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**An investigation of present vocational-technical education in
Iran**

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Iowa State University, 1987

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An investigation of present vocational-technical
education in Iran

by

Seyed-Alireza Mirzamostafa

A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of the
Requirements for the Degree of
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تقدیم

شهیدای جهاد سازندگی

و
آموزش و پرورش

CHAPTER I. INTRODUCTION

Self-sufficiency is the main purpose of the economic policy of The Islamic Republic of Iran, and the government administrators have started a nation-wide effort toward the achievement of national self-sufficiency. But there are some barriers that the government is faced with which make it difficult to achieve self-sufficiency. Some of these barriers are as follows:

1. About 400,000 students are interested in entering universities and colleges, but less than 80,000 students can enter, and the rest of them do not have any plans for continuing their education, so they are not prepared for the job market.
2. Migration to the big cities, especially the city of Tehran (the capital), is increasing yearly because of the shortage of rural income, and the lack of welfare in the rural areas. The villagers cannot be hired by industrial organizations because of their lack of knowledge, skill, and experience. Therefore, it brings about the decrease of agriculture, food and dairy products; also, it causes many problems in the cities.

The existing situation that delays the achievement of self-sufficiency brings about the necessity of a long-term

and deliberate plan to provide semi-skilled, skilled and technical manpower for industries and rural services toward the expansion of vocational-technical education based on the research findings.

History of Vocational-Technical Education

Motives of establishment

Social incidents have an identical impact on societal changes, and cause changes in all aspects. Industrial revolution is one of them. The influence of industrial revolution in Iran started with the return of the first group of students who were sent to Europe by Abbas Mirza (the Crown Prince) in 1841 (Khaghani, 1973). The high interest of Abbas Mirza to obtain and promote new European industries and techniques opened the gates of western civilization to Iran. During the Nasereddin Shah's monarchy, by increasing the frequentation of Iranian businessmen and merchants to Europe by attention to necessity and expansion of industries, and by Iran's entering the world of communication and markets, development of industries was taken into consideration. This caused significant influence on the expansion of vocational education. For example, dispatch of student groups to study new sciences and formation of Madreseh-Darolfonoon (Polytechnic School) are among the influences. During the Mozaffareddin Shah's

monarchy, action was taken to establish Iranian and German vocational schools. (Honarestan-i-Sanati-Tehran) is among those movements. This is the first formal attention to the vocational-technical education in Iran.

The history of the establishment of vocational schools in Iran goes back to 1907. In 1907, according to Iranian and German negotiations, the first steps were taken to form the Tehran vocational school; but due to the beginning of World War I, this institution was closed down (Ministry of Education, 1982b). After the end of World War I, in 1921, Iran decided to open the Tehran vocational school again with the cooperation of the German competent authorities. In February 1924, this school opened with the presidency of Dr. Strong (Mohajer Pour, 1963). Until 1932, it was the only Iranian vocational school that the other vocational school established in Tabriz (Plan Organization, 1959).

In 1953, according to the agreement between Iran and the Federal Republic of Germany, the government of Germany agreed to donate all necessary machinery and equipment to both Tehran and Tabriz vocational schools, and also to send German technicians and specialists. In November 1958, the first load of donated equipment arrived in Tehran and was installed by technicians and school teachers (Khalighi, 1970). In 1969, a bill requiring funding evening classes

passed, and following the acceptance of students in two sessions, the number of vocational school graduates was doubled.

Until the early 1960s, faculty, facilities, and equipment were provided with the cooperation of the German government. Until the beginning of each world war, German teachers were used to teach in vocational schools, and every time the war began, they left Iran. From 1941 to 1958, after German teachers left Iran, vocational schools were directed by Iranian teachers and specialists (Hamahang, 1985). In the early 1960s, due to the better training of Iranian technicians, it was decided that one vocational school graduate from each school department should be sent to West Germany to continue education and to get acquainted with German vocational education. Meanwhile, vocational school faculty was provided to some extent by graduates returning from West Germany (Hamahang, 1985). In the same year, 74 full-time Iranian teachers were teaching in Tehran vocational schools (Ministry of Education, 1967).

In the beginning, Tehran vocational schools offered two fields of metal works and carpentry that were taught by German instructors (Ministry of Education, 1981). In 1924, the dyeing was added to the other fields. Two hundred and fifty students were admitted each year and the duration of study was four years (Khalighi, 1970). In 1933,

according to approval from the Ministry of Education and Fine Arts, the course of study increased from four years to six years. After the completion of four years, students were studying two more years in the areas of electricity, and/or automotives (Khalighi, 1970). In 1934, the first group of graduates received their diplomas after completion of six years in vocational technical education (Khalighi, 1970). In 1958, according to new approved association article of the Advanced Council of Culture, the duration of study in vocational schools decreased from six years to three years. Meanwhile, the completion of the ninth grade (high school) and successful entering examination scores were determined as conditions for vocational school enrollment. The first year of study was in a general field and in the second year, students selected their major field.

In 1959, 900 students were studying in the areas of carpentry, construction, electricity, mechanics, and metal works (Plan Organization, 1959). Statistics show that until 1959, 1800 students were graduated in the areas of carpentry, electricity, and metal work (Plan Organization, 1959).

Process of Development of Vocational Schools
Before Islamic revolution

In 1935, there were only nine vocational schools in Iran; the Tehran and Tabriz vocational schools were among the most important of these. In 1935, Mashhad vocational school and in 1936, Isfahan vocational school were established by the Ministry of Industries. Because of the establishment of vocational schools in Tehran and other cities, 1939 is the beginning of quantitative change in vocational education. However, one year later because of the beginning of World War II, most of the vocational schools were shut down so that in 1940 only Tehran and Tabriz vocational schools were still open (Ministry of Education, 1983a).

In 1950, Ort Institution, which is an International Jewish institution, opened Ort Vocational School in Tehran, and in 1951, opened another vocational school in Shiraz. No Jewish students could enroll up to more than 10% of the schools capacity (Plan Organization, 1959).

In 1955, Rasht and Ahvaz vocational schools, and in 1956, Ghazvin and Zahedan vocational schools were established. Some foreign teachers were hired as faculty members of these schools, but later on, Iranian teachers were substituted for the foreigners (Plan Organization, 1959).

From the end of World War II to 1964, the number of vocational schools was always changing. The highest number of vocational schools before the Islamic revolution was 210 in 1977.

After Islamic revolution

Vocational schools increased in number every year after the victory of the Islamic revolution. For example, 38 schools were established in 1979, 26 schools in 1980, and 40 schools in 1981. In 1982, 270 new vocational schools were established. This is very significant in the history of vocational education in Iran (Ministry of Education, 1982a).

