Table 11. Sources of information concerning vocational-technical education

Sources	Frequency	Percentage
Counselor	15	1.6
Teacher	106	11.2
Reading	378	39.8
Parents	250	26.3
Friends	138	14.5
Other	63	6.6
Total	950	100.0

At the present time how do you feel about your high school education?

Of the students who responded, 212 (10.3%) were completely satisfied; 695 (33.9%) were partially satisfied; 604 (29.4%) were neither satisfied nor dissatisfied; 332 (16.2%) were dissatisfied; 209 (10.2%) were very dissatisfied; and 10 (0.5%) of the students did not respond to the question (Table 12).

Also further statistical treatment of data in Table 13 showed that analysis of variance on satisfaction of 12th grade high school students by field of study was significant ($F_{2,2046} = 5.295, p < 0.01$). But by sex status it was not significant ($F_{1,2046} = 0.294, p > 0.01$).

In your opinion, do high schools in Iran prepare students for their future job?

Students' responses indicated that 196 (9.6%) felt that their high school adequately prepared them for a job, but a large number, 1496 (73.6%), believed that the high schools in Iran did not prepare students for future jobs. Three hundred forty-one (16.8%) answered I do not know, and 29 of the students did not respond to the question (Table 14).

What kind of job would you like to have most?

Responses concerning the kind of job desired indicated that 660 (44.7%) wanted professional jobs like those of a medical doctor, a university professor, or a position in a scientific

Table 12. Degree of student satisfaction with high school education by field of study

Field	Completely satisfied		Partially satisfied		Neither satisfied nor dissatisfied		Dissatisfied		Very dissatisfied		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Mathematics	87	11.0	268	33.9	218	27.6	132	16.7	85	10.8	790	38.5
Natural science	111	10.5	367	34.7	325	30.7	163	15.4	93	8.8	1059	51.6
Literature	14	6.9	60	29.6	61	30.0	37	18.2	31	15.3	203	9.9
Total	212	10.3	695	33.9	604	29.4	332	16.2	209	10.2	2052	100.0

Table 13. Analysis of variance of high school students satisfaction by field and sex^a

Source of variation	Sum of squares	D.F.	Mean square	F	Significance of F
Main effect:	13.820	3	4.607	3.584	0.013
Field	13.613	2	6.807	5.295	0.005
Sex	0.379	1	0.379	0.294	0.999
2-way interaction	0.349	2	0.175	0.136	0.999
Field x sex	0.349	2	0.175	0.136	0.999
Explained	14.170	5	2.834	2.204	0.051
Residual	2630.242	2046	1.286		
Total	2644.412	2051	1.289		

^aScale: 1 refers to very satisfied
5 refers to very dissatisfied.

Table 14. Student responses concerning the adequacy of high school preparation by field of study

Field	Yes		No		I don't know		Total	
	N	%	N	%	N	%	N	%
Mathematics	49	6.2	630	79.6	112	14.2	791	38.9
Natural science	119	11.3	741	70.2	196	18.6	1056	51.9
Literature	28	15.1	125	67.2	33	17.7	186	9.1
Total	196	9.6	1496	73.6	341	16.8	2033	100.0

field; 577 (39.1%) wanted technical jobs; 150 (10.2%) wanted nontechnical jobs; 15 (1.1%) wanted business jobs; 12 (0.8%) wanted official affairs jobs; 20 (1.4%) women were interested in being a housewife; 41 (2.8%) did not know; and 586 (28.4%) did not respond to the question. Answers showed that mathematics majors were interested in technical jobs or in university professorial positions, while students in the natural sciences were more interested in professional jobs in medicine or teaching. Students in literature were more interested in being lawyers or professors of literature. See Table 15.

Table 15. Student job preference by field of study

Field	Professional		Technical		Nontechnical	
	N	%	N	%	N	%
Mathematics	100	15.7	467	73.2	41	6.4
Natural science	493	66.6	104	14.1	91	12.3
Literature	67	68.4	6	6.1	18	18.4
Total	660	44.7	577	39.1	150	10.2

$$\chi^2_{12} = 582.41^{***}$$

χ^2 test was made but table contain small cells (i.e., n less than 5)

*** = p < .001.

	Business		Official affairs		Housewife		I don't know		Total	
	N	%	N	%	N	%	N	%	N	%
6	0.9	2	0.3	3	0.5	19	3.0	636	43.2	
9	1.2	7	0.9	16	2.2	20	2.7	740	50.1	
1	1.0	3	3.1	1	1.0	2	2.0	98	6.6	
15	1.1	12	0.8	20	1.4	41	2.8	1476	100.0	

What do you plan to do after graduation from the 12th grade?

Student responses indicated that 1396 (68.4%) were interested in going to the university for higher education; 116 (5.7%) were interested in a two-year vocational-technical education; 343 (16.8%) were interested in going to other countries for higher education in their field; 104 (5.1%) were interested in going in to the job market; 32 (4.0%) reported they didn't know; and 21 students did not answer the question (Table 16).

In addition, data in Table 16 show students in mathematics more than students in the natural sciences and students in the natural sciences more than students in literature had plans for their future. Another fact that the data showed was that students in literature were more interested in a two-year V.T.E. programs than the other two groups. Probably, students in the literature curriculum did not have as much advanced educational or job opportunity as the students in the other two groups. Also, goals and objectives for mathematics and natural science students are much clearer than those for the literature students. Also, students in the mathematics and natural science majors are more interested in going to other countries for advanced education.

Table 16. Future plans of students after graduation by field of study

Field	Go to 4-year college or university		Go to 2-year V.T.E.		Go to other countries for advanced education		To work		I do not know yet		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Mathematics	562	71.1	35	4.4	151	19.1	17	2.2	25	3.2	790	38.7
Natural science	706	67.2	63	6.0	163	15.5	74	7.0	45	4.3	1051	51.5
Literature	128	64.0	18	9.0	29	14.5	13	6.5	12	6.0	200	9.8
Total	1396	68.4	116	5.7	343	16.8	104	5.1	32	4.0	2041	100.0

$\chi^2 = 37.66^{***}$

*** = p < .001.

If you could not enter a university, would you prefer to enroll in one of the two-year junior technical colleges to be prepared for your future job?

Of the students' responses, 1507 (73.1%) reported yes and 554 (26.9%) reported no, and one did not respond to the question. Also, as Table 17 shows, natural science students were more interested than literature students and mathematics students in continuing their education through a vocational-technical program.

Table 17. Interest in enrollment in a 2-year vocational-technical school expressed by students unable to attend a university program

Field	Yes		No		Total	
	N	%	N	%	N	%
Mathematics	540	68.0	254	32.0	794	38.5
Natural science	813	76.4	251	23.6	1064	51.6
Literature	154	75.9	49	24.1	203	9.8
Total	1507	73.1	554	26.9	2061	100.0

$$\chi^2_2 = 17.18^{***}$$

*** = $p < .001$.

If your answer is yes; specify in what area?

Of the students' responses, 183 (12.1%) were interested in becoming electrical technicians, 41 (2.7%) in becoming electronic technicians, 12 (0.8%) in becoming industrial technicians, 36 (2.4%) in becoming mechanical technicians, 149 (9.9%) in becoming instrumentation technicians, 49 (3.2%) in becoming metallurgical technicians and 228 (15.1%) in becoming aviation technicians. Ten (0.7%) were interested in air conditioning, heating and refrigeration. Seventy-seven (5.1%) were interested in becoming chemical technicians, 34 (2.3%) in becoming civil technicians, 2 (0.1%) in becoming diesel engineer technicians, 80 (5.3%) in becoming professional technicians and 106 (7.0%) in becoming managers, proprietors and officials. Thirty-three (2.2%) were interested in the service. The largest number, 311 (20.6%), were interested in becoming computer technicians, while 129 (8.5%) were interested in becoming radio and TV technicians. Thirty-one (2.1%) were interested in agricultural technicians and 551 did not apply to this question (Table 18).

Would you enroll in one of the vocational-technical courses if it were offered?

Data reported (Table 19) showed 1600 (78.0%) were interested in vocational-technical courses; 451 (22.0%) were not interested in vocational-technical courses and 11 did not respond to the question. Also, comparison percentages of the

Table 18. Responses of high school students by field of study concerning interest area

Field	Electrical technician		Electronics technician		Industrial technician		Mechanical technician		Instrumentation technician		Metallurgical technician	
	N	%	N	%	N	%	N	%	N	%	N	%
Mathematics	94	17.4	9	1.7	6	1.1	11	2.0	91	16.8	19	3.5
Natural science	75	9.2	22	2.7	6	0.7	18	2.2	45	5.5	25	3.1
Literature	14	9.0	10	6.4	-	-	7	4.5	13	8.3	5	3.2
Total	183	12.1	41	2.7	12	0.8	36	2.4	149	9.9	49	3.2

Table 18 (Continued)

Field	Aviation technician		Air conditioning, heating and refrigeration technician		Chemical technician		Civil technician		Diesel technician		Professional (vocational-technical teacher, engineer, medical technician and art worker)	
	N	%	N	%	N	%	N	%	N	%	N	%
Mathematics	84	15.5	2	0.4	11	2.0	20	3.7	-	-	8	1.5
Natural science	119	14.6	5	0.6	60	7.4	13	1.6	1	1.1	66	8.1
Literature	25	16.0	3	1.9	6	3.8	1	0.6	1	0.6	6	3.8
Total	228	15.1	10	0.7	77	5.1	34	2.3	2	0.1	80	5.3

Table 18 (Continued)

Field	Manager, proprietor and official		Service (public service)		Computer technician		Radio and TV technician		Agriculture technician		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Mathematics	20	3.7	2	0.4	129	23.8	30	5.5	5	0.9	541	35.8
Natural science	67	8.2	22	2.7	166	20.4	78	9.6	26	3.2	814	53.9
Literature	19	12.2	9	5.8	16	10.3	21	13.5	-	-	156	10.3
Total	106	7.0	33	2.2	311	20.6	129	8.5	31	2.1	1511	100.0

$\chi^2_{32} = 208.71$ test was made, but table contained small cells (i.e., n less than 5)

*** = p < .001.

Table 19. Course interest enrollment in vocational-technical education by field of study

Field	Yes		No		Total	
	N	%	N	%	N	%
Mathematics	621	78.4	171	21.6	792	38.6
Natural science	817	76.8	247	23.2	1064	51.9
Literature	162	83.1	33	16.9	195	9.5
Total	1600	78.0	451	22.0	2051	100.0

$\chi^2_2 = 3.92$ not significant

reports of the three groups showed that literature students (83.1%) were more interested than mathematic students (78.4%) and mathematic students were more interested than natural science students (76.8%) in vocational-technical courses.

Also of those students who were interested in taking vocational-technical courses, 527 (32.7%) preferred having vocational-technical courses in the evening; 992 (61.5%) wanted training on a part-time basis; 95 (5.9%) preferred a full-time training program and 448 (21.7%) did not answer this question.

Does your father work?

Students responses showed that 1813 (88.1%) students' fathers worked and 98 (4.8%) of the students' fathers did not

work; 146 (7.1%) of the students' fathers were no longer living (Table 20).

Table 20. Responses of high school students by field of study concerning whether their father is working

Field	Yes		No		Dead		Total	
	N	%	N	%	N	%	N	%
Mathematics	686	86.4	48	6.0	60	7.6	794	38.5
Literature	964	90.7	38	3.6	61	5.7	1063	51.7
Natural science	163	81.5	12	6.0	25	12.5	200	9.7
Total	1813	88.1	98	4.8	146	7.1	2057	100.0

$$\chi^2_4 = 19.81***$$

*** = $p < .001$.

If your answer is yes, what kind of job does he have?

Of the students responding, 568 (31.7%) said that their fathers had professional, technical, scientific and administrative jobs; 111 (6.2%) reported that their fathers had factory, laboratory and operator jobs. One hundred (5.6%) indicated that their fathers had agricultural jobs; 847 (47.3%) said that their fathers had service, clerical and sales jobs, while 165 (9.2%) stated that their fathers had other jobs. Two hundred seventy-one (13.1%) did not answer the question (Table 21).

Table 21. Classification of father's occupation by students field of study

Field	Professional technical scientist, administrator and manager		Factory worker laboratory and operator		Agricultural job		Service worker, clerical and sales job		Other		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Mathematics	237	34.8	32	4.7	44	6.5	314	45.0	55	8.1	682	38.1
Natural science	290	30.6	66	7.0	46	4.8	466	49.1	81	8.5	949	53.0
Literature	41	25.6	13	8.1	10	6.3	67	41.9	29	18.1	160	8.9
Total	568	31.7	111	6.2	100	5.6	847	47.3	165	9.2	1791	100.0

$\chi^2 = 27.67***$

*** = p < .001.

What is your father's age?

The distribution of the responses by age and fields as indicated in Table 22 showed that 16 (0.8%) were less than 36 years old; 93 (4.9%) were between 36-40 years old; 471 (24.7%) were between 41-45 years old, and 523 (27.4%) were between 46-50. Eight hundred seven (42.3%) students reported the age of their fathers as over 50 years. One hundred forty-six did not have a father and six students did not respond.

What is the level of your father's education?

To this question, 267 (14.1%) students indicated that their fathers had no education; 223 (11.7%) had an educational level between grades 1-3; 505 (26.6%) had received an education between grades 4-6; 216 (11.4%) were educated between 7-9 grade levels; 286 (15.1%) had a 10-12 grade education and 114 (6.0%) had two years of college education. One hundred seventy-two (9.1%) had a B.S. degree; 53 (2.8%) had a Master's degree, and 62 (3.3%) had a Ph.D. degree. One hundred forty-six of the students did not have a father and 18 students did not respond to the question (Table 23).

What is your father's income per month?

Of the students responding, 86 (4.7%) reported their father's income as \$100 and less; 413 (22.6%) as between \$101-300; 358 (19.6%) as between \$301-600; 246 (13.5%) as between \$601-900; and 275 (15.1%) as over \$900. Four hundred forty-eight (24.5%) did not know their father's income and 236 (11.4%) did not respond to the question (Table 24).

Table 22. Responses of high school students by field of study concerning the age of their father

Field	Less than 36		36-40		41-45		46-50		Over 50		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Mathematics	3	0.4	24	3.3	183	24.9	190	25.9	335	45.6	735	38.5
Natural science	12	1.2	56	5.6	248	24.8	292	29.2	393	39.3	1001	52.4
Literature	1	0.6	13	7.5	40	23.0	41	23.5	79	45.4	174	9.1
Total	16	0.8	93	4.9	471	24.7	523	27.4	807	42.3	1910	100.0

$\chi^2_8 = 18.10^*$ χ^2 test was made but table contained small cells (i.e., n less than 5)

* = p < .05.

Table 23. Responses of high school students by field of study concerning their father's educational level

Field	No education		1-3 grades		4-6 grades		7-9 grades	
	N	%	N	%	N	%	N	%
Mathematics	66	9.1	64	8.8	171	23.6	82	11.3
Natural science	157	15.7	131	13.1	288	28.8	106	10.6
Literature	44	25.3	28	16.1	46	26.4	28	16.1
Total	267	14.1	223	11.7	205	26.6	216	11.4

$\chi^2_{16} = 106.30^{***}$ χ^2 test was made, but table contained small cells (i.e., n less than 5)

*** = $p < .001$.

10-12 grades		2 years of college		B.S. degree		M.S. degree		Ph.D. degree		Total	
N	%	N	%	N	%	N	%	N	%	N	%
137	18.9	50	6.9	95	13.1	31	4.3	29	4.0	725	38.2
138	13.8	54	5.4	72	7.2	22	2.2	31	3.1	999	52.6
11	6.3	10	5.7	5	2.9	-	-	2	1.1	174	9.2
286	15.1	114	6.0	172	9.1	53	2.8	62	3.3	1898	100.0

Table 24. Responses of high school students by field of study concerning the monthly income of their fathers

Field	\$100 or less		\$101-300		\$301-600		\$601-900		Over \$900		I do not know		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Mathematics	33	4.8	116	16.8	137	19.9	114	16.5	129	18.7	160	23.2	689	37.7
Natural science	37	3.8	255	26.3	194	20.0	119	12.3	137	14.1	228	23.5	970	53.1
Literature	16	9.6	42	25.1	27	16.2	13	7.8	9	5.4	60	35.9	167	9.1
Total	86	4.7	413	22.6	358	19.6	246	13.5	275	15.1	448	24.5	1826	100.0

$$\chi^2_{10} = 64.31***$$

*** = p < .001.

Does your mother work?

Responses indicated that 232 (11.3%) of the students' mothers worked and that 1751 (85.1%) did not. Seventy-four (3.6%) students reported that their mothers were no longer living, and 5 (0.2%) did not respond to the question (Table 25).

Table 25. Responses of high school students by field of study concerning whether their mothers worked or not

Field	Yes		No		Dead		Total	
	N	%	N	%	N	%	N	%
Mathematics	108	13.6	656	82.6	30	3.8	794	38.5
Natural science	110	10.3	918	86.4	35	3.3	1063	51.7
Literature	14	7.0	177	88.5	9	4.5	200	9.7
Total	232	11.3	1751	85.1	74	3.6	2057	100.0

$$\chi^2_4 = 9.70^*$$

$$^* = p < .05.$$

If yes, what kind of job does your mother have?

Of the students responding, 126 (54.8%) had mothers who had professional, technical, scientific and administrative jobs; 16 (7.0%) had factory, laboratory and operator jobs; 1 (0.4%) had an agriculture job; and 60 (26.1%) had service, clerical and sales jobs. Twenty-seven (11.7%) students had mothers who had other jobs, and two did not respond (Table 26).

Table 26. Classification of mother's job by student's field of study

Field	Professional technical, scientist, administrator and manager		Factory worker, laboratory and operator		Agricultural job		Service job, clerical and sales job		Other		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Mathematics	61	57.5	7	6.6	1	0.9	22	20.8	15	14.2	106	46.1
Natural science	62	56.4	6	5.5	-	-	32	29.1	10	9.1	110	47.8
Literature	3	21.4	3	21.4	-	-	6	42.9	2	14.3	14	6.1
Total	126	54.8	16	7.0	1	0.4	60	26.1	27	11.7	230	100.0

Mother's age

Two hundred fifty-nine (13.1%) of the students had mothers who were less than 36 years old; 663 (33.6%) were 36-40 years old; 560 (28.4%) were 41-45 years old, 364 (18.4%) were 46-50 years old, 127 (6.4%) were over 50 years old. Eighty-nine (4.3%) did not respond to the question (Table 27).

What is the level of your mother's education?

Five hundred eighty-six (29.9%) students reported that their mothers had no education; 255 (13.0%) had an educational level of 1-3 grades; 484 (24.7%) had an educational level of 4-6 grades; 239 (12.2%) had received an education between 7-9 grades; and 271 (13.8%) had an educational level of the 10-12 grade. Seventy-seven (3.9%) had 2 years of college; 36 (1.8%) had a B.S.; 7 (0.4%) had a Master's degree, and 7 (0.4%) had Ph.D. degrees. One hundred (4.8%) did not respond to the question (Table 28).

What is your mother's income per month?

Sixteen (7.1%) students reported that their mothers' monthly income was \$100 or less; 67 (29.9%) had incomes between \$100-300 per month; 89 (39.7%) had incomes between \$301-600 per month; 22 (9.8%) had incomes between \$601-900 per month; and 7 (3.1%) had incomes over \$900. Twenty-three (10.3%) did not know their mother's income and 8 did not respond to the question (Table 29).

Table 27. Responses of high school students concerning the age of their mothers

Field	Less than 36		36-40		41-45		46-50		Over 50		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Mathematics	98	13.0	253	33.5	213	28.2	133	17.6	59	7.8	756	38.3
Natural science	139	13.5	350	34.1	298	29.0	184	17.9	56	5.5	1027	52.1
Literature	22	11.6	60	31.6	49	25.8	47	24.7	12	6.3	190	9.6
Total	259	13.1	663	33.6	560	28.4	364	18.4	127	6.4	1973	100.0

$\chi^2_8 = 9.68$ not significant

Table 28. Responses of high school students by field of study concerning the level of education of their mothers

Field	No education		1-3 grades		4-6 grades		7-9 grades	
	N	%	N	%	N	%	N	%
Mathematics	165	21.9	78	10.4	186	24.7	118	15.7
Natural science	322	31.5	150	14.7	258	25.2	109	10.7
Literature	99	52.7	27	14.4	40	21.3	12	6.4
Total	586	29.9	255	13.0	484	24.7	239	12.2

$\chi^2_{16} = 124.88^{***}$ χ^2 test was made but table contained small cells (i.e., n less than 5)

*** = $p < .001$.

10-12 grades		2 years of college		B.S. degree		M.S. degree		Ph.D. degree		Total	
N	%	N	%	N	%	N	%	N	%	N	%
146	19.4	38	5.1	18	2.4	3	0.4	-	-	752	38.3
117	11.4	38	3.7	18	1.8	3	0.3	7	0.7	1022	52.1
8	4.3	1	0.5	-	-	1	0.5	-	-	188	9.6
271	13.8	77	3.9	36	1.8	7	0.4	7	0.4	1962	100.0

Table 29. Responses of high school students concerning the monthly income of mothers

Field	\$100 or less		\$101-300		\$301-600		\$601-900		Over \$900		I do not know		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Mathematics	8	7.8	36	35.3	39	38.2	6	5.9	1	1.0	12	11.8	102	45.5
Natural science	7	6.5	25	23.4	48	44.9	15	14.0	6	5.6	6	5.6	107	47.8
Literature	1	6.7	6	40.0	2	13.3	1	6.7	-	-	5	33.3	15	6.7
Total	16	7.1	67	29.9	89	39.7	22	9.8	7	3.1	23	10.3	224	100.0

$\chi^2_{10} = 24.57^{***}$ χ^2 test was made but table contained small cells (i.e., n less than 5)

*** = p < .001.

Do you live with your parents?

Of the students, 1924 (93.7%) were living with their parents, and 129 (6.3%) responding were not. Nine (.04%) did not respond to the question (Table 30).

Table 30. Responses of high school students concerning whether they live with their parents

Field	Yes		No		Total	
	N	%	N	%	N	%
Mathematics	733	92.4	60	7.6	796	38.6
Natural science	1017	95.9	43	4.1	1060	51.6
Literature	174	87.0	26	13.0	200	9.7
Total	1924	93.7	129	6.3	2053	100.0

$$\chi^2_2 = 26.46^{***}$$

*** = $p < .001$.

Section Two: Findings Related to the Opinions of the
12th Grade Students of Vocational-Technical
Schools or Honarestan-i-Sanati¹ in Iran

This section describes the responses of 1140 vocational-technical students from seven government and nongovernment schools selected randomly from 40 schools. There were 21,615 vocational students enrolled in the 40 schools in Tehran. The researcher chose 1,140 students. The researcher received a 100 percent return because of his personal contact with the students. The questionnaire was composed of 14 questions. The findings of this section are reported in a sequence similar to the order in which the questions appeared. The names of the schools, and a copy of the questionnaire used for this study are in the appendix (page 166). The purpose of this questionnaire was to gather information concerning opinions of 12th grade students as to how well the vocational-technical schools were preparing them for their future jobs. The following questions were asked:

Are you male or female?

Responses indicated 1082 (94.9%) were male and only 58 (5.1%) were female (Figure 5).

¹Honarestan-i-Sanati: The name of vocational-technical high school in Iran.

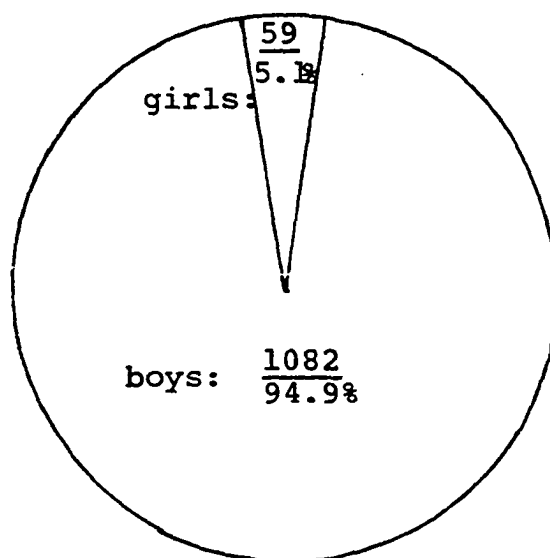


Figure 5. Sex distribution of respondents

How old are you?

Responses showed that 280 (24.6%) were under 18 years-old; 791 (69.3%) between 18-22 years of age and only 69 (6.1%) were 22 years or older (Table 31).

Table 31. Age distribution of vocational-technical students

Age	Student frequency	Percentage
Under 18	280	24.6
18-22	791	69.3
22-up	69	6.1
Total	1140	100.0

Do you have a part-time job?

Responses concerning part-time jobs indicated that 461 (40.4%) had part-time jobs and 679 (59.6) did not.

If yes, how many hours do you work per week?

Of the students (461) who indicated that they had a part-time job, 48 (10.4%) reported that they worked between 1-10 hours per week; 65 (14.2%) between 11-20 hours per week; 85 (18.4%) 21-30 hours per week and 263 (57.0%) worked more than 30 hours per week (Table 32).

Table 32. Distribution of number of hours worked per week by V.T. students

Hours	Frequency	Percentage
1-10	48	10.4
11-20	65	14.2
21-30	85	18.4
31 and more	263	57.0
Total	461	100.0

What is your job?

The 461 students who reported having part-time jobs indicated that their jobs were as follows: 278 (60.3%) reported having technical jobs; 120 (26.0%) reported having nontechnical jobs; 29 (6.3%) had administrative jobs and 34

(7.4%) reported having business jobs.

What is your field of study?

As shown in Table 33, 340 (29.7%) of the students were enrolled in auto mechanics; 108 (9.5%) in construction engineering, 412 (36.1%) in electricity, 126 (11.1%) in electronics, 52 (4.6%) in machine tool mechanics, 28 (2.5%) in wood industry, 22 (1.9%) in air conditioning and heating, 24 (2.1%) in automotive and diesel, and 28 (2.5%) in mechanics and building drafting.

Table 33. Distribution of vocational-technical students by field of study

Field	Frequency	Percentage
Auto mechanic	340	29.7
Construction engineering	108	9.5
Electricity	412	36.1
Electronic	126	11.1
Machine tool mechanic	52	4.6
Wood industry	28	2.5
Air conditioning and heating system	22	1.9
Automotive and diesel	24	2.1
Mechanics and building drafting	28	2.5
Total	1140	100.0

At the present time how do you feel about your vocational school?

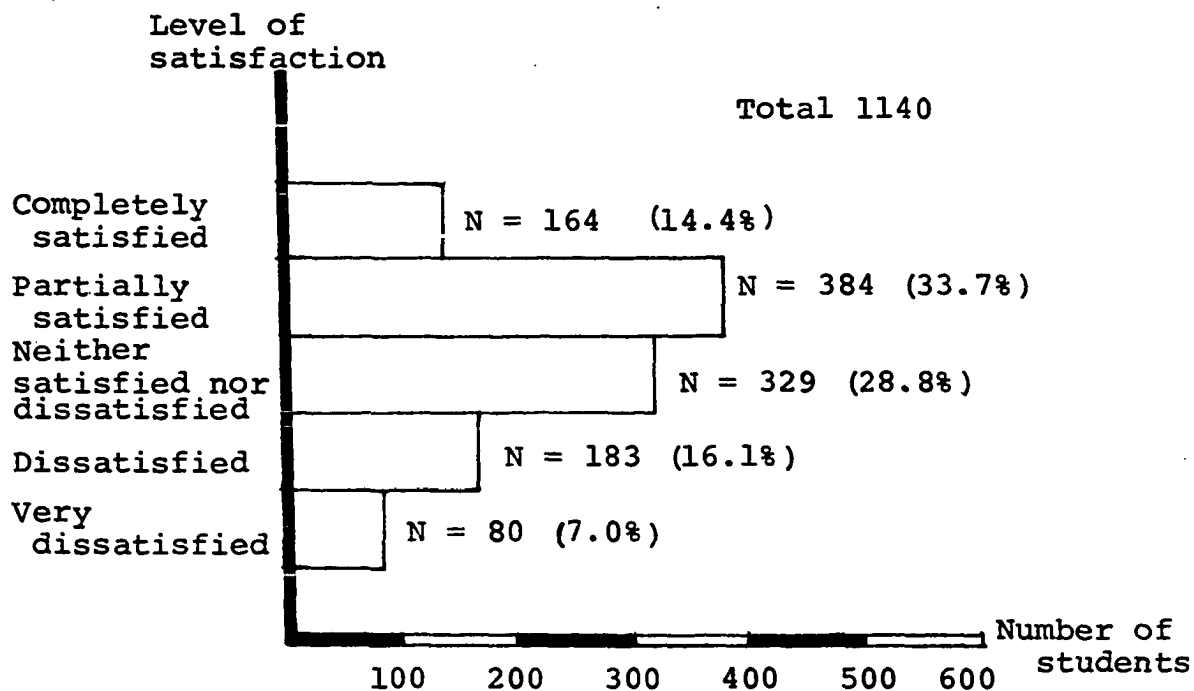


Figure 6. Graph of student's satisfaction of their vocational-technical school

Answers showed that 164 (14.4%) of the students were completely satisfied; 384 (33.7%) were partly satisfied; 329 (28.8%) were neither satisfied nor dissatisfied; 183 (16.1%) were dissatisfied and 80 (7.0%) were very dissatisfied.

Responses showed older students were more satisfied than younger students with their vocational-technical schools (Table 34).

Table 34. Degree of students satisfaction with vocational-technical high school by age

Age	Completely satisfied		Partially satisfied		Neither satisfied nor dissatisfied		dissatisfied		Very dissatisfied		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Under 18	36	12.9	95	33.9	87	31.1	45	16.1	17	6.1	280	24.6
18-22	105	13.3	269	34.0	229	29.0	130	16.4	58	7.3	791	69.4
22 and up	23	33.3	20	29.0	13	18.8	8	11.6	5	7.2	69	6.1
Total	164	14.4	384	33.7	329	28.9	183	16.1	80	7.0	1140	100.0

$$\chi^2_8 = 23.11***$$

*** = p < .001.

In your opinion, do vocational-technical schools in Iran prepare students for their future jobs?

To the above question, 257 (22.5%) answered yes, 731 (64.2% (64.2%) no and 152 (13.3%) responded I don't know.

If no, please indicate which of the following problems you consider to be the most important in the vocational-technical schools in Iran

The responses indicated that about one-third, 294 (25.8%), felt that problems one, two and three were the most important; 248 (21.8%) of the students reported that all of the problems listed were important; 69 (6.1%) believed that a lack of equipment was the most important while 34 (3.0%) felt the lack of experienced instructors was a problem. Forty-three (3.8%) felt a lack of quality books was an important problem; 17 (1.5%) indicated that a lack of suitable school buildings was important; 26 (2.3%) rated the lack of correct administration as most important, while 25 (2.2%) considered the long distance from vocational-technical school to home a problem of vocational-technical schools in Iran (Table 35).

What kind of job would you like to have after your graduation?

From the responses 1128 students (98.9%) indicated that they would like to work in the area of preparation; 8 (0.7%) would like to work in other areas and 4 (0.4%) were interested in a job in business.

Table 35. Problems encountered by students enrolled in vocational-technical schools in Iran

No.	V.T.E. problems	Frequency	Percentage
1.	Lack of equipment	69	6.1
2.	Lack of experienced instructors	34	3.0
3.	Lack of quality books	43	3.8
4.	Lack of suitable buildings	17	1.5
5.	Lack of correct administration	26	2.3
6.	Long distance from home	25	2.2
7.	Answer one, two and three	294	25.6
8.	All of the above	248	21.8
9.	No response	384	33.7
Total		1140	100.0

What do you plan to do after graduation from 12th grade vocational-technical school?