It is necessary to indicate that the admission of students is based on results of admission tests that students should take before enrollment. In 1982, 26,134 students enrolled in vocational schools, and this number increased to 40,000 students in 1983 (Ministry of Education, 1983b).

Problem of the Study

The problem of this study was to investigate the present situation of vocational-technical education in Iran in order to obtain the direct information from the administrators of the Advanced Council for Concordance of Civil Vocational-Technical Education. This study was

designed to provide an analysis of the reported attitudes of 8th grade junior high school, 12th grade high school, and 12th grade vocational-technical students toward the improvement of vocational technical education in Iran.

The purposes of this study were:

1. To study the present situation of vocational-technical education in Iran.
2. To obtain direct data from the administrators of the Advanced Council for Concordance of Civil Vocational-Technical Education toward the need for semi-skilled, skilled, and technical manpower for industries.
3. To determine the attitude and opinion of 8th grade junior high school students toward continuing their education in vocational-technical institutions.
4. To determine the attitude of 12th grade high school students toward continuing their education in institutions of technology.
5. To determine the attitude of 12th grade vocational-technical school students toward the curriculum, teachers, and facilities.

The Need for the Study

The developing countries, such as Iran, should contribute to reducing their industries' workforce shortages. Of course, such efforts need wide long-term and well-organized policies based on extensive investigations and research. A well-deliberated and long-term planning strategy in vocational-technical education in Iran needs to be studied in the area as follows:

1. Identify and report the performance and legal responsibilities of various ministries and organizations related to V.T.E.
2. Study the V.T.E. trends of the other countries based on their formations and successful experiences.
3. Study the codification and arrangements of various V.T.E. and categorize them by taking advantage of the studies of international research institutions based on realities and requirements of Iran's society.
4. Study the performance of the administration and planning organizations related to V.T.E.
5. Study the existing possibilities and deficiencies of V.T.E. in Iran specifically.

In 1979, the Revolutionary Council passed a law to establish the Advanced Council for Concordance of Vocational-Technical Education. The law says:

It is to give permission to a Council compounded of ministers and elder advisors of Ministries of Education, Cultural and Higher Education, Labor and Social Welfare, Agriculture, Health, and the Planning and Budget Organization to investigate the V.T.E. policies and basic roles being made by this council that are supposed to be performed by all related organizations (Revolutionary Council, 1979).

The results of the Lotifpour study (1976) indicate the lack of research that exists concerning vocational-technical education according to different levels of training:

(1) V.T.E., (2) in high school education, and (3) in higher education.

Lotfipour (1976), because of his research, reported that no scientific methods have been used to indicate the supply and demand of manpower in Iran; it would be beneficial to conduct a nation-wide study of technical training in Iran, because of the 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 to meet the demands of the expanding economy.

The need for this study was to obtain accurate information about the current situation of vocational-

technical education to determine the strengths and weaknesses of the program, and finally, to submit constructive recommendations obtained from the findings to the educational administration. Hopefully, the results of this study will fulfill country-wide needs to a greater extent than they are currently being met.

Questions of this Study

The following questions formed the basis for this study:

1. Is there a student interest in pursuing vocational-technical education?
2. Is there a demand for graduates from the I.V.T.E. in semi-skilled and skilled technical areas?
3. Are there adequate resources available to provide vocational-technical education, such as
 - (a) teachers, (b) financial support, and
 - (c) facilities?
4. What factors would enhance the demand and supply of semi-skilled and skilled manpower resources?

Basic Assumptions for this Study

It is assumed that the existing independent policy of Iran towards its self-sufficiency will result in a demand for more vocational-technical education all over the

country. It is also assumed that sources such as governmental publications and documents are available and provide a sufficient basis for answering the questions raised in this study. It is further assumed that 8th grade junior high school students, 12th grade high school students, and 12th grade V.T.E. students are among the best sources of data to indicate the interest of students pursuing vocational education. It is also assumed that the administrators of the Advanced Council for Concordance of Civil Vocational-Technical Education are the main sources of data to determine the need for semi-skilled, skilled and technical manpower in the areas of labor and industries.

Delimitations of the Study

This study was limited to the following:

1. Survey of students in 20 districts within the city of Tehran (the capital).
2. 8th grade junior high school and 12th grade high school students.
3. 12th grade vocational school students.
4. Administrators of the Advanced Council for Concordance of Civil Vocational-Technical Education.
5. Administrators of the Ministry of Education and the Vice-Ministry of Research and Development.

Procedure of the Study

To carry out this study, the following procedures were used:

1. Review of related literature.
2. Letters to the Ministry of Education.
3. Letters to the Vice Ministry of V.T.E. to obtain their cooperation toward the study.
4. Questionnaires for 8th grade junior high school and 12th grade high school students.
5. Questionnaire for 12th grade vocational school students.
6. Review of items on the questionnaires with the V.T.E. administrators.
7. Revision of the items on the questionnaires.
8. Distribution of the questionnaire to the students by the Ministry of Education.
9. Interview with the Advanced Council for Concordance of Civil Vocational-Technical Education administrators.
10. Analysis of the data with the use of the Iowa State University computer.
11. Preparation of the data analysis, the summary, the conclusions, and researcher's observations.
12. Presentation of constructive recommendations.

Definition of Terms and Abbreviations

To assist in the reading of this study, the following terms were defined:

1. Advanced Council for Concordance of Civil Vocational-Technical Education: The Council was established in 1979. It includes ministers and elder advisors of the Ministries of Education, Higher Education, Labor and Social Affairs, Agriculture, Health, and the Plan and the Budget Organization.
2. Honarestan-i-Sanaati: A vocational technical high school.
3. Honarjoo: A vocational technical high school student.
4. Madresseh-i-Rahnamai: A three-year junior high school.
5. Institute of Technology: A two-year college of technology.
6. Kardan: An institute of technology diploma holder.
7. Karshenas: A Bachelor's Degree holder.
8. V.T.E.: Vocational-technical education.
9. V.T.T.: Vocational-technical training.
10. V.T.S.: Vocational-technical school.

CHAPTER II. REVIEW OF LITERATURE

Introduction

There have been several studies on vocational-technical education programs in Iran and other developing countries conducted in American universities to determine the need and assessment of vocational-technical education. One is the development and administration of vocational and technical education in Iran: Program implications for human resource development. This study was done by Firouz Khoshzamir (1971) at the University of Wisconsin.

The main objective of the Khoshzamir study was the examination of the present administrative structure of vocational education in Iran. Further objectives were (a) to identify factors of success or failure in fulfilling the human resource development plan, (b) to describe the current level of quality and quantity of the vocational education programs in Iran, and (c) to describe the administrative patterns related to the effort made by the Iranian government in developing vocational education programs directed toward human resource development.