The student responses (1140) indicated that 119 (10.4%) wanted to go to junior or community college for two years of technical education; 88 (7.7%) were interested in the job market in their field; 25 (2.2%) were going to work out of their field; 499 (43.8%) wanted to go to the university for advanced education; 345 (30.3%) were going to go to other countries for advanced vocational-technical education, and 64 (5.6%) responded that they had not decided (Figure 7).

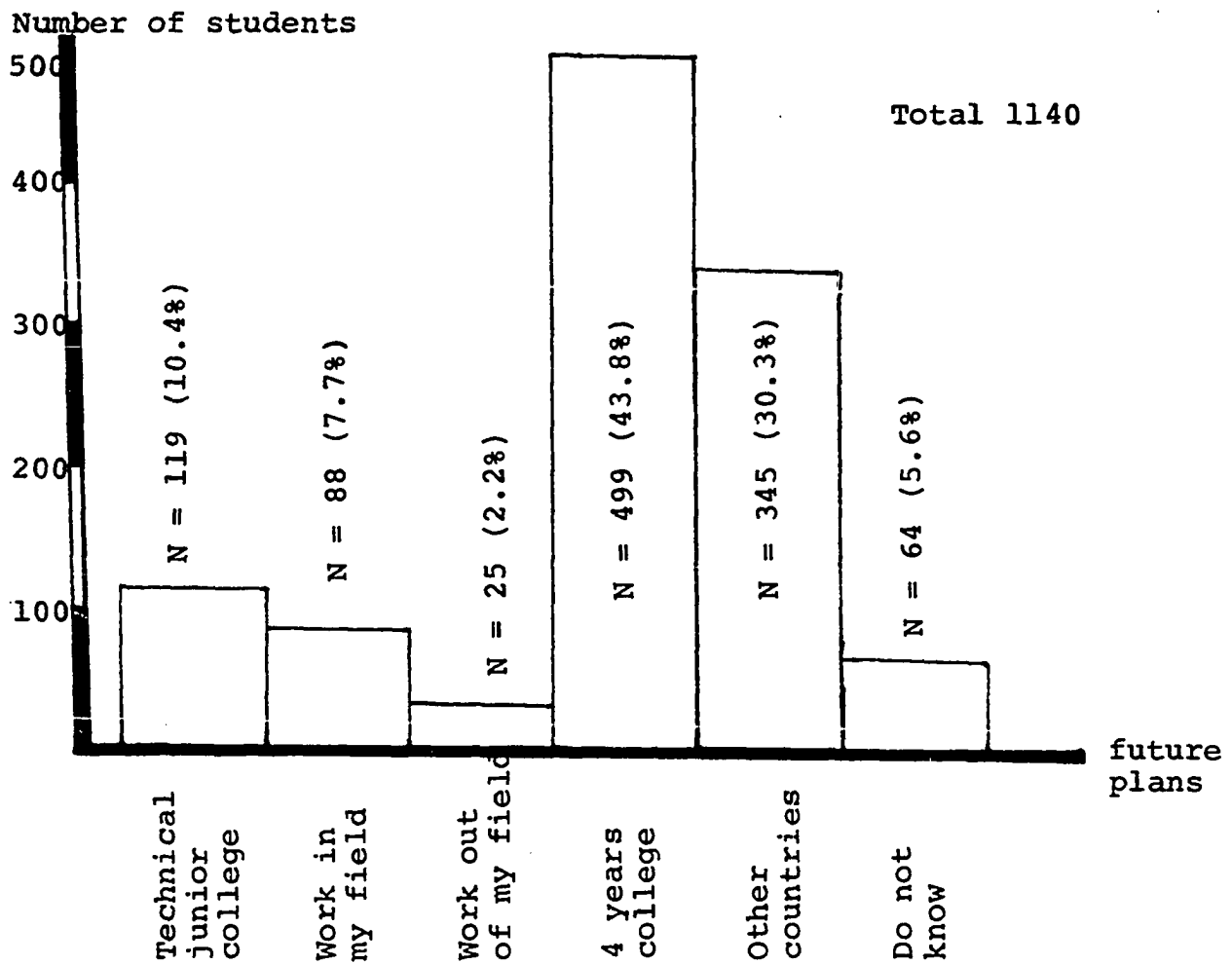


Figure 7. Histogram of future planning of vocational-technical students

In your opinion, are students able to get jobs after graduation from vocational-technical schools in Iran?

The responses indicated that 318 (27.9%) of the total 1140 answered yes, 632 (55.4%) answered no and 190 (16.7%) reported they did not know.

If no, why?

The responses reported in Table 36 indicated that the two most important reasons why students felt they could not get jobs were lack of experience and no job opportunities.

Table 36. Distribution of reason given by student for not getting a job after graduation from vocational-technical school

Reasons	Frequency	Percentage
1 Lack of experience	239	37.7
2 Lack of demand for them	86	13.6
3 Answer one and two	270	42.9
4 Another problem	37	5.8
Total	632	100.0

Did you receive guidance and counseling from your teachers or school administrators to assist you for your future career job?

Of the students responding, 319 (28.0%) received some guidance toward their future career; a large number, 821 (72.0%) responded that they did not receive any guidance in selecting their future career.

Data showed students not getting counseling answered no more frequently to getting jobs (Table 37).

Table 37. Students responses concerning whether or not with counseling service can get job

Get job	Counseling					
	Yes		No		Total	
	N	%	N	%	N	%
Yes	128	40.3	190	59.7	318	27.9
No	132	20.9	500	79.1	632	55.4
Do not know	59	31.1	131	68.9	190	16.7
Total	319	28.0	821	72.0	1140	100.0

$\chi^2_2 = 40.43^{***}$

*** = $p < .001$.

Table 38 shows that the employed vocational-technical students' mean was 2.565 whereas the mean of unemployed student was 2.7511 and the difference was significant at 0.006 level. This indicates that the employed students were more satisfied with their vocational-technical schools.

Table 39 shows that analysis of variance on hours of part-time job vocational-technical students for school was a highly significant result ($F_{6,451} = 8.50, p < 0.01$).

Further, differences among schools concerning hours work and satisfaction was at 5% level.

Table 38. Summary of t-test on high school satisfaction by employment status^a

	N	Mean	Standard deviation	T value	2-tail probability
Group 1 - employed student	460	2.5652	1.113	<u>-2.76</u>	<u>0.006</u>
Group 2 - unemployed student:	679	2.7511	1.116		

^aScale: 1-5 refers to very satisfied
5 refers to very dissatisfied.

Table 39. Analysis of variance of vocational school students by hours worked^a

	D.F.	Sum of squares	Mean squares	F ratio	F probability
Between groups of (Vocational-technical schools)	6	50.2891	<u>8.38</u>	<u>8.50</u>	<u>0.001</u>
Within group	451	444.4414	0.98		
Total	457	494.7305			

^aScale: 1 = 1-10 hours
 2 = 11-20 hours
 3 = 21-30 hours
 4 = more than 30 hours.

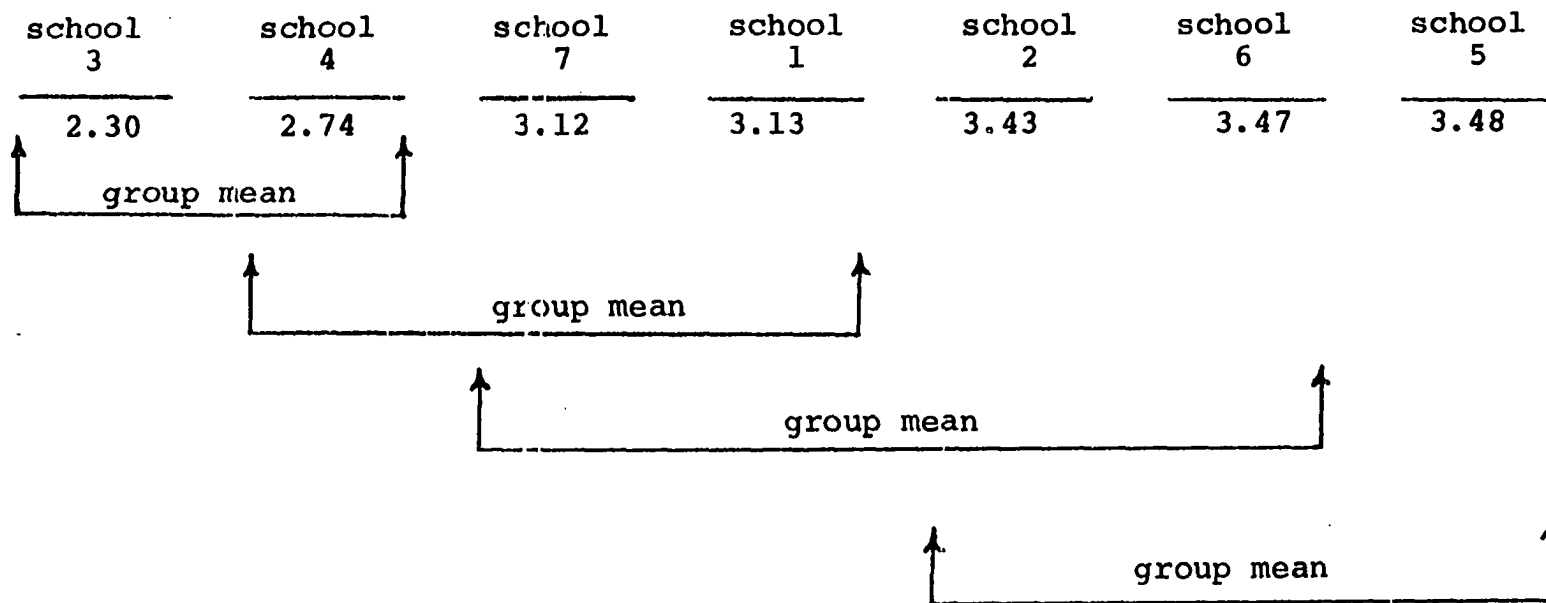


Figure 8. Duncan multiple range test of vocational-technical schools by hours of part-time work and satisfaction

Table 40. Analysis of variance of vocational-technical school student satisfaction with schools

Source	D.F.	Sum of squares	Mean squares	F ratio	F probability
Between groups	6	32.8713	<u>5.4785</u>	<u>4.629</u>	<u>0.001</u>
Within groups	453	535.1726	<u>1.1836</u>		
Total	459	569.0439			

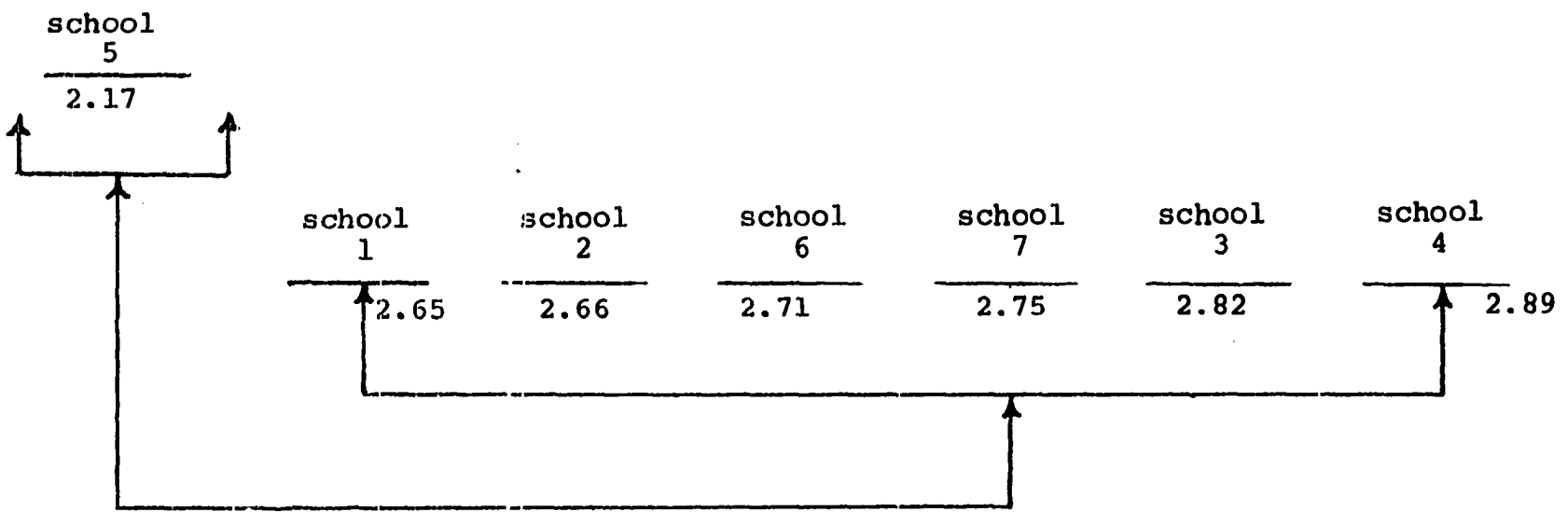


Figure 9. Duncan multiple range test of school means and student satisfaction with vocational-technical schools

Duncan multiple range statistical test was used to determine which groups (schools) differed. The results of the procedure showed:

school 3 is different from school 7, 1, 6, 5

school 4 is different from school 2, 6, 5

school 1 is different from school 5

school 7 is different from school 5.

See Figure 8.

Table 40 shows that analysis of variance and satisfaction of their vocational-technical school was highly significant ($F_{6.453} = 4.63, p < 0.01$). Further procedure showed that students' satisfaction of vocational-technical school five is different from other schools, see Figure 9.

Section Three: Related to the Workers 10 Factories

This section presents the responses of selected workers employed in ten factories. The Iranian factories chosen for this study included: two automotive, two tractor, two TV and radio, and two refrigerator factories as well as two telephone companies.

The researcher, after getting formal permission, personally contacted the workers and secured responses from 443 workers. The questionnaire was designed to gather the following information:

What is your age?

Responses showed 71 (16.0%) of the workers were 20 years of age or younger; 201 (45.4%) were 21-29 years old; 132 (29.8%) were 30-39 years old; 35 (7.9%) were 40-49 years old and only 4 (0.9%) of the workers were 50-59 years old (Table 41).

Table 41. Age distribution of factory workers

Range of age	Frequency	Percentage
20 or younger	71	16.0
21-29 years	201	45.4
30-39 years	132	29.8
40-49 years	35	7.9
50-59 years	4	0.9
Total	443	100.0

What is your sex?

Answers regarding the sex showed 350 (79.2%) were male and 92 (20.8%) of the workers were female and one did not respond. Data showed most of the workers in the car and tractor companies were male and most of the females were in the telephone and TV and radio companies (Table 42). Also 291 (65.7%) of the workers were married and 34.3% were single. The responses also indicated that 30 (6.8%) of the workers report their spouses were working.

Table 42. Sex distribution

Type of company	Male		Female		Total	
	N	%	N	%	N	%
Cars	105	100.0	-	-	105	23.8
Tractors	67	100.0	-	-	67	15.2
TV and radios	45	77.6	13	22.4	58	13.1
Refrigerators	80	94.1	5	5.9	85	19.2
Telephones	53	41.7	74	58.3	127	28.7
Total	350	79.2	92	20.8	442	100.0

What level of education have you completed?

Information concerning the level of education of workers showed that 25 (5.7%) did not have any formal education; 223 (50.3%) had a 6th grade education or less; 106 (23.9%) had a 9th grade education or less; 79 (17.8%) had a 12th grade education or less and 10 (2.3%) had a college education (Figure 10).

What type of occupation do you have?

The information in Table 43 showed that 87 (19.6%) worked in different sections of refrigerators; 95 (21.4%) worked in cars; 59 (13.3%) worked in radio and TV; 122 (27.5%) worked in telephone; 62 (14.0%) worked in tractor, 10 (2.3%) worked in technical supervisor; 2 (0.5%) worked in machines drafting; 2 (0.5%) in welding and 4 (0.9%) worked in nontechnical jobs.

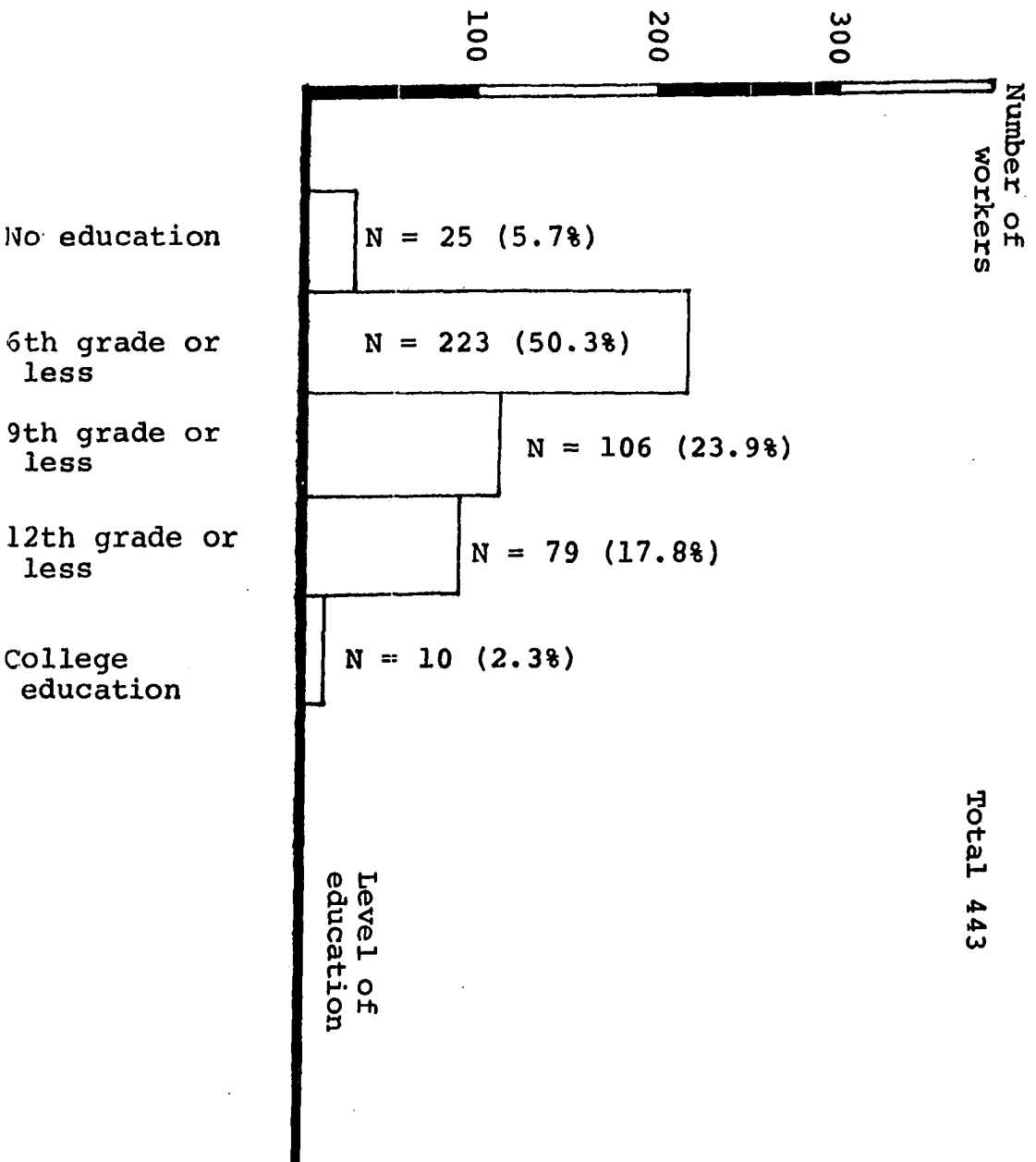


Figure 10. Distribution of level of education of workers

Table 43. Distribution of workers by type of work

Type of work	Frequency	Percentage
Working on refrigerators	87	19.6
Working on cars	95	21.4
Working on radio and TV	59	13.3
Working on telephones	122	27.5
Working on tractors	62	14.0
Technical supervisor	10	2.3
Machines drafting	2	0.5
Welding	2	0.5
Nontechnical	4	0.9
Total	443	100.0

When did you last attend school?

The reports showed a great number, 234 (52.8%) of the total workers, had not been in school in the last five years. However, 87 (19.6%) were in school within the last year, 45 (10.2%) during the last 1-2 years; 69 (15.6%) were in the last 3-5 years and 8 (1.8%) did not respond (Table 44). Also 435 (98.2%) of the workers stated that they were interested in engaging in additional courses of vocational-technical programs.

Only 8 (1.8%) were not interested in taking additional vocational-technical programs.

Table 44. Responses concerning length of time since attending school

Length of time	Frequency	Percentage
Within the last year	87	19.6
1-2 years	45	10.2
3-5 years	69	15.6
More than 5 years	234	52.8
Did not respond	8	1.8
Total	443	100.0

They were asked if they were interested in taking additional courses in the vocational-technical programs, and if so, what courses were they interested in.

As the responses showed (Table 45), a great number, 232 (52.4%) of the total, were interested in taking courses in technical areas: 19 (4.3%) in auto mechanic; 45 (10.2%) in radio and TV; 6 (1.4%) in computer; 81 (18.3%) in electricity; 11 (2.5%) in industrial administration; 4 (0.9%) in refrigerator and heating; 36 (8.0%) in telephone and 4 (0.9%) in mechanical engineering. Five (1.1%) did not respond to the question.

Table 46 shows the numbers and percentages of workers, and why they were interested in taking courses in technical fields. About half of the total workers were interested in

Table 45. Distribution of workers interest in studying vocational-technical courses

Type of course	Frequency	Percentage
Auto mechanic	19	4.3
Radio and TV	45	10.2
Technical in general	232	52.4
Computer	6	1.4
Electricity	81	18.3
Industrial administration	11	2.5
Refrigerator and heating	4	0.9
Telephone	36	8.0
Mechanical engineering in tractor	4	0.9
No response	5	1.1
Total	443	100.0

further education because they were interested in gaining more knowledge.

Also Tables 47, 48, 49, and 50 indicate preferred methods of learning, reasons for that educational method, location of learning facilities and reasons for location chosen.

The reports showed about one-half of the workers liked to study and learn during working time. Ninety-six (21.7%) were interested in studying during the evening (Table 47). Their reasons as shown in Table 48 were:

Table 46. Reasons expressed by workers for taking further education

Reasons	Frequency	Percentage
To work toward a degree	25	5.6
To be better informed; gain new knowledge	204	46.1
Preparing for a new job or career	51	11.5
Job requirement	23	5.2
To perform present job better or to obtain a promotion	72	16.3
Simply to learn about my present job	8	1.8
To study current economic problems	55	12.4
Not apply or did not respond	5	1.1
Total	443	100.0

84 (19.0%) thought they were familiar with this way and more than half, 285 (64.3%), felt that they could learn best from this method. Seventy (15.8%) reported that they enjoyed this way of learning. Also 234 (52.8%) reported that the best learning method had a center beside the factory where they worked (Table 49). Their reasons were: 116 (26.2%) for convenience, 60 (13.5%) because of financial cost, 102 (23.0%) due to time involved in getting to the location, and 57 (12.9%) because the programs they wanted were offered (Table 50).

Table 47. Worker preferences for method of acquiring additional education

Way of learning	Frequency	Percentage
Study and learn during working time	203	45.8
Traditional classes <u>during the day</u>	32	7.2
Traditional classes <u>during the evening</u>	96	21.7
Sessions held on weekends	26	5.8
Courses using multi-media (television, tape recorder, printed materials, etc.) either at your home or at a learning center with periodic meeting with an instructor	65	14.7
Independent study	2	0.5
Correspondence study at home	15	3.4
Other	1	0.2
Did not respond	3	0.7
Total	443	100.0

Table 48. Worker reasons for method of learning

Reasons	Frequency	Percentage
I am familiar with this way	84	19.0
I feel I learn best this way	285	64.3
I enjoy this way of learning	70	15.8
Other	1	0.2
Did not respond	3	0.7
Total	443	100.0

Table 49. Worker choice of location for learning

Location	Frequency	Percentage
At home	22	5.1
At your place of work	234	52.8
A library, extension office, or other community agency	7	1.6
High school	29	6.5
An adult learning center	60	13.5
A community or junior college campus	83	18.7
Other	5	1.1
Did not respond	3	0.7
Total	443	100.0

Table 50. Workers reasons for choosing location

Reasons	Frequency	Percentage
Convenience	116	26.2
Financial cost	60	13.5
Time involved in getting to location	102	23.0
Programs that I want are offered	57	12.9
Better learning	102	23.0
Other	3	0.7
Did not respond	3	0.7
Total	443	100.0

Have you been in the military service?

To this question, 178 (40.2%) answered yes; 265 (59.8%) answered no. Of the 178 who had been in military service only 64 received military training related to vocation. The type of training that they received was as follows:

43 (67.2%) were trained in military equipment; 20 (31.2%) in technical courses, and one (1.6%) in a nontechnical field.

Regarding the question: Is this training helpful in your job?

46 (71.9%) answered that the training received in military service was helpful in their job, but 18 (28.1%) reported that it was not helpful.

Have you attended any training courses since regular school?

132 (29.8%) responded yes and 311 (70.2%) answered no. Of the 132 who had training, 128 (97.0%) were trained in technical schools and 4 (3.0%) were trained in nontechnical areas. Concerning the question: Are you working at a skilled job now?

425 (95.9%) responded yes, 15 (3.4%) said no and 3 (0.7%) did not answer.

As responses showed, a large number, 325 (73.2%), did assembly work in different sections of the car, tractor, TV and radio, refrigerator and telephone industry (Table 51).

All 15 workers who did not work in skilled areas were interested in skilled jobs if they had the opportunity.

Table 51. Employment area of skilled workers

Area	Frequency	Percentage
Assembly, car, tractor, TV, telephone and refrigerator	325	73.2
Electric and electronic	17	3.8
Welding	15	3.4
Body work and mechanic	41	9.3
Plastics and drill operator	10	2.3
Air condition and cooling and freezing equipment	2	0.5
Production	8	1.8
Industrial administration	8	1.8
Drafting	2	0.5
Not apply	15	3.4
Total	443	100.0

In response to the question: Would you be interested in additional training if free?, 433 (97.7%) responded that they were interested in free training; 8 (1.8%) workers said no and two (0.5%) did not answer.

What length of training period would best fit your needs?

As the report showed, 11 (2.5%) workers believed that one month would be the best period of training. Seventy-two

(16.3%) believed 3 months training; 130 (29.3%) 6 months training; 132 (29.8%) one year of training; and 92 (20.8%) believed more than a one-year period was needed for training (Table 52).

Table 52. Worker choice of length of training period to meet needs

Training period	Frequency	Percentage
One month	11	2.5
Three months	72	16.3
Six months	130	29.3
One year	132	29.8
More than one year	92	20.8
Did not answer	6	1.3
Total	443	100.0

Did your employer's organization provide training for you?

Table 53 shows 130 (29.6%) answered yes, 309 (70.4%) answered no and 4 did not answer. Of the 130 total workers who had received training, 126 (94.7%) were trained by their organization in their area job and 4 (5.3%) in areas outside of their job.

Table 53. Responses of workers concerning job training by employer's organization

Type of company	Yes		No		Total	
	N	%	N	%	N	%
Car	57	55.9	45	44.1	102	23.2
Tractor	20	29.9	47	70.1	67	15.3
TV and radio	4	6.9	54	93.1	58	13.2
Refrigerator	25	29.4	60	70.6	85	19.4
Telephone	24	18.9	103	81.1	127	28.9
Total	130	29.6	309	70.4	439	100.0

Regarding the questions: Have you had training by any other organization? If yes, what area, by whom and when? The responses were as follows: 54 (12.2%) answered yes, 385 (86.9%) no and 4 (0.9%) did not answer. Fifty-three (96.4%) of the total 54 had been trained in their present job while only one (3.6%) had been trained outside of his present job. Twenty-nine (52.7%) had been trained by other factories, 8 (16.4%) by the ministry of labor and social affairs, 2 (3.6%) by the army, one (1.8%) by the National Iranian Oil Company, 4 (7.3%) by business, 9 (16.4%) by vocational-technical schools and one (1.8%) by a private organization. Of the 54 total, 23 (41.8%) had been trained before 1970 and 31 (58.2%) after 1970.

Responses to: How many jobs have you held since you left school? Responses showed that 197 (44.5%) held one job; 149 (33.6%) held two jobs; 54 (12.2%) held three jobs; 17 (3.8%) held four jobs and 26 (5.9%) reported they held more than four jobs.

The responses to the question: What kind of job do you expect to have in the future? Responses: 117 (26.4%) answered that they wanted to work at their present job; 53 (12.0%) were interested in electric or electronics; 106 (23.9%) were interested in auto and tractor mechanic; 51 (11.5%) were interested in radio and TV; 3 (0.7%) were interested in computer; 12 (2.7%) were interested in nontechnical; 29 (6.5%) were interested in mechanical engineering; 26 (5.9%) were interested in industrial administration and 46 (10.4%) were interested in working at a telephone job.

Are you satisfied with your job?

Workers' responses: 204 (46.2%) answered yes and 238 (53.8%) answered no and one did not respond to the question (Table 54).

If you are not satisfied with your job indicate why?

As Table 55 shows, 160 (67.8%) of the total 236 answered that they were not satisfied with their job because of low salary. Seven (3.0%) answered that they did not have adequate knowledge in their present job; 16 (6.8%) answered that they

Table 54. Workers' responses concerning whether or not they were satisfied with their job

Type of company	Yes		No		Total	
	N	%	N	%	N	%
Car	74	69.8	32	30.2	106	24.0
Tractor	28	41.8	39	58.2	67	15.2
TV and radio	23	39.7	35	60.3	58	13.1
Refrigerator	22	25.9	63	74.1	85	19.2
Telephone	57	45.2	69	54.8	126	28.5
Total	204	46.2	238	53.8	442	100.0

$$\chi^2_4 = 39.46***$$

*** = $p < .001$.

did not have adequate experience in their present job, while 34 (14.4%) stated that they would like another job. Ten (4.2%) mentioned that they did not like the job's location and place of their job, and 9 (3.8%) indicated that their present job did not provide a challenge. Finally, two did not respond.

Table 55. Reasons given by workers for dissatisfaction of their job

Reasons for dissatisfaction	Number	Percentage
I don't have adequate knowledge in my present job	7	3.0
I do not have adequate experience in my present job	16	6.8
Receive low salary	160	67.8
I would like another job	34	14.4
I do not like the place of my job	10	4.2
Present job does not provide a challenge	9	3.8
Total	236	100.0

Section Four: Described Gathering and Information Supplied by Personnel Officers of 10 Factories

Questionnaires were sent to the ten factories and responses were received from all of them. The information contained in the completed questionnaires was compiled by the ten personnel officers of the factories.

Data received from the personnel officers of the ten factories were not coded or computer processed due to the small size of the sample.

An examination of Table 56 indicates the number of technicians and skilled workers employed in 1975 and 1976 and the additional workers needed in 1977 and 1978. The researcher had direct contact with each respondent in the sample and received 100 percent of the questionnaires back from the total sample.

Data concerning the number of technicians and skilled workers employed in 1975 and 1976 are shown in Table 56. The figures in this table show there is a strong need for additional qualified technicians and skilled workers by 1977 and 1978. In fact, as shown in Table 57, the ten factories need 383 technicians and skilled workers to fill present vacancies. These vacancies include: Iran Nacional, 30 technicians, 150 skilled workers; General Motors, 30 technicians, 150 skilled workers; Iran John Deere, 2 technicians, 5 skilled workers; Toshiba Company, 5 technicians; and Telephone Sazy Iran, 1 technician, 10 skilled workers. This table also shows the number of technicians and skilled workers who have received training through various sources.