The methodology used in his study was a historical-descriptive type of research utilizing the techniques of historical criticism, documentation of both primary and secondary sources, government reports, bulletins, journals,

and other primary sources of information available and related to vocational education and human resource development plans in Iran.

In his study, Khoshzamid made certain selected comparative analyses between Iran and Turkey since both countries share similar social, economic, political and historical circumstances.

The following recommendations were made by Khoshzamid to improve the present organization and administration structure of the educational system in Iran, especially in the field of vocational and technical education.

1. That an organizational structure for the administration of vocational and technical education on the secondary and post-secondary levels in Iran be initiated. With a sound organizational and administrative structure in the secondary and post-secondary schools, the vocational and technical schools can be more properly and effectively administered as related to the making and implementing of policies in curriculum designs, instructional techniques and methods, selecting and upgrading teaching staff, and coordinating the school program with other agencies.
2. That a Board of Vocational and Technical Education be created for each of the 18 provinces in order to establish, foster, and maintain vocational education programs in each area.
3. That advisory committees be organized on local levels in order to bring together education, labor management, industry, and employment services, professional people and representatives from other groups who are interested in the welfare of the students and

the needs of industry and national economic development.

4. That a limited decentralization be implemented at the provincial (or district) 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. That continuing vocational and technical education be developed as an integral function of the whole educational system.
6. That administrators of vocational and technical education programs should continually and actively participate in international conferences, particularly those of UNESCO, related to manpower development as well as vocational and technical developments.
7. That provisions be made to enable students to transfer from one type of educational program to another, particularly between vocational and general education.
8. That curriculum content in vocational and technical education should be functional in the sense that it will be responsive to the economic and social demands and the needs of the nation and the individual.
9. That new and improved post-high school programs in vocational and technical education be developed to train highly skilled workers in emerging semi-professional occupations based on the current occupational requirements brought about by technological change.
10. That vocational training of young school dropouts be initiated in order to equip them with skills that will enable them to join the world of work.
11. That a close coordination between training institutions of vocational and technical education and business and industry be established in order to gear the supply of trained personnel to employer demands.

12. That short-term vocational and technical courses be provided to meet specific occupational requirements (Khoshzamid, 1971, pp. 239-240).

Another research study contained recommendations for a bachelor's degree program in vocational and technical teacher education and industrial technology for colleges and universities in Iran. It was conducted by Fereydoun-Nayeri Gilani (1977) of the University of Arkansas.

The purpose of this study was to prepare a model teacher education program to be used as a guide for the development of an undergraduate program in vocational-technical education for colleges and universities in Iran. The program consisted of development of courses of study in areas of automotive technology, building construction technology, and electricity technology.

The methodology Gilani (1977) used in his study was to develop questionnaires in the brief study of industrial development in Iran and the need of industries in terms of manpower in the various technical areas. The questionnaire was presented to fifty consultants in two groups. The educator consultants were selected from the fifteen colleges and universities in Iran and industrial consultants were selected from the ten industries in order to make choices of most desirable courses of study.

The following recommendations were made based on the findings of the study:

1. The model courses of study developed should be used as a basis for improvement of vocational-technical teacher education in colleges and universities.
2. There is a need to develop a well-defined cooperatively developed program between the technical colleges and industries for students' supervised work experience.
3. Teacher certification qualifications should be reviewed by a team composed of teacher educators, the industrial consultants with the assistance and advice of advisory committees.
4. Teacher preparation should include a bachelor's degree in vocational-technical teacher education with 136 college hours.
5. There is a need for strong cooperation between colleges of education and colleges of engineering in providing courses of study in vocational and technical education programs (Gilani, 1977, p. 156).

Another study of vocational-technical education in Iran (Tehran) was conducted by Khosrow Lotfipour (1976) of Iowa State University. The purpose of this study was 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 semi-skilled, 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 program in Iran (Tehran).

The method used in this study included a survey by questionnaire and interview. The sample randomly chosen for

this study consisted of five groups in Tehran. Group one was 12th grade high school students, group two was 12th grade vocational-technical students, group three was workers from ten factories, group four was personnel officers from ten factories and group five was administrators of vocational education.

The findings of this study were (a) there is a shortage of semi-skilled, skilled and technicians in Iran, (b) there is a lack of coordination between technical training centers, businesses and industries, and (c) there is a lack of administrative experience, a lack of planning and commitment of those who are in such positions to improve vocational-technical training programs in Iran.

The recommendations Lotfipour made in his study are as follows:

1. Evaluation of (a) technical teachers' activities, (b) curriculum, (c) guidance and counseling services' activities, (d) technical books and equipment of vocational-technical schools, and (e) administrative procedures in V.T.S.
2. Establishment of a special committee to serve as a channel between technical trainers, students, parents, and other community occupational groups.
3. Improvement of public relations programs of the colleges, universities and vocational-technical schools.
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.

5. Provide more training and retraining for workers as well as for the villagers who immigrate into the cities.
6. Provide technical training for nonstudents, adults with or without jobs.
7. Persuade working adults to upgrade skills and knowledge.
8. Expand the technical centers to include rural areas.
9. Administrators and supervisors should receive more training and experience in their jobs. 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 (Lotfipour, 1977, pp. 152-154).

Another research study examined technical education in Iran: Attitudes of students and employers, conducted by Guitty Nassehi-Tabrizi (1979) of the University of Illinois at Urbana-Champaign. The research consisted of two efforts. First, the attitude of technical school students on their school, manual work, and their future career was studied. Second, the managers' opinions on the graduates of technical schools were surveyed.

From four technical schools, 531 students in various regions of Iran were included in the first survey, and 36 personnel managers took part in the second survey. Questionnaires were designed and administered to the two groups.

The findings of the study are as follows:

1. The results of the students' questionnaires indicated that a majority of the pupils came from lower or lower-middle class families, with lower than average incomes and few educated parents. The pupils also seemed to have relatively low grade point averages before entering technical schools.
2. Technical school students had doubts about the legitimacy and efficacy of their schools. The responses suggested that pupils chose these institutions as a stepping stone to other future careers.
3. The factor most negatively viewed by the students was the absence of avenues in their program to allow for a future change of careers and the fact that their future was pretty much determined by entering the schools.
4. The schools' endowments had much to do with the students' perceptions of their future prospects. Students from the better endowed schools seemed to be more optimistic about their future prospects.
5. Pupils coming from large city schools were more realistic about their future careers than those coming from non-city schools.
6. Most students said they liked to become engineers in the future, only a small minority said they would rather become skilled workers, for which their school prepares them (Nassehi-Tabrizi, 1979, pp. 118-120).

In her study, Nassehi-Tabrizi concludes that:

1. The managers seemed to be "fairly satisfied" with the work of technical school graduates.
2. Technical graduates were more productive than nonformally-educated workers. The higher

productivity was attributed by managers to knowledge of theory, ability to read blueprints, and creativity.

3. The technical school graduates were found to be slightly less upwardly mobile in the same factory than were regular workers (Nassehi-Tabrizi, 1979, pp. 120-125).

Another research, Attitudes of Iranian Students in the United States Toward Vocational Education in Iran, was conducted by Manouchehr Asefpour (1981) of Indiana University.

The purpose of this study was to investigate the relationship between selected Iranian students' characteristics and their attitudes toward vocational education in Iran.

The methodology employed in this study was that of survey research. The study population was comprised of 1183 Iranian students enrolled in the selected Big Ten Universities in the Midwest Region of the United States during the fall semester of 1980. The study instrument consisted of two sections: (a) personal information, and (b) the modified version of the "Image of Vocational Education (IVE)" scale entitled "Image of Vocational Education - Iran (IVE-I)."

The major findings of the study were: (a) Iranian students' attitudes toward vocational education were significantly associated with their prior training in vocational education in Iran, and

- (b) Iranian students' attitudes toward vocational education were not significantly associated with their sex, field of study, family income, source of income, period of study in the United States, and place of residence in Iran (Asefpour, 1981, p. 131).

Asefpour (1981) concluded that Iranian students in the United States (a) possess an overall favorable attitude toward vocational education in Iran, and (b) do not differ on major characteristics except for prior educational preparation.

The following recommendations are made by Asefpour (1981):

1. Studies should be undertaken to employ the modified version of the IVE scale with other segments of the Iranian population, particularly parents, teachers, and high school students.
2. Research should be conducted to investigate the most practical and effective ways of acquiring knowledge and awareness about the vocational education in Iran.
3. A comparative international research study in the form of pretest - post-test design should be undertaken to investigate the impact of vocational education in these countries on the Iranian students' attitudes by use of the modified version of the IVE scale.
4. A study should be undertaken to investigate the ways of increasing the return rate in study with international students, particularly Iranian students.
5. A study should be undertaken to determine the nature of relationship between attitudes of Iranian students in the United States toward

vocational education in Iran and their actual behavior with reference to vocational education (Asefpour, 1981, pp. 135-138).

Another study of job satisfaction of male and female vocational technical teachers of Esfahan, Iran, was conducted by Mehdi Saidian (1980) of the University of Kansas.

The methodology Saidian used in his study was to translate the 20 item Minnesota Satisfaction Questionnaire (MSQ) and to distribute to a random sample of 200 of the 8807 vocational-technical teachers in Esfahan, Iran.

The findings of his study are as follows:

1. All two-year degree teachers declared they were more satisfied that their job gave them a chance to do different things from time to time, while all four-year degree teachers were more indifferent or dissatisfied.
2. The change to be "somebody" in the community because of their job was more satisfying to the two-year degree teachers when compared to the four-year degree teachers.
3. All two-year degree teachers expressed more satisfaction about their job giving them the chance to try their own method than did all four-year degree teachers.
4. All two-year degree teachers were more satisfied with the way their co-workers got along with each other than were their four-year degree counterparts (Saidian, 1980, p. 150).

In his study, Saidian concluded that

(a) teachers derived the greatest amount of satisfaction from their job giving them the feeling of accomplishment--this observation verified the fact that teachers select teaching and realize a great deal of satisfaction from their job, (b) teachers are satisfied with their jobs because it provides them with the opportunity to do things for others, (c) teachers tend to be more human oriented people--in addition, these teachers expressed a high degree of satisfaction about their job keeping them busy all the time, and (d) teachers were the most dissatisfied with their supervisors and their competence as administrative decision-makers. The fact that administrators give very little positive feedback to teachers for doing good work was cited by these teachers as a major criticism (Saidian, 1980, p. 152).

Another study which evaluated a plan of trade and industrial education for Iran based on trade and industrial education purposes in the United States was conducted by Ebrahim Jabbari (1972) of the University of Missouri-Columbia. The purpose of the study was to develop a plan of trade and industrial education for Iran. The main objectives of Jabbari's study were:

1. To determine the need for a trade and industrial education program in Iran.
2. To design a functional program to meet the needs for training skilled manpower for Iran.
3. To make suggestions for the implementation of a trade and industrial education program in the education system of Iran (Jabbari, 1972, p. 11).

Data for the study were obtained through (a) questionnaires responded to by selected trade and industrial education specialists in the United States; (b) available literature concerning trade and industrial education programs in the United States; (c) available literature and statistical information concerning Iranian general, vocational and technical education; and (d) surveys and reports published by UNESCO, the United Nations and the Agency of International Development.

The findings of the study were as follows:

1. It is necessary to plan trade and industrial education programs to solve the needs for skilled manpower and the educational needs of individuals in Iran.
2. The selected procedures and characteristics utilized by trade and industrial education in the United States are applicable for establishing a trade and industrial education program for Iran.
3. Guidance and counseling services need to be extended from the junior high through all educational levels so that students will be directed into the programs best suited to their needs and interests (Jabbari, 1972, p. 196).

In his study, Jabbari (1972) made these recommendations:

1. That advisory committees be organized on state and local levels for the purpose of bringing together education, management, industry, labor, employment services and professional people and representatives from other groups who are concerned with the welfare of the students and the needs of industry and the national plan for economic development.

2. Provisions should be made to enable students to transfer from one type of educational program to another, particularly between vocational and academic education without the restrictions of a qualifying examination.
3. For the schools that are not equipped with an adequate amount of laboratory facilities, mobile unit facilities or some type of area schools should be initiated.
4. Steps should be taken through the Iranian Ministry of Education to authorize school administrators to establish an employment office for the purpose of placing trade and industrial graduates into an entry level job according to the training they have received (Jabbari, 1972, pp. 198-200).

Another somehow related study is the impact of the Ford Foundation on vocational education in Nigeria-- Implications for future development conducted by Raphael N. Oranu (1977).

The purpose of this study was threefold:

1. To assist both the Ford Foundation authorities in Nigeria and the Nigerian recipients of Ford Foundation aid by critically assessing the extent to which such aid met their original objectives.
2. To help the Nigerian recipients of Ford Foundation aid to determine their unmet needs in vocational teacher education which would enhance the development of vocational teacher education in Nigeria in the future.
3. To look for possible recommendations or guidelines about project design and execution which could be applied to future vocational teacher education projects in Nigeria (Oranu, 1977, pp. 2-3).

The methodology Oranu used in his study was to prepare a questionnaire in three parts: one for the graduates of vocational teacher education, the second for the head of the department of such programs, and the third called for the response of the Ford Foundation office in Lagos, Nigeria.