The personnel officers were asked how many workers they would encourage to attend technical training programs if they were provided. The responses are presented in Table 58 and indicate three of the personnel officers hoped they could encourage most of the workers to receive more training.

Table 56. Number of technicians and skilled workers employed in 1975 and 1976 and number of additional technicians and skilled workers needed in 1977 and 1978

No.	Type of factory	Name of factory
1.	Car co.	Iran Nacional
2.	Car co.	General Motors
3.	Tractor co.	Iran Tractor Mfg. Co.
4.	Tractor co.	Iran John Deere Co.
5.	TV and radio co.	Toshiba Co.
6.	TV and radio co.	Azmayesh Co.
7.	Refrigeration co.	Azmayesh Co.
8.	Refrigeration co.	Arj
9.	Telephone co.	LTMC ^b
10.	Telephone co.	Telephone Sazy Iran ^c
Total		

^aNo response.

^bTelecommunication manufacturing company (Private joint stock), Shirz.

^cPersian name of telephone company.

Number of technicians employed		Number of skilled workers employed		Additional number of technicians needed		Additional number of skilled workers needed	
1975	1976	1975	1976	1977	1978	1977	1978
300	330	2000	2300	100	130	100	130
NR ^a	NR	NR	NR	70	80	100	130
91	111	543	603	50	70	200	500
5	12	10	16	20	25	40	30
110	140	200	280	50	50	20	40
22	18	50	40	30	30	120	130
22	18	50	40	30	30	120	130
45	45	1660	1660	14	12	166	166
60	60	1034	1148	70	80	300	400
3	4	29	32	2	2	10	10
658	738	5576	6119	436	509	1176	1666

Table 57. Number of technicians and skilled workers needed to fill present vacancies and number of technicians and skilled workers who have received training classified by type of training

No.	Type of factory	Name of factory	Current vacancies	
			Technicians	Skilled workers
1.	Car co.	Iran Nacional	30	150
2.	Car co.	General Motors	30	150
3.	Tractor co.	Iran Tractor Mfg. Co.	--	--
4.	Tractor co.	Iran John Deere Co.	2	5
5.	TV and radio co.	Toshiba Co.	5	--
6.	TV and radio co.	Azmayesh Co.	--	--
7.	Refrigeration co.	Azmayesh Co.	--	--
8.	Refrigeration co.	Arj	--	--
9.	Telephone co.	LTMC	--	--
10.	Telephone co.	Telephone Sazy Iran	1	10
Total			68	315

Table 58. Number of technicians and skilled workers that personnel officers expect to encourage to attend technical programs

No.	Type of factory	Name of factory	Technicians	Skilled workers
1.	Car co.	Iran Nacional	150	1000
2.	Car co.	General Motors	NR	NR
3.	Tractor co.	Iran Tractor Mfg. Co.	Most	Most
4.	Tractor co.	Iran John Deere Co.	5	8
5.	TV and radio co.	Toshiba Co.	60	300
6.	TV and radio co.	Azmayesh Co.	50	120
7.	Refrigeration co.	Azmayesh Co.	50	120
8.	Refrigeration co.	Arj	Most	Most
9.	Telephone co.	LTMC	30	250
10.	Telephone co.	Telephone Sazy Iran	Most	Most

Three possible sources for providing training programs to workers were listed on the questionnaire. Table 59 shows five of the ten personnel officers indicated they believed all three sources should be responsible: 1) factories, 2) government vocational-technical schools, and 3) other organizations such as the Ministry of Labor and Social Affairs. Two personnel officers believed factories and government vocational-technical schools should provide the training; two responded only that the factories should be responsible, and one believed that the Ministry of Labor and Social Affairs should provide the training for workers.

Information was obtained regarding the level of education the technicians had received. Nine of the ten personnel officers responded that the level of education of most of the technicians was twelfth grade with a small number having had two years of college. One personnel officer had technicians with wide ranges of formal schooling extending from less than high school to more than two years of college.

With regard to skilled workers, seven of the ten personnel officers reported employing workers who had received no education and some who had completed the tenth to twelfth grade. Three hiring personnel officers responded that most of their skilled workers had received an education between the fourth and ninth grade level. The ten personnel officers reported the salaries paid to workers: The average technician earns from

Table 59. Opinion of personnel officers concerning who should provide training programs for workers

No.	Type of factory	Name of factory	Source of training programs		
			Factories	Government vocational-technical schools	Other organization such as (Ministry of Labor and Social Affairs)
1.	Car co.	Iran Nacional	X	X	X
2.	Car co.	General Motors	X	X	
3.	Tractor co.	Iran Tractor Mfg. Co.			X
4.	Tractor co.	Iran John Deere Co.	X	X	X
5.	TV and radio co.	Toshiba Co.	X	X	
6.	TV and radio co.	Azmayesh Co.	X	X	X
7.	Refrigeration co.	Azmayesh Co.	X	X	X
8.	Refrigeration co.	Arj	X	X	X
9.	Telephone co.	ITMC	X		
10.	Telephone co.	Telephone Sazy Iran	X		

\$300 to \$600 per month while wages paid to skilled workers ranged from \$100 to \$300 per month.

All ten respondents stated it was very difficult to find qualified technicians and skilled workers to hire. The following reasons were given for this difficulty: six personnel managers reported the job applicants lacked the necessary qualifications; two stated it was due to lack of applicants plus the lack of necessary training, and two responded it was because of lack of applicants.

The ten personnel officers were asked how they viewed the future of the company they worked for. Nine responded that their company would expand in the future and one stated his company would remain about the same. All indicated a willingness to help their present employees get additional training.

Section Five: Interview with Administrators of Vocational-Technical Education in Iran

Findings of this section concern interviews with administrators of V.T.E. in order to determine their opinion about V.T.E. in Iran. The 30 interviewed people were chosen from organizations which have a high responsibility level for technical training. Fifteen of the administrators are principals of vocational-technical schools who were chosen randomly from 40 principals in Tehran; five administrators of The Ministry of Labor and Social Affairs who have high

responsibility for technical training were questioned; five administrators of The Ministry of Education were chosen because of their high responsibility level for making decisions for V.T.E. and five administrators from the Industrial Training Board who have high responsibility for T.T.P. (technical training program) were also interviewed.

To determine the opinion of the administrators of V.T.E. the following questions were asked:

What do you consider to be the problems and issues of vocational-technical education in Iran?

All 30 indicated the following problems as the most important problems of V.T.E. in Iran:

- 1) lack of planning in V.T.E.
- 2) lack of enough books and the quality of them
- 3) lack of sufficiently experienced instructors
- 4) low salaries of vocational teachers
- 5) lack of a relationship between vocational training centers and industrial, business and agricultural organizations.

What is your plan for the future to improve vocational-technical education in Iran?

Their responses indicated that 25 did not have serious plans for future improvement in V.T.E. Four administrators of Ministry of Labor and Social Affairs and one individual from

the Industrial Training Board indicated that if Ministry of Education gave permission they would increase new fields in their schools. In general it is very difficult to have future plans because of administrative policy problems.

What is your suggestion regarding needs and assessment of V.T.E. in Iran?

The following suggestions were reported:

- 1) More investment in V.T.E.
- 2) More research in areas of V.T.E.
- 3) Increase the salary of vocational-technical teachers.
- 4) Provide enough books in V.T.E. for students.
- 5) Improve the buildings for V.T.E.
- 6) Increase new equipment for V.T.E.
- 7) Provide more curriculums to meet the needs of the country.
- 8) Establish a relation between vocational-technical centers and industrial, businesses and agricultural organizations.
- 9) Stipulate the organization or ministry responsible for all levels of manpower training in Iran.

CHAPTER V. DISCUSSION

Introduction

The purpose of this study was to collect data that would help to determine the attitudes of the 12th grade high school students toward V.T.P.; to find out the opinions of other vocational-technical students about their curriculums and schools; to determine vacancies and shortages of semiskilled and skilled workers in ten factories. Furthermore, this study was to discover the qualifications of present workers, to assess these workers' interest for training and retraining in V.T.P.; and finally to find out the opinions of vocational-technical administrators concerning the problems and improvements of V.T.E. in Iran. In order to fully explain each of the five areas of study, this discussion has been divided into five sections.

Discussion section one

This section is concerned with the educational attitudes of 12th grade boys and girls in mathematics, natural science and literature. Each year thousands of graduating 12th grade students want to enter the university, but little opportunity exists for them because of the limited number of higher educational institutions. For this reason, the researcher wanted to determine whether or not high school students were interested in V.T.E.

The population surveyed was 57.6 percent male and 42.4 percent female. Responses showed more male students were in mathematics and natural science than females and that more female students were in literature than males. The age of 92.9% of the 12th grade high school students was between 16-20 years of age. The grade point averages of the high school students when in the 11th grade were better for students in mathematics than for those in the natural sciences. Similarly, students in the natural sciences had better grade point averages than literature students. This fact could influence their educational opportunities as well as their future plans.

Concerning whether or not they had part-time jobs, responses indicated 149 (7.2%) had part-time jobs. Of the total students questioned, mathematics students had more jobs than the other two groups. About 92.8% of the students who were unemployed could not find part-time jobs, or if they could, they were less efficient because they had no training for the job and did not have the necessary vocational-technical courses.

Data showed 1114 (54.0%) of the students in the three academic fields had almost no information about V.T.E., and only 895 (43.4%) had a little information. Also the combined data of all three fields indicated that only 53 (2.6%) of the students felt that they had sufficient information about V.T.E. opportunities in Iran. This response shows that a

strong need for guidance services to advise students of opportunities in V.T.E. exists. A comparison of the fields showed that mathematics students had more information about V.T.E. than the other two groups.

Of those students who had information about V.T.E., 80.6% received information from their reading, their parents and their friends. Only 1.6% reported that they had received information from their counselors. Again a lack of counseling and guidance services in the high schools is strongly indicated, especially as students need help in solving problems related to future vocational choices.

Of the male and female students in all three fields, 212 (10.3%) reported that they were completely satisfied with their high schools; 695 (33.8%) were partially satisfied; 604 (29.4%) were neither satisfied nor dissatisfied; 332 (16.2%) were dissatisfied; and 209 (10.3%) were completely dissatisfied. Two-thirds of the high school students in the three fields felt that the high schools in Iran did not adequately prepare students for future jobs. This indicates a strong need for changing curriculums in Iranian high schools in order to meet the students' needs for future employment. The researcher believes that high schools in Iran should have some opportunities in vocational-technical education for those who are interested. In this way, students not only become more satisfied with their school's curriculum, but they

are better able to find lifetime employment. In addition they further increase the country's productivity.

Responses concerning the kind of job desired indicated that 1237 (41.9%) wanted professional and technical jobs. Only 150 (10.2%) wanted nontechnical jobs. Answers showed that mathematics majors were more interested in engineering jobs while students in the natural sciences were more interested in medicine. Students in literature were more interested in becoming lawyers. Two-thirds of the students indicated that they were interested in going to the University for advanced education. Only 116 (5.7%) were interested in two years of V.T.E. Three hundred forty-three (16.8%) were interested in going to other countries for higher education, and 32 (4.0%) did not specify educational interest. Students were asked why they were interested in higher education in Iran or abroad. They responded that if they did not have a college degree in Iran they could not receive a salary sufficient to cover monthly expenses; however, if they had a college degree and worked two or three places per day, then they might cover their living expenses.

From the student responses, a strong need for guidance services and informal communications with high school students and their parent was apparent. Also parents need to present to their children the alternative of a vocational-technical education. Students should also be made as aware as possible

of all job opportunities. In addition, more vocational-technical schools and more technical junior colleges should be established to meet the need for skilled workers and technicians in Iran. Furthermore, to encourage technical-vocational teachers and technicians their salaries should be raised.

Responses to the question if you could not enter a university would you prefer to enroll in a two-year junior technical college, 1507 (73.1%) preferred to go to a two-year junior technical college. Twelve (0.8%) were interested in becoming industrial technicians while 149 (9.9%) were interested in becoming instrumentation technicians. Forty-nine (3.2%) were considering becoming metallurgical technicians; 228 (15.1%) thought of becoming aviation technicians; 10 (0.7%) were interested in becoming air conditioning technicians; 77 (5.1%) were interested in becoming chemical technicians. The largest number, 311 (20.6%), were interested in becoming computer technicians and 31 (2.1%) were interested in agricultural technicians. Unfortunately, no opportunities in the above areas exist in any V.T.S. or junior technical colleges in Iran. Because educational facilities are lacking, Iran has to either send students to other countries for technical training or hire many experts in those areas from other countries.

Students' responses also showed that there were not enough technical training institutions in Iran; therefore, these institutions could not meet the needs in Iran. In order to meet

these demands, more technical community colleges and additional technical curriculums must be established in Iran. It is important to note that 1600 (78%) of the students were interested in vocational-technical courses but few opportunities existed for them to take courses in technical training in Iran. Only seven technical training centers are in Iran: one in Tabriz, one in Isfahan, one in Mashhad and four in Tehran. Those technical training centers have small curriculums which can not meet the needs of the communities.

Of the total students 1924 (93.7%) were living with their parents, and supported by them. Students under parental supervision may be influenced by the education, finance and jobs of their parents when making a future job choice. Data showed 21.1% of the students in mathematics had fathers with at least one college degree; 12.5% of the students in natural science had fathers with at least one college degree and 4% of students in literature had fathers with at least a college degree. This correlates with the data showing that 71.1% of the mathematics students and 67.2% of the natural science students were interested in some form of higher education, while only 64% of the literature students were interested in higher education. The responses showed that 14.1% of the students' fathers and 29.9% of the students' mothers did not have any formal education. In all three areas of study, 2.6% of the students' mothers and 15.2% of the students' fathers had at least one college degree.

Also 46.9% of the fathers had an income of \$600 or less; 28.6% had an income over \$600 and in 24.5% of the responses the father's income was not reported. Data showed that 76.6% of the mothers had incomes of \$600 or less; 12.9% of them had incomes over \$600 and in 10.3% of the responses the mother's income was not reported.

A significant relationship existed between the educational level of the father and the students' part-time jobs. Students who had well-educated fathers had fewer part-time jobs because the fathers were more interested in pushing their children toward advanced education than in their having part-time jobs. Also students who had fathers with a high income had fewer part-time jobs, because their fathers believed that their children did not need to work. Most parents wanted to send their children to other countries for higher education or at least to the very best schools in Iran.

In summary the researcher found that the majority of 12th grade high school students preferred a university education to the two-year technical junior colleges, although they were interested in taking courses in V.T.E.

Discussion section two

This section discusses the responses of 1140 vocational-technical students from seven government and nongovernment schools in Tehran, concerning vocational-technical education. The majority of the students (69.3%; 791) were between 18 and 22 years of age. Of those students, 94.9% were male and 5.1%

were female. Thus, V.T.E. appears to be a male-oriented program in Iran. Because the woman's place traditionally is in the home subservient to the husband, most women find it unnecessary or culturally unacceptable to enroll in V.T. programs. Furthermore, students and their parents lack information about V.T.E. which could increase the female interest and population in V.T.E. As a result, an informal communication between parent, students and guidance personnel needs to be established in order to direct females into such areas as telephone, TV, radio, and computers.

Concerning the students' current employment, 461 (40.4%) of the students had part-time jobs. Two hundred seventy-eight (60.3%) reported that they had technical jobs, while 120 (26.0%) reported that they had nontechnical jobs. Twenty-nine (6.3%) had administrative jobs and 34 (7.4%) had business related jobs. Compared to the high school students (see section two), students in V.T.E. had more part-time jobs and were, therefore, economically more productive, because they had some technical training.

Most curriculums in vocational-technical schools and junior technical colleges in Iran offer courses in auto mechanics, electricity, electronics, and construction. A few offer courses in air conditioning and heating systems; however, in many areas such as computers, chemical engineering, radio and TV, instrumentation, plumbing, metallurgy, aircraft engine,

diesel mechanics and tractor mechanics no courses exist in the technical schools in Iran. The following is a list of reasons as to why such courses are not offered:

1. insufficient data on the numbers of students needing training and the areas in which training was desired
2. insufficient funding for V.T.E.
3. lack of technical teachers
4. lack of buildings and facilities
5. lack of books in desired fields.

Despite these inadequacies, about one-half of the students in vocational-technical schools were satisfied with their schools. Of those (about one-half) who were dissatisfied, most of the students were younger than those who were satisfied with the V.T. programs. Nevertheless, when asked if their schools prepared them for future jobs, 731 (64.2%) of the students felt that their schools did not prepare them for future employment. About two-thirds of the students believed that a lack of equipment, books, technical teachers and buildings contributed to the serious problems in vocational-technical schools in Iran, which caused the quality of vocational-technical training to be low.

Concerning their future plans 74% of the students reported that they were interested in university education. However, some problems exist for vocational-technical students in Iran who want a university education. Vocational-technical

students only have a 20% chance of entering a technical university while mathematics students have an 80% chance. Because the entrance examinations are based on general knowledge including literature, English, chemistry, physics, and mathematics, students in mathematics are better equipped than students in vocational-technical schools who lack knowledge in these areas. During their four years of high school, students in vocational-technical schools spend course time in valid practical technical training rather than in theoretical courses as do the mathematics students. As a result vocational-technical students are stronger than students in mathematics in practical training; but because they lack the knowledge required to pass the entrance examinations, they find it difficult to receive an advanced education. Furthermore, students with technical training have a higher level of practical experience than the mathematics students which results in an unequal level of experience at the training level. These factors present a serious problem for technical colleges and students in Iran. Only two colleges accept 20% of their total enrollment from vocational-technical schools (Honarestan-i-Sanati). The remaining 80% come from mathematics students. Other technical colleges or universities set rules which do not allow vocational-technical students to take advanced study. This situation causes vocational-technical students to become discouraged. Another prohibiting factor

is that some vocational-technical schools teach only French or German but many examinations require a knowledge of the English language.

The responses of 632 (55.4%) of the students showed that the lack of work experience and the lack of demand limit their ability to acquire a job after graduation. Seventy-two percent responded that they did not receive any guidance and counseling service during their four years in high school which could have helped them to find employment. Of those students who received counseling, more had part-time jobs and were, therefore, more satisfied with their schools than those who received little or no guidance.

In summary the higher educational opportunities for vocational-technical students are very limited because of a lack of books, teachers and equipment as well as adequate vocational-technical training in Tehran. Other cities in Iran lack these facilities also. The author feels that more than 90% of the Iranian people do not have opportunities for technical training. For this reason, a strong need exists for increasing vocational-technical training in all levels in order to train skilled workers and technicians to meet the demands of the students and the society. Furthermore, V.T.T. is lacking for females in Iran.

Discussion section three

This section describes the attitudes of 443 selected workers employed in 10 factories in Tehran toward technical training and retraining. Of those questioned, 37.6% of the workers were between 30-39 years of age with 79.2% of the workers male and 20.8% female. Of the females 80.7% worked in telephone, radio and TV companies.

The educational level of the workers was low: 25.7% did not have any formal education and only 50.3% had a 6th grade education or less. Still more than one-half of the workers indicated that they were interested in taking courses in technical areas. Most workers were interested in courses such as auto mechanics, radio and TV, electricity, and telephone.

Five factories did not want to train the workers in general technical courses; instead, they only trained workers in the area needed. They especially did not desire the workers to improve their technical knowledge. Most factories believed that if they trained the workers, the workers would leave the factories for better paying jobs in other factories. However, the researcher feels that if workers had technical training and formal education during the workday, not only would the workers be better satisfied with their jobs but they would also be more efficient. But most factory administrators are primarily concerned with the present cost and find it difficult to understand that properly trained workers would increase

productivity.

About half of the workers were interested in further technical education because they wanted to acquire knowledge that would help them perform better while on the job. Workers' responses showed that 203 (45.8%) were interested in further study during work time. They felt that this way of learning was best; in addition, the way was most convenient for them as it saved them time.

The workers' responses indicated that 97.7% were interested in free technical training and retraining programs. When asked if they had attended any training courses after regular school, 29.8% responded yes. Of those responding yes, 97.9% received technical training and at the present 95.9% were working in skilled jobs with only 3.4% working in non-skilled jobs. More than 70% of the workers were not trained by the factory in which they were working.

In Iran, many young people are conscripted for two years of military service but the quality of conscripted training is quite low. The author believes that the military manpower could be put to better use in construction of roads and health clinics. Also, the military could help to eradicate illiteracy which was 66.6% in 1968, although it has now decreased to 60%. Such use of military manpower would benefit the general public by providing more technical training to conscripts who could then use such training after their service; plus it would

improve the military's capacities for national defense.

Concerning the military service, 178 (40.2%) had served in the military. Of these, twenty (31.2%) had received technical training. Of the workers who had received technical training, 71.4% felt that the training received in the military service was helpful in their job and 28.1% felt it was not.

More than one-half of the workers reported that they were not satisfied in their job because of low salaries. The author believes this problem caused workers to be discouraged in their jobs and to decrease their efficiency. Almost all of the workers (97.7%) were interested in technical training or re-training, but about 70% did not have any chance for training. Of the 30% who had a chance for training or retraining, most felt the quality of the training was low.

The author feels that a lack of communication exists between the educational centers and factories in Iran since most factories do not provide training for their workers. Undoubtedly, this is one of the reasons why the efficiency of the Iranian workers is low. To solve this problem and to increase the efficiency of Iranian workers, factories must provide free technical training for workers during the working day. Iran should train students based on the needs of the factories.

In summary workers of the ten factories responded they were interested in training and retraining in technical courses, but there was not adequate training by factories for them.

Discussion section four

This section concerns the discussions with the personnel officers of ten Iranian factories. The purpose of the questioning was to determine the number and kind of semi-skilled, skilled and technician level workers employed in 1975 and 1976 and to decide the number and kind of workers and technicians that would be needed in 1977 and 1978. The discussions were to also indicate the current job vacancies in the ten factories.

The responses indicated that a strong need existed for additional qualified technicians and skilled workers for 1977-1978. Data concerning skilled workers and technicians showed that the ten companies had annually increased the number of skilled workers by about 600 and the number of technicians by about 350. The personnel officers felt these numbers would increase in 1978 and the years following. At the present time, the ten factories need 383 technicians and skilled workers to fill the current vacancies.

Personnel officers knew that most of the workers were interested in free training if the companies provided the training. However, the responses indicated that five of the

ten personnel officers felt that three sources (1 - factories, 2 - government V.T.S. and 3 - Ministry of Labor and Social Affairs) were responsible for technical training. Other personnel officers indicated that sources one or two were responsible. The author believes that the above mentioned three sources as well as other technical training agencies in Iran should organize to determine the need and quality of skilled workers and technicians. Perhaps, an organization of all training centers or the Ministry of V.T.E. should be established to have the responsibility for all manpower needs in Iran.

Generally, the education level of technicians in Iran was through the twelfth grade, although some technicians had 2 years of college. The author, when he had met the workers in the factory, found a number of workers who did not have any formal education. This inadequate level of education contributes to the low efficiency rate in Iranian factories.

As hiring personnel reported the salaries of skilled workers were between \$100 to \$300 per month, while the wages paid to technicians were \$300 and \$600 per month. The low salaries did not cover all technicians and skilled workers' expenses per month. For those who did not own their homes, they either borrowed money or worked at another job to cover their expenses, since a significant percent of their income went to pay for rent.

The author believes that the distribution of money among the people at this time is not equal. Most of the employed people from workers to professors and teachers have low salaries which do not cover all their living expenses, especially those who do not own their own homes as they pay more than two-thirds of their salary for rent. Since people who are in construction or business are comparatively rich, workers, peasants and teachers become discouraged, and therefore, less efficient.

In summary, most factories in Iran are expanding and do need more skilled and technical labor to meet their growing demands. However, few factories offer training or retraining programs for their workers, even though most workers are interested in such programs. At the present time, confusion as to the agency responsible for such programs has hampered any form of consistent training or retraining of factory workers.

Discussion section five

This section concerns the opinions of administrators about their problems, suggestions and plans for V.T.E. It appeared that the administrators of V.T.E. and other technical centers were aware of most of the problems of V.T.E. in Iran. In addition, the suggestions and plans given to the author looked adequate; however, the question as to why they could not solve

the problems facing them presents itself. The author feels that part of the difficulty comes from a lack of administrative experience for those in charge and from a lack of commitment to their jobs. Finally, problems arise from the policies determined by the administration.

CHAPTER VI. SUMMARY AND CONCLUSION

Summary

Statement of problem

There are not enough higher educational opportunities for high school graduates in Iran. Each year thousands of Iranian students are interested in higher education, but they find that opportunities either in university or technical colleges do not exist. Therefore, few receive an advanced degree because of the limited opportunities for higher education. Students who can not enter the universities go to other countries for advanced educations. As a result, Iranian monies flow out of the country, decreasing the balance of foreign resource exchange. Some students will go to the job market, but because they lack proper job training, their efficiency will be low. The remaining students will join the army or wait year after year for a chance to enter a university.

As a result of economic and industrial changes in Iran, the number of cars, tractors, radios and TVs, refrigerators as well as other industrial equipment and agricultural machines has rapidly increased in the urban and rural areas. Although the mechanized products have increased, no adequate system has been established to educate the technicians who will maintain and repair them. Therefore, the demand for semiskilled workers and technicians has also increased. To compensate for the

shortage of technical manpower, Iran has had to hire thousands of skilled workers, technicians and specialists from other countries even though Iran could solve the problem with Iranian manpower.

The efficiency of the workers in the Iranian factories is low. There is a lack of qualified workers and technicians in the factories because of a lack of training and retraining programs in most of the factories in Iran. Also the quality of vocational-technical training in Iran is poor, because the Iranian high schools are overcrowded and, therefore, can not meet the needs of the Iranian students. As a result, most students are dissatisfied with their high school curriculum.

Purpose of study

The objectives of this study were:

1. to determine the interests and attitudes of 12th grade high school students toward vocational-technical education.
2. to determine the opinions of 12th grade vocational-technical students toward the Iranian vocational-technical school curriculums.
3. to determine the attitudes and interests of workers in ten Iranian factories toward technical training and retraining.
4. to determine the attitudes of personnel officers and agents toward the need for adequately qualified

semiskilled, skilled and technician level workers.

5. to indicate the opinions of administrators of vocational-technical education concerning problems, suggestions and future plans for improvement of V.T.E. in Iran.
6. to make recommendations for development of vocational-technical programs based upon the findings of the study.

Methods

The method used in this study was survey by questionnaire. The population that was chosen for the study consisted of five different groups in Tehran. Group one was 12th grade students from mathematics, natural science and literature. The researcher selected a sample of 38 classes which included 2,062 students from a total of 786 classes (33,248 students). These 38 classes included: eleven boys' natural science classes and ten girls' natural science classes; nine boys' mathematics classes and four girls' mathematics; two boys' literature classes and two girls' literature classes. The 2060 students were chosen randomly from seventeen districts in the north, south, west and east sections of Tehran.

Group two consisted of 12th grade vocational-technical students whose attitudes toward V.T.E. surveyed. The researcher randomly chose 1,140 students in seven V.T.S. among the 40 vocational-technical schools (21,615 students) in Tehran.

The third group consisted of semiskilled, skilled and technical level workers chosen randomly from ten Iranian factories (two automobile, two tractor, two refrigerator, two radio and TV and two telephone factories).

The fourth group was made of the personnel officials in the above ten factories.

Group five included 30 administrators of vocational-technical education in Tehran. They were chosen because of the high responsibility they had for decisions made regarding planning and improving vocational-technical schools in Iran.

The researcher had personal contact with all five groups surveyed. Because of the personal contact, the researcher had a one hundred percent return on the questionnaires.

Coding

The questionnaires were coded for punching on I.B.M. cards with important points specified through the coding. The language used for this study was SPSS (Statistical Package for the Social Science).

Conclusion

Two-thirds of the high school students indicated that they preferred a university education to two years at a technical junior college, although they were interested in

taking courses in vocational-technical education. Seventy-three percent of the high school students were interested in a two-year junior technical college if they could not have a four year college opportunity. One-half of the high school students in the three academic fields (mathematics, natural science and literature) were dissatisfied or very dissatisfied with their high school curriculums. Two-thirds of the high school students in the three fields felt that the high schools in Iran did not adequately prepare students for future jobs. This indicates a strong need for changes in curriculums in Iranian high schools.

The quality of vocational-technical training in Iran is low. At the present time, technical high schools, technical colleges and other technical centers can not meet the needs of the students and the society. The data indicated that about one-half of the vocational-technical students were not satisfied with their vocational-technical schools. Furthermore, 731 (64%) of the students felt that their schools did not prepare them for future employment and about two-thirds of the students believed that the lack of technical books, teachers, equipment and buildings contributed to the serious problem in Iranian vocational-technical schools.

Concerning their future plans, 74% of the students reported that they were interested in a university education,

but higher educational opportunities for high school and V.T. students is about ten percent. Only two technical colleges accept vocational-technical students for four years of advanced education. However vocational-technical students only have a twenty percent chance of being admitted to those schools as the remaining number of enrolling students are from mathematics.

Most factories in Iran are expanding and do need more skilled and technical labor to meet their growing demands. However, few factories offer training or retraining programs for their workers, even though 97.7% of the workers were interested in such programs. Two-thirds of the workers were dissatisfied with their jobs because of the low salaries they received. The workers' low efficiency could be attributed to low salaries, worker dissatisfaction with jobs, lack of experience and poor relationships and communications between employees and employers.

At the present time, a shortage of semiskilled, skilled workers and technician exists in Iran, due in part to the lack of communication between the V.T. centers and the industrial, business, and agricultural sectors of the economy.

There is a lack of administrative experience and a lack of commitment of those who are in such positions to change vocational-technical training programs. Finally, a significant problem exists because of the policies determined by the administrations.

Recommendations for Improvement of Vocational-Technical Education

These recommendations based on the data gathered from the five groups studied as well as from other sources reviewed by the researcher are presented for those persons who have the responsibility for the development of V.T.E. in Iran. This information is arranged and discussed according to the following categories:

1. Research
2. Evaluation
3. Curriculum
4. Communication
5. Adult education
6. Administration
7. Guidance services

Research

The results of this study indicate that a lack of research exists concerning vocational-technical education according to different levels of training: (1) in vocational-technical education, (2) in high school education and (3) in higher education.

The author, because of his research, feels that no scientific methods have been used to indicate the supply and demand of manpower in Iran; it would be beneficial to conduct a nationwide survey technical training in Iran, because of expanding technology and factory development which requires better trained workers. Furthermore, an indication of the

present and future needs for skilled workers, technicians and engineers would help Iran meet the demands of the expanding economy.

To help students to meet the country's manpower demands, further study into the communication, persuasion and guidance services of vocational-technical education which are available to students and their parents needs to be conducted. Uniform nationwide surveys conducted at regular intervals would indicate the changes necessary in V.T.E. in Iran.

Evaluation

An evaluation of the following factors necessary for improving V.T.E. in Iran:

1. evaluation of technical teachers' activities
2. evaluation of curriculum and vocational-technical students.
3. evaluation of cost and return of vocational-technical education.
4. evaluation of the comparative cost and return of vocational-technical education with general education.
5. evaluation of guidance and counseling services' activities.
6. evaluation of technical books and equipments of V.T.S.
7. evaluation of administrative procedures in V.T.S.
8. evaluation of communications between teachers and other high school administrators and the students.

Curriculum

In order to meet the country's needs, new areas of study should be introduced into the present vocational-technical curriculums. Among the areas now lacking are: computers, chemical engineering, electronics, air conditioning and heating, metallurgy, sheet metals, drafting, radio and TV, tractor mechanics, printing and plumbing; in addition to more courses, more technical high schools and technical colleges should be provided for the students. Also those areas of the curriculum which are no longer useful should be eliminated.

Technical higher education for vocational-technical students should have a separate curriculum from that required by technical higher educations for high schools in mathematics.

Also, students should be allowed to fit the curriculums to their future jobs.