Project recommendations were as follows:

1. A redefinition or redesigning of the objectives of the program is necessary and should be consistent with the new Federal Government educational policies and plans for Nigeria.
2. Efforts should be made to get the Ford Foundation to continue its assistance aid.
3. The university administration problems could be eliminated or reduced by either making the head of the department directly accountable to the Ford Foundation or any other supporting agency for funds disbursement, or by the Ford Foundation employing a specialist who would be accountable to the Foundation or the supporting agency for the funds it provided.
4. Graduate programs should be established at the University of Nigeria and promising students provided some teaching or research assistantships so that they will become the future leaders for vocational teacher education programs and research.
5. The Federal Nigerian Ministry of Education, the state ministries of education, and the University of Nigeria should establish a personnel need survey study so that underemployment of graduates of vocational teacher education could be minimized.
6. Strong commitment and leadership for the program was necessary. Additional resources will help eliminate some of the problems experienced by the program.

7. Public relations activities should be encouraged by supporting agency and employing public media so as to educate Nigerian public on the potentials of vocational teacher education to the Nigerian society (Oranu, 1977, pp. 174-176).

In his study, Oranu made the following research recommendations:

1. An in-depth program evaluation is now overdue for the department of vocational teacher education. The recent graduates should serve as the subjects for such a study.
2. A need assessment of vocational education teachers should be conducted for Nigeria.
3. An evaluation of the Ford Foundation assistance aid in education generally in Nigeria is essential so that future assistance from the Foundation could be directed to the most deserving areas.
4. Similar study of aid programs in other developing countries should be undertaken to determine if cultural and institutional relationships are like or unlike those reported in this study.
5. These guidelines should be implemented and evaluated in terms of their applicability and usefulness (Oranu, 1977, pp. 176-177).

Among the research studies conducted on the vocational technical education in developing countries in the Middle East is an analysis of job tasks in selected occupations as related to vocational school curriculum in Egypt by Abobakr-Abdeen Badawi (1982) of Indiana University. The purpose of this study was to examine this relationship by

investigating the perceptions of vocational school graduates, their employers, and supervisors, regarding variables of tasks performed on the job. In addition, possible relationships between these perceptions and graduates' degree of job satisfaction were also examined (Badawi, 1982).

In his study, Badawi (1982) selected a sample of 295, 30 and 30, from the population of graduates, supervisors, and employers in secretarial, machine shop, and combination welding. Task lists for the three occupations studied were generated from V-TECS Catalogues and validated by two Egyptian advisory committees. The Minnesota Satisfaction Questionnaire (short form) was used to measure job satisfaction. Cluster analysis, analysis of variance, Pearson Product-Moment Correlations, frequency distributions, and comparison of means were used in data analysis.

The findings of Badawi's (1982) study were:

1. Eighty-four percent of the tasks needed on the job area included in the present curriculum, while 16% of the tasks surveyed were rated as never performed and not important.
2. No statistically significant relationships existed: (a) among graduates' job satisfaction, their assessment of task variables, and their occupation of employment; (b) among graduates' assessment of different variables of tasks--importance, level, and frequency; (c) between graduates and their employers for 66% of the tasks, rated on

importance for hiring, and (d) between graduates and their supervisors for 74% of the tasks rated on required level of performance.

3. Age and job satisfaction were two main factors in clustering graduates' responses (Badawi, 1982, pp. 119-121).

Badawi (1982) concluded that:

1. Graduates' and supervisors' perceptions of the task variables were more similar than the graduates' and employers' perceptions.
2. Respondents' degree of job satisfaction was not related to their perception of the task variables.
3. The Egyptian vocational school curricula in the three selected occupations--secretarial, machine shop, and combination welding--do not precisely match the actual needs of the Egyptian occupational requirements (Badawi, 1982, p. 122).

Another study was the attitudes of students and fathers toward vocational education: The Role of Vocational Education in Economic Development in Saudi Arabia, conducted by Mahmoud-Mohammed Kisnawi (1981) of the University of Colorado. The main purpose of his study was to measure the attitudes of intermediate and secondary school students and their fathers toward vocational-industrial education and manual occupations in the cities of Riyadh, Mecca, and Jeddah in Saudi Arabia. A secondary purpose of his study was to determine if the attitudes of students and fathers were similar toward vocational-industrial education and

manual occupations. Related to this secondary purpose was the determination of the effect of family income, fathers' occupation and fathers' educational levels on their attitudes. A scaled questionnaire that measured attitudes toward vocational-industrial education and manual occupations was constructed. The total number of participants in this study was 486 students and fathers. The questionnaire was administered to 153 intermediate school students, 153 secondary school students, and 180 fathers. A simple random sample technique was used to select three general intermediate schools and the three general secondary schools from each city. Seventeen students were randomly selected from each school. One hundred and eight fathers of the selected students, 60 fathers from each city, were selected as representatives of the Arabian Society. Data were obtained from all participants in the study.

A chi-square test was used for data analysis and the 0.05 level of significance was utilized to evaluate the collected data.

The following conclusions were reached from the data analysis of Kisnawi's study.

1. A majority of intermediate school students revealed negative attitudes toward both vocational-industrial education and manual occupations, while their fathers presented

positive attitudes.

2. A majority of secondary school students and their fathers indicated favorable attitudes toward vocational-industrial education and low attitudes toward manual occupations.
3. Most students indicated that they would not enroll in industrial schools and would not engage in manual occupations in the future.
4. Generally, family income, fathers' occupations and fathers' educational levels had little effect on fathers' and students' attitudes.
5. To change society's negative attitudes toward vocational-industrial education and manual occupations and to stress the value and dignity of manual work, it was recommended that all government agencies in the country emphasize these aspects of vocational-industrial education and manual jobs through television, radio, and the press (Kisnawi, 1981, pp. 260-261).

CHAPTER III. METHOD OF PROCEDURE

Design

Population sampled

The population that was selected for this study included three groups.

Group 1 included all 12th grade vocational school students enrolled in 44 vocational schools in Tehran. A total of 5704 students enrolled in the areas of electricity, auto mechanics, electronics, wood industries, metal works, construction, drafting, and heating and air conditioning in 1980 (Ministry of Education, 1980). The researcher selected a random sample of eight vocational schools with a total of 368 students.

The main objective of surveying this group was to obtain students' evaluation of instructors, program, facilities and equipment. Another objective was to determine the students' interest in continuing their higher education in technical institutions and colleges.

Group 2 included all 12th grade high school students enrolled in 330 high schools in Tehran. A total number of 48,714 students enrolled in the areas of math and physics, experimental sciences, culture and literature, economics, and social sciences in 1980 (Ministry of Education, 1980). The researcher selected a random sample of one high school

from each of the two districts and a total number of nine high schools from 20 districts with the total number of 510 12th grade students in the areas of economics and social sciences, experimental sciences, and math and physics.

The main objective of surveying this group was to obtain the attitudes of 12th grade students toward vocational education.