In the areas of established training, the military should upgrade the quality of these technical training programs.

Short term courses in vocational training should be provided to meet specified occupational requirements.

Communication

In order to improve communications relative to V.T.E., the following recommendations are made:

(1) Establishment of a special committee to serve as a channel between technical trainers, students, parents and other community occupational groups.

(2) Improvement of public relations programs of the colleges, universities and vocational-technical schools.

(3) Awareness on the part of technical training centers of the changes in the labor market which indicates future needs and surpluses through the establishment of a communications system between industry, business and education.

(4) Establishment of a system by which technical training centers and industries can inform people of educational and job opportunities. A career education program should be established in 6-7-8 grades (Figure 4).

Adult education

Adult education in Iran should:

(1) Provide more training and retraining for workers as well as for the villagers who immigrate into the cities.

(2) Provide effective programs which prepare students for jobs and for advanced training.

(3) Provide technical training for nonstudent adults with or without jobs.

(4) Persuade working adults to upgrade skills and knowledge.

(5) Inform adults of job and educational opportunities.

(6) Strive for equal opportunities for females and males.

(7) Expand the technical centers to include rural areas.

Administration

To increase the efficiency of administrative and supervisory personnel, individuals in such positions should receive more training and experience in their jobs. As a result, administrators and supervisors would be better able to authorize changes in vocational-technical education curriculums and thus feel a stronger commitment to their job.

Vocational-technical education administrators should have authority for policy changes in curriculum designs, teacher training, educational equipments, teacher salaries, instructional techniques and methods.

They should be aware of the new methods and systems for improving V.T.E. in developed countries, and they should participate in the international conferences on vocational technical education.

For those administrators who make the decisions concerning manpower needs, a ministry or other organization should be created to centralize the responsibility for vocational-technical education at all levels. The author's idea for a new ministry would be that it set guidelines in technical education, that it collect and disseminate information concerning new methods and ideas in V.T.E. This ministry should be an umbrella organization with local/or provincial branches. There should also be an advisory group consisting of representatives from business, industry and the community as well as from

education who could help set policies in vocational-technical education.

Guidance services

This study showed that 97.4% of high school students in three different fields had little or no information about V.T.E. The data on high school students indicated that two-thirds of the students have to enroll in other than university courses. These students need help in making whatever choices are available to them. The guidance years 6, 7, and 8 have to be well-planned and counselors have to be made available to help students make the best use of the educational opportunities of Iran as are indicated in Figure 4.

Occupational information and vocational guidance are very important for young people as they progress through school and make choices related to their vocations.

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APPENDIX A: LIST OF HIGH SCHOOLS IN
POPULATION SURVEYED

2062 boys and girls in 38 mathematic, natural science and literature classes have been chosen randomly from a total sample of 33,248 students in 786 classes in Tehran

No.	Name of school	Type of school	Field	Sex	Class	Amount
1	Tabari	government	literature	girls	1	61
2	Norbakhah (Guard)	government	literature	girls	1	53
3	Naaser-Khosrow	government	literature	boys	1	57
4	Pahlavi-Payetakht	government	literature	boys	1	36
5	Khojasteh	nongovernment	natural science	girls	1	76
6	Anoshiravan-Dadgar	nongovernment	natural science	girls	1	59
7	Kharazmi-Pahlavi	nongovernment	natural science	girls	1	66
8	Attareh-i-Rohani	government	natural science	girls	1	42
9	Ghavam	government	natural science	girls	1	58
10	Eram	government	natural science	girls	1	54
11	Kaywan	government	natural science	girls	1	58
12	Azady-i-Zanan	government	natural science	girls	1	58
13	Attar	government	natural science	girls	1	33
14	Kooshesh	nongovernment	natural science	boys	1	63
15	Shahin	nongovernment	natural science	boys	1	81
16	Jaavidan	nongovernment	natural science	boys	1	59
17	Banihashemi	nongovernment	natural science	boys	1	44
18	Dr. Hashroody	nongovernment	natural science	boys	1	87
19	Roozbeh	government	natural science	boys	1	36
20	Atabaky	government	natural science	boys	1	23

21	Takhte Jamshid	government	natural science	boys	1	19
22	Tavakkol	nongovernment	natural science	boys	1	51
23	Bozorg-i-Tehran	government	natural science	boys	1	52
24	Arvin	nongovernment	natural science	boys	1	41
25	Anooshiravan-i-Dadgar	nongovernment	mathematics	girls	1	63
26	Pishahang	nongovernment	mathematics	girls	1	41
27	Pishahang	nongovernment	mathematics	girls	1	40
28	Soraiya	government	mathematics	girls	1	51
29	Asaadi	government	mathematics	girls	1	57
30	Kharazmi No. 1	nongovernment	mathematics	boys	1	90
31	Kharazmi No. 1	nongovernment	mathematics	boys	1	69
32	Albourz	government	mathematics	boys	1	54
33	Dr. Houshyar	government	mathematics	boys	1	51
34	Hadaf No. 4	nongovernment	mathematics	boys	1	80
35	Dr. Hashroody	nongovernment	mathematics	boys	1	61
36	Asadabady	government	mathematics	boys	1	37
37	Rahnema	government	mathematics	boys	1	51
38	Bozorg-i-Tehran	government	mathematics	boys	1	50
					—	—
Total					38	2062

**APPENDIX B: LIST OF VOCATIONAL-TECHNICAL HIGH SCHOOLS
(HONARESTAN) IN POPULATION SURVEYED**

1140 students in 12th grade vocational-technical schools in
Tehran

Name of vocational- technical school (Honarestan-i-Sanati)	Amount	Percentage	Type of school
1 Honarestan-i-Sanati No. 1 of Tehran	172	15.1	government
2 Honarestan-i-Sanati No. 9 of Tehran	183	16.1	government
3 Honarestan-i-Sanati Ort	158	13.9	semi-private
4 Honarestan-i-Sanati Shafie	80	7.0	nongovernment
5 Honarestan-i-Sanati Mobtaker	206	18.1	nongovernment
6 Honarestan-i-Sanati No. 12 of Tehran	105	9.2	government
7 Honarestan-i-Sanati Iran Technic	236	20.7	nongovernment
Total	1140	100.0	

APPENDIX C: LIST OF NAMES OF FACTORIES IN
POPULATION SURVEYED

The Name of Factories

<u>Type of factory</u>	<u>Name of factory</u>
1. Car co.	Iran Nacional
2. Car co.	General Motors
3. Tractor co.	Iran Tractor Mfg. Co.
4. Tractor co.	Iran John Deere Co.
5. TV and radio co.	Tooshiba Co.
6. TV and radio co.	Azmayesh Co.
7. Refrigeration co.	Azmayesh Co.
8. Refrigeration co.	Arj
9. Telephone co.	LTMC ¹
10. Telephone co.	Telephone Zazy Iran ²

¹TeleCommunication Manufacturing Company (private joint stock), Shiraz.

²Persian name of telephone company.

APPENDIX D: QUESTIONNAIRE FOR 12TH GRADE HIGH SCHOOL
STUDENTS IN TEHRAN (IRAN)

2. How old are you?

- (1) under 16
- (2) 16-20
- (3) 21-24
- (4) 25 up

3. What was your grade point average in the 11th grade?

- (1) A
- (2) B
- (3) C
- (4) D
- (5) I don't know

4. Do you have a part-time job?

- (1) yes
- (2) no

5. If yes, how many hours do you work per week?

6. How is your job classified?

- (1) professional and technical, administrator, manager, factory worker and operator (teacher, nurse, all kinds of technical jobs, factory job, and driver)
- (2) agricultural worker (all kinds of jobs related to the farm)
- (3) service worker, clerical and sales worker (shop and housecleaner, office worker, all kinds of business jobs)
- (4) other (please specify) _____

7. How much information do you have about vocational-technical education in Iran?
- (1) much information
 - (2) a little information
 - (3) almost no information
8. If you have information about vocational-technical education, how did you get it?
- (1) from counselor
 - (2) from teachers
 - (3) from your reading
 - (4) from parents (father or mother) or close relative (brother or sister)
 - (5) from friends
 - (6) from other sources (please indicate) _____
9. At the present time, how do you feel about your high school education?
- (1) completely satisfied
 - (2) partially satisfied
 - (3) neither satisfied nor dissatisfied
 - (4) dissatisfied
 - (5) very dissatisfied
10. In your opinion, do high schools in Iran prepare students for their future jobs?
- (1) yes
 - (2) no
 - (3) I don't know

11. What kind of job would you like to have most?
(please specify) _____
12. What do you plan to do after graduation from the 12th grade?
- (1) I would like to enter a 4-year college.
 - (2) I would like to enter a 2-year vocational-technical college.
 - (3) I would like to go to other countries to continue my college education.
 - (4) I would like to work.
 - (5) I don't know.
13. If you couldn't enter a university or any 4-year college, would you prefer to enroll in one of the 2-year vocational-technical colleges to be prepared for your future job?
- (1) yes
 - (2) no
14. If your answer is yes, in what area? Please circle one.
- (1) electrical technician (design, operation and repair of all kinds of electrical equipment)
 - (2) electronics technician (communication, manufacturing, installation of electronic equipment)
 - (3) industrial technician (job in a factory, production, control, material handling, and a job evaluation)
 - (4) mechanical technician (design, production, operation of machines, tools on metal products)
 - (5) instrumentation technician (build, install, maintain instruments used to control speed, weight, time, temperature, pressure, voltage, etc.)
 - (6) metallurgical technician (producing, testing, and treating metals)

- (7) aviation technician (design, build, and test air frames, power plants, propeller controls, etc.)
 - (8) air condition, heating and refrigeration technician (control of the temperature, humidity, cleanliness and circulation of air)
 - (9) chemical technician (testing, research or control chemist)
 - (10) civil technician (drafting, design, construction, surveying)
 - (11) diesel technician (install, operate and repair engines)
 - (12) professional (vocational-technical teacher, engineer, medical technician and art worker)
 - (13) manager, proprietor and official (farm operator, farm manager, farm business, laboratory, general administration, sales, and housemother)
 - (14) services (any kind of public service)
 - (15) computer
 - (16) radio and TV
 - (17) agriculture
15. Would you enroll in one of the vocational-technical courses if it were offered?
- (1) yes
 - (2) no
16. If your answer is yes:
- (1) in the evening
 - (2) on a part-time basis
 - (3) on a full-time basis

17. Does your father work? (if your father is retired your answer is yes. If he is dead circle number (3) and you do not need to answer questions numbered 18-22.
- (1) yes
 - (2) no
 - (3) deceased
18. If yes, what kind of job does he have?
- (1) professional and technical, scientist, administrator, and manager
 - (2) factory worker, laboratory, and operator
 - (3) agricultural job
 - (4) service worker, clerical and sales job
 - (5) other (please specify) _____
19. What is your father's age?
- (1) less than 36
 - (2) 36-40
 - (3) 41-45
 - (4) 46-50
 - (5) over 50
20. What is the level of your father's education?
- (1) no education
 - (2) 1-3 grades
 - (3) 4-6 grades
 - (4) 7-9 grades
 - (5) 10-12 grades

- (6) 2 years of college
 - (7) B.S. degree
 - (8) M.S. degree
 - (9) Ph.D. degree
21. What is your father's income per month?
- (1) \$100 and less
 - (2) \$101-\$300
 - (3) \$301-\$600
 - (4) \$601-\$900
 - (5) over \$900
 - (6) I don't know
22. Does your mother work? (If she is retired your answer is yes. If she is dead circle (3) and you do not need to answer questions 23-27.)
- (1) yes
 - (2) no
 - (3) deceased
23. If yes, what kind of job does your mother have?
- (1) professional and technical, scientist, administrator, and manager
 - (2) factory worker, laboratory, and operator
 - (3) agricultural job
 - (4) service job, clerical and sales job
 - (5) other (please specify) _____

24. How old is she?

- (1) less than 36
- (2) 36-40
- (3) 41-45
- (4) 46-50
- (5) over 50

25. What is the level of your mother's education?

- (1) no education
- (2) 1-3 grades
- (3) 4-6 grades
- (4) 7-9 grades
- (5) 10-12 grades
- (6) 2 years of college
- (7) B.S. degree
- (8) M.S. degree
- (9) Ph.D. degree

26. What is your mother's income per month?

- (1) \$100 or less
- (2) \$101-\$300
- (3) \$301-\$600
- (4) \$601-\$900
- (5) over \$900
- (6) I don't know

27. Do you live with your parents? (one or both)

(1) yes

(2) no

Thank you very much for your cooperation in answering the questionnaire. Your responses will materially aid in a study of the need for vocational-technical education in Iran. If you have any comments, please write them below or on the back of this page.

APPENDIX E: QUESTIONNAIRE FOR STUDENTS (HONARJOYAN) IN
THE LAST YEAR OF VOCATIONAL-TECHNICAL SCHOOLS
(HONARESTAN-i-SANATI) IN NEW AND
OLD CYCLE IN TEHRAN

Questionnaire for students (Honarjoyan) in the last year of vocational-technical schools (Honarestan-i-Sanati) in new and old cycle in Tehran.

Code no. _____

Student no. _____

Name of vocational-technical school _____

Address of vocational-technical school _____

Date: _____ 19 _____

The purpose of this questionnaire is to find out the opinions of vocational-technical students concerning vocational-technical education in Iran (Tehran).

(NOTE: Your answers will be confidential. They will be used to suggest some recommendations for improving vocational-technical training in Tehran (Iran).)

Please give one answer to each question. Answer every question, but circle only one answer.

1. Are you male or female?

(1) male

(2) female

2. How old are you?

(1) under 18

(2) 18-22

(3) 22 up

3. Do you have a part-time job?
 - (1) yes
 - (2) no
4. If yes, how many hours do you work per week? _____
5. What is your job? _____
6. What is your field of study? _____
7. At the present time, how do you feel about your vocational-technical school?
 - (1) completely satisfied.
 - (2) partially satisfied.
 - (3) neither satisfied nor dissatisfied.
 - (4) dissatisfied.
 - (5) very dissatisfied.
8. In your opinion, do vocational-technical schools in Iran prepare students for their future jobs?
 - (1) yes
 - (2) no
 - (3) I don't know
9. If no, please specify which of the following is one of the most important problems of the vocational-technical schools in Iran.
 - (1) lack of equipment.
 - (2) lack of enough instructors and lack of experience and knowledge.
 - (3) lack of enough books and lack of quality of them.

- (4) lack of suitable buildings for vocational-technical schools.
 - (5) lack of the correct administration in the managing of the vocational-technical school.
 - (6) long distance from vocational-technical school to home.
 - (7) answer one, two and three.
 - (8) all of the above problems (one to six).
10. What kind of job would you most like to have after your graduation? (Please specify) _____
-
11. What do you plan to do after graduation from 12th grade vocational-technical school?
- (1) I would like to go to junior or community college for a 2 year technical education.
 - (2) I would like to work in my major field.
 - (3) I would like to work out of my major field.
 - (4) I would like to enter a four year college or university.
 - (5) I would like to go to other countries to continue my college education.
 - (6) I don't know.
12. In your opinion, are students able to get jobs soon after graduation from vocational-technical schools in Iran?
- (1) yes
 - (2) no
 - (3) I don't know

13. If no, why?

- (1) lack of experience.
 - (2) lack of demand for them.
 - (3) answer one and two.
 - (4) another problem (please specify). _____
-

14. Did you receive guidance and counseling from your teachers or school administrators to assist you for your future career job?

- (1) yes
- (2) no

I hope your answers will be quite helpful for developing vocational-technical schools in Iran. If you have any comments regarding the problems and development of vocational-technical education in Iran, please write them below or on the back of this page.

Thank you very much for your cooperation.

APPENDIX F: QUESTIONNAIRE FOR WORKERS OF 10 FACTORIES

The purpose of this questionnaire is to determine your interest to retain or upgrade your training through the vocational-technical schools or through your employer's organization or in other ways that may help make your life more satisfying or productive.