Group 3 included all the 8th grade boys and girls in junior high schools within 20 districts in Tehran. A total number of 94,411 students were enrolled in 8th grade in 724 junior high schools in Tehran in 1980 (Ministry of Education, 1980). The researcher selected a random sample of one junior high school from each district. Twenty junior high schools with a total number of 196 girls and 214 boys were selected for this study.

The main objective was to determine the interest of the 8th grade students in studying vocational education and intending to enroll in vocational schools.

Questionnaire

The research questions served as the basis for the item development contained in the questionnaires that were constructed. These questionnaires were developed for collecting data from three distinct groups of students. These instruments were translated into Persian for purposes

of this research. Some important factors for motivating the respondents such as length, ease of checking, clarity and confidentiality of information and short answers were considered. The questionnaire items were reviewed with the Vice Ministry of Vocational Education, and the open-ended and unrelated items were omitted, and some important and related items were added to the questionnaire. The final questionnaires were printed and submitted to the Ministry of Education to distribute them to the schools that were preselected by the researcher.

Relevance to the questions

Items 11, 14 and 15 in the high school questionnaire, item 5 in the vocational school questionnaire, and item 15 in the junior high school questionnaire are related to the first question of the study to indicate students' interest in pursuing vocational-technical education. Items 8 through 11 in the vocational school questionnaire are related to the third question of the study to indicate the adequate resources available to provide I.V.T.E. such as (a) teachers, (b) equipment and facilities, and (c) financial support.

Coding

The following important points of questionnaire responses were coded for computer data analysis.

1. Type of questionnaire

2. Type of major (auto mechanics--machine shop--wood industries)
3. Name of vocational school--high school--junior high school
4. Number of responses to the questions
5. Number of nonresponses to the questions
6. Classification of open-ended questions.

The researcher used the SAS computer language for his study and chi square for testing significant relationships between categories. A five percent margin of error was used for the purposes of this study.

Classification of Open-Ended Items

The open-ended items were classified as follows:

1. The students' fathers' jobs were classified as:
(a) industry related, (b) own career,
(c) government employee, (d) retired, and
(e) unemployed.
2. The students' mothers' jobs were classified as:
(a) housewife, (b) teacher, (c) worker, (d) nurse,
(e) government employee, and (f) retired.
3. The 12th grade high school students' majors were classified as: (a) economics and social sciences,
(b) experimental science, (c) math and physics,
(d) literature, (e) social services, and
(f) vocational-technical education.

4. The 12th grade vocational school students' majors were classified as: (a) electricity, (b) construction, (c) auto mechanics, (d) machine shop, (e) wood industry, and (f) metal works.
5. The students' part-time jobs were classified as: (a) industries, (b) nonindustries, and (c) auto mechanics.

Hypotheses of the Study

Hypothesis 1

It was hypothesized that the variable "interest in V.T.E." is independent of the variable sex. That is, it was hypothesized that the proportion of 8th grade junior high school students classified as interested or not interested in V.T.E. is unaffected by the sex classification of the student. The statistical hypothesis will be:

$$H_0: P_1 = P_2$$

$$H_A: P_1 \neq P_2$$

1 = interested in V.T.E.

2 = not interested in V.T.E.

Hypothesis 2

It was hypothesized that there is no significant difference between the mean grade point average of 8th grade junior high school students interested and not interested in

enrolling in vocational high school. The statistical hypothesis would be:

$$H_0: \mu_1 = \mu_2$$

$$H_A: \mu_1 \neq \mu_2$$

1 denotes interested and 2 denotes not interested students.

Hypothesis 3

It was hypothesized that there is no significant differences among the proportions of 8th grade junior high school students classified into three groups based on the amount of information they have about V.T.E. The statistical hypothesis would be:

$$H_0: P_1 = P_2 = P_3$$

$$H_A: P_1 \neq P_2 \text{ or } P_1 \neq P_3 \text{ or } P_2 \neq P_3$$

1 = much information

2 = little information

3 = no information.

Hypothesis 4

It was hypothesized that there is no significant difference between the mean grade point average of 12th grade high school students interested or not interested in

enrolling in institutes of technology. The statistical hypothesis would be:

$$H_0: \mu_1 = \mu_2$$

$$H_A: \mu_1 \neq \mu_2$$

1 denotes interested and 2 denotes not interested student.

Hypothesis 5

It was hypothesized that there is no significant differences among the proportions of 12th grade high school students classified into three groups based on the amount of information they have about V.T.E. The statistical hypothesis would be:

$$H_0: P_1 = P_2 = P_3$$

$$H_A: P_1 \neq P_2 \text{ or } P_1 \neq P_3 \text{ or } P_2 \neq P_3$$

1 denotes much information, 2 denotes little information, and 3 denotes no information.

Hypothesis 6

It was hypothesized that there is no significant difference among the mean grade point average of 12th grade high school students interested in going to universities, institutes of technology, or job market. The statistical

hypothesis would be:

$$H_0: \mu_1 = \mu_2 = \mu_3$$

$$H_A: \mu_1 \neq \mu_2 \text{ or } \mu_1 \neq \mu_3 \text{ or } \mu_2 \neq \mu_3 .$$

Table 3.1 indicates the relationships among hypotheses, the questions of this study, the questionnaire item, type of data, and the type of test applied to test the hypothesis.

Table 3.2 indicates the cross-classifications explored among questionnaires' items, the question of the study, and the type of data in the questions.

Table 3.1. Relationship among hypothesis, study questions and questionnaire items

Hypothesis	Study question #	Item #	Questionnaire ^a	Type of data	Test
1	1	1 and 15	(a)	discrete	chi-square
2	1	3 and 15	(a)	continuous and discrete	t-test
3	1	13 and 15	(a)	discrete	chi-square
4	1	1 and 14	(b)	discrete	chi-square
5	1	3 and 14	(b)	continuous and discrete	t-test
6	1	12 and 14	(b)	discrete	chi-square

^a(a) indicates items on the questionnaire for the 8th grade junior high school students; (b) indicates items on the questionnaire for the 12th grade high school students.

Table 3.2. Relationship between study questions and questionnaire items

Study question #	Items cross-classified	Questionnaire ^a	Type of data
1	4 and 15	(a)	discrete and continuous
1	5 and 15	(a)	discrete
1	9 and 15	(a)	discrete
1	1 and 10	(a)	discrete
4	1 and 16	(a)	discrete
4	10 and major	(b)	discrete
1	11 and major	(b)	discrete
1	13 and school	(b)	discrete
4	15 and major	(b)	discrete
4	6 and major	(c)	discrete
3	9 and major	(c)	discrete
2	10 and major	(c)	discrete
2	11 and major	(c)	discrete
4	12 and major	(c)	discrete
4	13 and major	(c)	discrete

^a(a) indicates items on the questionnaire for the 8th grade junior high school students; (b) indicates items on the questionnaire for the 12th grade high school students; (c) indicates items on the questionnaire for the 12th grade vocational school students.