Code no. _____

Employee no. _____

- a. _____ car
- b. _____ tractor
- c. _____ TV and radio
- d. _____ refrigerator
- e. _____ telephone

QUESTIONNAIRE

Survey of Vocational-Technical Education and Interests

(NOTE: Your answers will be confidential. They will be used just as a recommendation for securing more training opportunities for those interested in retraining or in improving their skills.)

Please answer one and mark (X) in the blank.

I. General Information

- A. What is your age?
- (1) _____ 20 or younger
 - (2) _____ 21-29 years
 - (3) _____ 30-39 years
 - (4) _____ 40-49 years
 - (5) _____ 50-59 years
 - (6) _____ 60-69 years
 - (7) _____ 70 years or over

B. Your sex:

(1) ___ male

(2) ___ female

C. Are you married?

(1) ___ yes

(2) ___ no

D. If yes, does your wife (husband) work?

(1) ___ yes

(2) ___ no

E. If yes, where does she/he work and what does she/he do?

E1. Works at _____

E2. Does _____

F. What level of education have you completed?

(1) ___ no education

(2) ___ 6th grade or less

(3) ___ 9th grade or less

(4) ___ 12th grade or less

(5) ___ college education

G. Your occupation?

Type of work: _____

II. Education Plans

A. When did you last attend school?

- (1) ___ within the last year
- (2) ___ 1-2 years
- (3) ___ 3-5 years
- (4) ___ more than 5 years

B. If within the next two years, would you like to engage in additional courses of vocational-technical programs for a certificate?

- (1) ___ yes
- (2) ___ no

C. If yes, in what courses?

(please indicate) _____

III. Goals

A. For what reasons are you interested in further learning?

- (1) ___ to work toward a degree
- (2) ___ to be better informed; gain new knowledge
- (3) ___ prepare myself for a new job or career
- (4) ___ job requirement
- (5) ___ to perform present job better or to obtain a promotion
- (6) ___ simply to learn about my present job
- (7) ___ to study current economic problems
- (8) ___ other (specify) _____

IV. Preferred Way of Learning

A. Method of acquiring additional training -

- (1) ___ study and learning during working time
- (2) ___ traditional classes during the day
- (3) ___ traditional classes during the evening
- (4) ___ sessions held on weekends
- (5) ___ courses using multi-media (television, tape recorder, printed materials, etc.) either at your home or at a learning center with periodic meeting with an instructor
- (6) ___ independent study
- (7) ___ correspondence study at home
- (8) ___ other (specify) _____

B. For what reason are you interested to learn in this way?

- (1) ___ I am familiar with this way
- (2) ___ I feel I learn best through this way
- (3) ___ I enjoy this way of learning
- (4) ___ other (specify) _____

V. Preferred Location for Learning

A. Place of offerings -

- (1) ___ at home, through multi-media (television, printed material, etc.) or correspondence work
- (2) ___ at your place of work
- (3) ___ a library, extension office, or other community agency
- (4) ___ high school

- (5) ___ an adult learning center
 (6) ___ a community or junior college campus
 (7) ___ other (specify) _____

B. For what reason are you interested in that location?

- (1) ___ convenience
 (2) ___ financial cost
 (3) ___ time involved in getting to location
 (4) ___ programs that I want are offered
 (5) ___ better learning
 (6) ___ other (specify) _____

VI. Military Service

A. Have you been in the military service?

- (1) ___ yes
 (2) ___ no

B. If yes, did you attend a military training course?

- (1) ___ yes
 (2) ___ no

C. What type of training did you receive?

(please specify) _____

D. Is this training helpful in your job?

- (1) ___ yes
 (2) ___ no

VII. General Training

A. Have you attended any training courses since regular school?

(1) yes

(2) no

B. If yes, in what area and when?

B1 _____ B2 Date _____

VIII. Present Job

A. Are you working at a skilled job now?

(1) yes

(2) no

B. If yes, in what area?

C. If no, are you interested in skilled work?

(1) yes

(2) no

IX. Offering

A. Would you be interested in training if free?

(1) yes

(2) no

B. What length of training period would best fit your needs?

- (1) ___ 1 month
- (2) ___ 3 months
- (3) ___ 6 months
- (4) ___ 1 year
- (5) ___ more than 1 year

X. Training by Employer's Organization

A. Did your employer's organization provide training for you?

- (1) ___ yes
- (2) ___ no

B. If yes, in what area?

(Please specify) _____

C. Have you had training by any other organization?

- (1) ___ yes
- (2) ___ no

D. If yes, in what area, by whom, and when?

D1 - In the area of _____

D2 - By _____ D3 - On _____

XI. Job Situation

A. How many jobs have you held since you first left full-time school?

- (1) ___ one
- (2) ___ two
- (3) ___ three
- (4) ___ four
- (5) ___ more than four

B. What kind of job do you expect to have in the future?

Please specify _____

C. Are you satisfied with your job?

- (1) ___ yes
- (2) ___ no

D. If you are not satisfied with your job, indicate why?

- (1) ___ I don't have adequate knowledge in my present job
- (2) ___ I don't have adequate experience in my present job
- (3) ___ receiving low salary
- (4) ___ I would like another job
- (5) ___ I don't like the place of my job
- (6) ___ present job does not provide a challenge

Thank you very much for your cooperation.

APPENDIX G: QUESTIONNAIRE FOR PERSONNEL OR HIRING
OFFICER OF 10 FACTORIES: AUTOMOBILE, TRACTOR,
T.V.-RADIO, REFRIGERATOR AND TELEPHONE

(two automobile companies, two tractor companies,
two T.V.-radio companies, two refrigerator companies,
and two telephone companies)

The purpose of this questionnaire is to determine the need for skilled and technician level workers.

Code no. _____

Firm no. _____

- a. _____ automobile
- b. _____ tractor
- c. _____ TV and radio
- d. _____ refrigerator
- e. _____ telephone

Date: _____ 19 _____

QUESTIONNAIRE

Survey for Vocational-Technical Education

(NOTE: Your name, name of your organization, and your answers will be kept confidential. This data will be used just for research and some recommendations for improving present and future vocational-technical education in Iran.)

Please answer all the questions and place your answers in the blank spaces.

1. How many technicians did you have in 1975, _____;
and 1976 _____?
2. How many skilled workers did you have in 1975, _____;
and 1976 _____?
3. How many additional technicians do you expect to have in
1977, _____; and 1978 _____?

4. How many additional skilled workers do you expect to have in 1977, _____; and 1978 _____?
5. How many technicians do you need to fill vacancies now? _____
6. How many skilled workers do you need to fill vacancies now? _____
7. How many technicians have received training through:
- _____ (1) vocational-technical college courses
 - _____ (2) vocational-technical high school courses
 - _____ (3) manufacturing training courses (within company)
 - _____ (4) experience only
 - _____ (5) other countries
 - _____ (6) other (please explain) _____
-
8. How many skilled workers have received training through:
- _____ (1) vocational-technical college courses
 - _____ (2) vocational-technical high school courses
 - _____ (3) manufacturing training courses (company training)
 - _____ (4) experience only
 - _____ (5) other countries
 - _____ (6) other (please explain) _____
-
9. How many would you encourage to attend technical training programs, if provided?
- _____ (1) technicians
 - _____ (2) skilled workers

- _____ (3) I don't know
10. Who should provide training program for workers?
Please circle your answer.
- (1) factories
- (2) government vocational-technical schools
- (3) other organizations such as Ministry of Labor and Social Affairs
11. How much education does the technician have?
- _____ (1) under 12th grade
- _____ (2) 12th grade
- _____ (3) two years college
- _____ (4) less than four years college
- _____ (5) I don't know
12. How much education does the skilled worker have?
- _____ (1) no education
- _____ (2) 1-3 grades
- _____ (3) 4-6 grades
- _____ (4) 7-9 grades
- _____ (5) 10-12 grades
13. How much does an average technician earn in wages per month?
- _____ (1) \$100-\$300
- _____ (2) \$301-\$600
- _____ (3) \$601-\$900
- _____ (4) more than \$900

14. How much does an average skilled worker earn in wages per month?

_____ (1) less than \$100

_____ (2) \$100-\$300

_____ (3) \$301-\$600

_____ (4) \$601-\$900

_____ (5) more than \$900

15. Did you find it difficult to hire qualified technicians in your area? Please circle your answer.

(1) yes

(2) no

16. If your answer is yes, why?

(1) lack of applicants

(2) applicants lack of necessary qualifications

(3) other (please explain) _____

17. Did you find it difficult to hire qualified skilled workers?

(1) yes

(2) no

18. If your answer is yes, why?

(1) lack of applicants

(2) applicants lack of necessary qualifications

(3) other (please explain) _____

19. What are your views about the future of your company?

(1) expand

(2) remain the same

(3) decline

20. If your business is not expanding, which of the following is appropriate?

- (1) lack of budgeting
- (2) lack of manpower
- (3) lack of official policy
- (4) lack of administration
- (5) not necessary
- (6) other (please explain) _____

21. Would you be willing to help your employees get additional training?

- (1) yes
- (2) no

22. If your answer is no, please explain why.

Position of person answering questionnaire: _____

Thank you very much for your cooperation.

APPENDIX H: INTERVIEW WITH ADMINISTRATORS OF
VOCATIONAL-TECHNICAL EDUCATION
IN TEHRAN (IRAN)

Code no. _____

Administrators of Vocational-Technical Education in Tehran
no. _____

Date: _____ 19 _____

QUESTIONNAIRE

Interview for Vocational-Technical Education

(NOTE: Your name and answers will be kept confidential. This data will be used just for research and some recommendations for present and future vocational-technical education in Iran.)

1. What do you consider to be the problems and issues of vocational-technical education in Iran?

2. What is your plan for the future to improve vocational-technical education in Iran?

3. What is your suggestion regarding needs and assessments of vocational-technical education in Iran?

Position of person answering the questionnaire _____

Thank you very much for your cooperation.

**APPENDIX I: THE NAME OF ORGANIZATIONS INVOLVED IN
VOCATIONAL-TECHNICAL TRAINING**

Ministries with general policy activities

Education
 Labor and Social Affairs
 Science and Higher Education

Ministry of National DefenseMinistry of IndustryMinistries involving technical activities

Agriculture
 Cooperative Societies and Rural Affairs
 Water and Electricity
 Ways and Communications
 Post Office
 National Defense
 Art and Culture
 Hygiene
 Construction and Housing

Public or semipublic concerns

- National Iranian Steel Company (NISCO)
- Iranian Development and Renovation Organization (IDRO)
- The Iranian Railway Company
- The TABRIZ Machine Production Joint Stock Company
- The ARAK Machine Production Joint Stock Company
- The IRAN General Mines and Foundry Company
- National Iranian Oil Company (N.I.O.C.)
- National Petrochemical Company (N.P.C.)
- IRAN Cereals, Sugar, Crystallized Sugar and Tea Organization's Joint Stock Company
- Joint Stock Company for the Copper Mines of SAR-CHESHMEH and KERMAN
- National Shipping Company ARYA
- Joint Stock Company for Iranian Dairy Industries

Organizations with a training activity

- Industrial Training Board
- FIROUZ GAR medical research and training centre

Technical organizations

- Prefecture of Police
- Gendarmerie
- Organization of unarmed defense
- Institute of Labour and Social Insurance
- National Forests and Landscapes Organization
- Environment Maintenance Organization
- Central Organization of rural cooperative societies

Social or charitable associations

- Rehabilitation society
- Iranian Society of the Lion and the Red Sun
- Imperial Social Services Organization
- Queen PAHLAVI's Foundation (3, p. 149).

APPENDIX J: LETTERS TO: MINISTER OF MINISTRY OF EDUCATION,
MINISTER OF MINISTRY OF SCIENCE AND HIGHER EDUCATION AND
VICE MINISTER OF MINISTRY OF EDUCATION WHO IS IN
CHARGE AS PRESIDENT OF VOCATIONAL-
TECHNICAL EDUCATION IN IRAN

IOWA STATE
UNIVERSITY

Telephone 515-294-4143

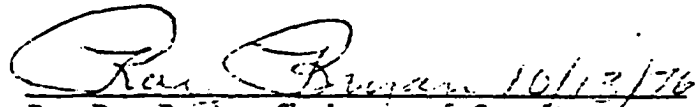
October 12, 1976

President of Vocational-Technical Education
Tehran, IranSubject: Mr. Khosrow Lotfipour of Tehran, Iran wishes permission to conduct a
research study "Vocational-Technical Education" in Tehran.

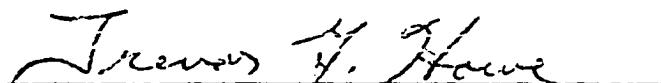
Mr. Lotfipour is a Ph.D. student in Higher Education at Iowa State University, Ames, Iowa. In order to collect the necessary data, Mr. Lotfipour plans to visit Iran in October 1976 and remain until the necessary data are collected. The problem of providing trained manpower appears to be world wide. The United States has recently established many area vocational-technical schools. One of the early problems of these schools was to get the students to attend for specific training. This same problem appears to be one of Iran's current problems. Mr. Lotfipour's study would help provide information that would provide more trained manpower in needed areas.

His research committee seeks your help in making the needed data available to him. Mr. Lotfipour has a copy of his research project for your examination.

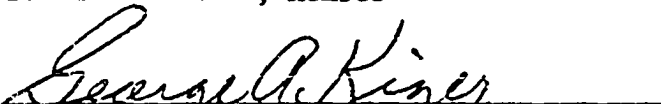
Sincerely,



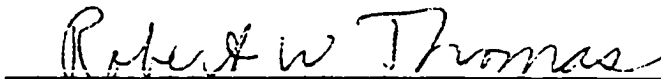
Dr. Ray Bryan, Chairman of Committee



Dr. Trevor Howe, Member



Dr. George Kizer, Member



Dr. Robert Thomas, Member



Dr. J. K. Hvistendahl, Member



Dr. Milton Brown, Member

IOWA STATE
UNIVERSITY

College of Education
Professional Studies
201 Curtiss Hall
Ames, Iowa 50011

Telephone 515-294-4143

October 12, 1976

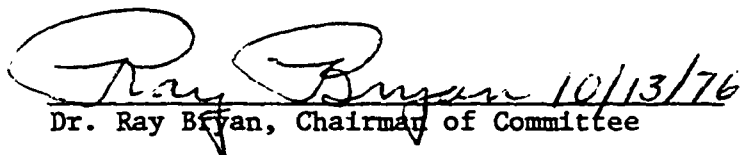
Minister of Science & Higher Education
Tehran, Iran

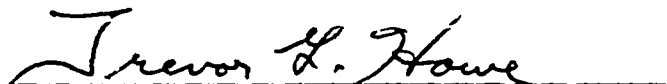
Subject: Mr. Khosrow Lotfipour of Tehran, Iran wishes permission to conduct a research study "Vocational-Technical Education" in Tehran.

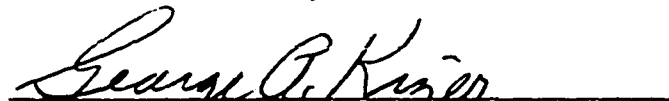
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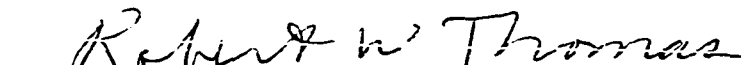
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Sincerely,



Dr. Ray Bryan, Chairman of Committee


Dr. Trevor G. Howe, Member


Dr. George Kizer, Member


Dr. Robert Thomas, Member


Dr. E. K. Hvistendahl, Member


Dr. Milton Brown, Member

IOWA STATE
UNIVERSITY

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201 Curtiss Hall
Ames, Iowa 50011

Telephone 515-294-4143

October 12, 1976

Minister of Education
Tehran, Iran

Subject: Mr. Khosrow Lotfipour of Tehran, Iran wishes permission to conduct a research study "Vocational-Technical Education" in Tehran.

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Dr. Ray Bryan, Chairman of Committee


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Dr. George Kizer, Member


Dr. Robert Thomas, Member


Dr. J. K. Hvistendahl, Member


Dr. Milton Brown, Member