CHAPTER IV. FINDINGS

The results of the analysis of the data collected for this study are presented in this chapter. The purposes of this study were:

1. To study the present situation of vocational-technical education in Iran.
2. To obtain direct data from the administrator of the Advanced Council for Concordance of Civil Vocational-Technical Education toward the need for semi-skilled, skilled, and technical manpower for industries.
3. To determine the attitude and opinion of 8th grade junior high school students toward continuing their education in vocational technical institutes.
4. To determine the attitude of 12th grade high school students toward continuing their education in institutes of technology.
5. To determine the attitude of 12th grade vocational-technical school students toward the curriculum, teachers, and facilities.

The data obtained by the questionnaires are described in four sections. Section one includes the data obtained from the 12th grade vocational high school students in electricity, auto mechanics, wood industries, machine shop,

metal works, and construction. Section two includes the data obtained from the 12th grade high school students in economics and social sciences, experimental sciences, math and physics. Section three includes the data obtained from the 8th grade junior high school students. Section four includes the hypotheses and their statistical analyses and tests.

Findings Related to Attitude of 12th Grade Vocational High School Students

This section includes the attitudes and opinions of 12th grade vocational high school students toward vocational education. A random sample of eight vocational schools with a total of 368 students was selected from 46 vocational schools with a total of 5704 students in the areas of electricity, auto mechanics, electronics, wood industries, construction, metal works, drafting, and heating and air conditioning. The purpose of collecting data was to obtain students' evaluation of instructors, programs, facilities, and equipment. Another objective was to determine the students' interest in continuing their higher education in technical institutes and colleges.

The questionnaire includes questions concerning students' sex, age, G.P.A., type of part-time job, future plans, job information, opinion about school, school deficiencies, job preparation and important factors, and

ability to find a job. A list of school names and a copy of the questionnaire used for this study are in Appendix A.

Table 4.1 shows the distribution of students by their major. Thirteen (3.53%) of the students were in wood industries, 245 (66.57%) in auto mechanics, 54 (14.67%) in machine shops, 10 (2.72%) in electricity, 14 (3.81%) in construction, 29 (7.88%) in metal works, and 3 (0.82%) did not respond to the question.

Besides the students' major, the following questions were asked.

Students sex. All students responding to this question were male.

Table 4.1. Distribution of students by their major

Major	Frequency	Percentage
Wood industries	13	3.53
Auto mechanics	245	66.57
Machine shop	54	14.67
Electricity	10	2.72
Construction	14	3.81
Metal works	29	7.88
No response	<u>3</u>	<u>0.82</u>
Total	368	100.00

Students age. Table 4.2 shows the distribution of students' age. Four (1.08%) of the students were 17 years old, 76 (20.65%) were 18 years old, 84 (22.83%) were 19 years old, 85 (23.09%) were 20 years old, 50 (16.04%) were 21 years old, 37 (10.06%) were 22 or over, and 23 (6.25%) did not respond to the question.

Students grade point average. There is numeric, rather than alphabetic grading in Iran's educational system. Table 4.3 shows the distribution of the students' grade point average both in the numeric and alphabetic system.

Do you have a part-time job? Of 368 students, 141 (38.31%) had a part-time job and 216 (58.69%) did not have a part-time job. Eleven (3.0%) of the students did not respond to the question.

If the answer to the above question was yes, what is your job? Among 141 students who had a part-time job, 39 (27.66%) of the students had a job related to industry, 25 (17.24%) had auto mechanic jobs, 17 (12.05%) had jobs not related to industry, and 60 (42.55%) did not respond to the question. Table 4.4 shows the distribution of the students' part-time jobs.

What is your plan after graduation? Answers showed that 101 (27.41%) of the students planned to study at a university, 14 (3.81%) planned to study at an institute of technology, 91 (24.72%) planned to work in their major

Table 4.2. Distribution of students' age^a

Age	Frequency	Percentage
17	4	1.08
18	76	20.65
19	84	22.83
20	85	23.09
21	59	16.04
22 or over	37	10.06
No response	<u>23</u>	<u>6.25</u>
Total	368	100.00

^aAge mean = 20.19; age standard deviation = 2.98.

Table 4.3. Distribution of students' grade point average^a

G.P.A.		Frequency	Percentage
Numeric	Alphabetic		
10	D	3	0.8
11	D	5	1.4
12	D	10	2.7
13	C	15	4.1
14	C	14	3.8
15	C	12	3.2
16	B	5	1.4
17	B	8	2.2
18	A	2	0.5
19	A	--	--
20	A	1	0.3
No response ^b		<u>293</u>	<u>79.6</u>
Total		368	100.0

^aG.P.A. mean = 13.94 or C; G.P.A. standard deviation = 2.14.

^bThe reason for high frequency of no response was either the students' low grade point average that they did not want to respond or students' lack of knowledge of their G.P.A. because they were not reported by their school.

Table 4.4. Distribution of students' part-time jobs

Type of job	Frequency	Percentage
Industry	39	27.66
Auto mechanics	25	17.74
Non-industry	17	12.05
No response	<u>60</u>	<u>42.55</u>
Total	141	100.00

field, 45 (12.23%) planned to work in other fields, and 117 (31.80%) did not respond to the question. Table 4.5 shows the distribution of students' plans after graduation.

Have you obtained sufficient guidance about your future job from your instructor or counselor? The responses indicated that 77 (20.93%) of the students obtained guidance from their instructor or counselor, and 209 (56.79%) did not. Eighty-two (22.28%) of the students did not respond to the question. Table 4.6 shows the distribution of students who did or did not obtain guidance about their future job.

What is your opinion about your school? Answers indicated that 62 (16.84%) of the students responded completely satisfied, 170 (46.19%) satisfied, 15 (4.08%) neither satisfied nor dissatisfied, 100 (27.17%)

Table 4.5. Distribution of students' plan after graduation

Students' plan	Frequency	Percentage
Study at university	101	27.44
Study at institute of technology	14	3.81
Work in major field	91	24.72
Work in other field	45	12.23
No response	<u>117</u>	<u>31.80</u>
Total	368	100.00

Table 4.6. Distribution of students obtaining guidance about their future job

Future job guidance	Frequency	Percentage
Students obtained guidance	77	20.93
Students did not obtain guidance	209	56.79
No response	<u>82</u>	<u>22.28</u>
Total	368	100.00

dissatisfied, 14 (3.84%) completely dissatisfied, and 7 (1.91%) of the students did not respond to the question. Figure 1 shows the students' level of satisfaction of their school.

What are the deficiencies of your school? Among 129 students who were completely dissatisfied, not satisfied and neither satisfied nor dissatisfied, 56 (93.41%) indicated lack of equipment and machinery, 1 (0.77%) lack of textbooks, 6 (4.65%) lack of instructors, 63 (48.83%) lack of experienced instructors, 2 (1.55%) lack of similarity of shop equipment being used in school and industry, and 1 (0.78%) indicated other deficiencies (see Table 4.7).

Do vocational-technical schools prepare their students for their future jobs? Of 368 students, 157 (42.7%) responded yes, 189 (51.3%) responded no, and 22 (6.0%) did not respond to the question.

If the answer to the above question is no, specify the important factor. Among 189 students who believed that vocational schools do not prepare students for their future jobs, 64 (33.86%) indicated lack of machinery, 64 (33.86%) lack of experienced instructors, 6 (3.17%) lack of textbooks and their low quality, 1 (.53%) lack of appropriate buildings, 8 (4.24%) lack of appropriate administration, 23 (12.17%) lack of concordancy between

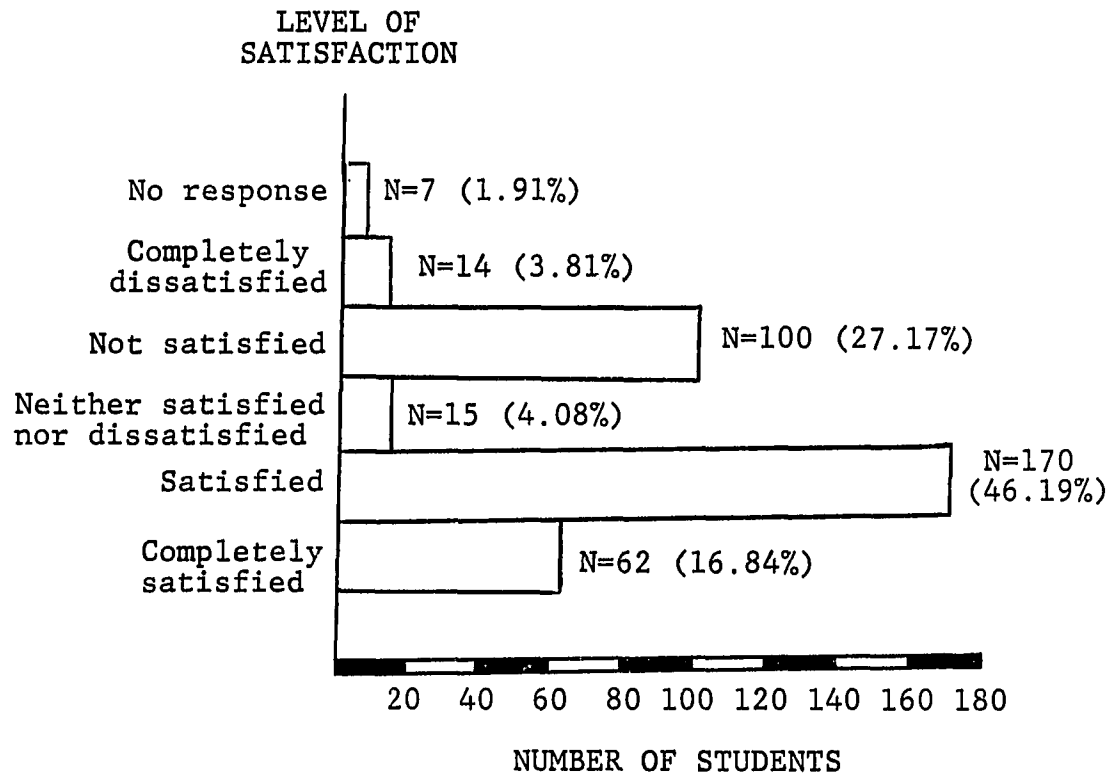


Figure 4.1. Students' level of satisfaction of their school

Table 4.7. Vocational schools' deficiencies

Deficiencies	Frequency	Percentage
Lack of equipment and machinery	56	43.41
Lack of textbooks	1	0.78
Lack of instructors	6	4.65
Lack of experienced instructors	63	48.83
Lack of similarity of shop equipment being used in school and industry	2	1.55
Other	<u>1</u>	<u>0.78</u>
Total	129	100.00

I.V.T.E. and industry needs, 2 (1.07%) lack of similarity of shop equipment being used in school and industry, 17 (9.00%) all of the above factors, and 4 (2.10%) did not respond to the question. Table 4.8 shows the distribution of important factors due to the lack of preparation of students for their future jobs.

Do you think that the students are able to find a job in their major fields? Responses showed that 91 (24.72%) of the students believed they are able to find a job in their major fields, 128 (34.78%) believed they are not, 75 (20.38%) were not sure, and 74 (20.12%) did not respond to the question (see Table 4.9).

Table 4.8. Important factors due to the lack of preparation of students for their future jobs

Important factor	Frequency	Percentage
Lack of machinery	64	33.86
Lack of experienced instructors	64	33.86
Lack of textbooks and their low quality	6	3.17
Lack of appropriate buildings	1	.53
Lack of appropriate administration	8	4.24
Lack of concordancy between I.V.T.E. and industry's needs	23	12.17
Lack of similarity of shop equipment being used in school and industry	2	1.07
All of the above factors	17	9.00
No response	<u>4</u>	<u>2.10</u>
Total	189	100.00

Table 4.9. Distribution of students and their ability to find a job in their major field

Students	Frequency	Percentage
Are able to find a job	91	24.72
Are not able to find a job	128	34.78
Are not certain	75	20.38
No response	<u>74</u>	<u>20.12</u>
Total	368	100.00

If your answer to the above question is no, why?

Among the students who thought they were not able to find a job in their major field or were not certain, 84 (41.87%) responded lack of experience, 18 (8.86%) lack of sufficient jobs, 58 (28.57%) lack of experience and sufficient jobs, and 42 (20.69%) did not respond to the question (Table 4.10).

Table 4.10. Important factors due to the lack of finding jobs in major field

Important factor	Frequency	Percentage
Lack of experience	85	41.88
Lack of sufficient jobs	18	8.86
Lack of experience and sufficient jobs	58	28.57
No response	<u>42</u>	<u>20.69</u>
Total	203	100.00

Findings Related to Attitude of 12th Grade
High School Students

This section includes the attitudes and opinions of 12th grade high school students toward vocational education. A random sample of nine high schools with a total of 510 students in the areas of math and physics, experimental sciences, and social economics were selected for this study. In 1980, a total number of 48,714 students

were enrolled in the areas of physics and math, experimental sciences, culture and literature, economics, and social sciences (Ministry of Education, 1980). The main objective of surveying this group was to obtain the attitudes of 12th grade students toward vocational education.

The questionnaire includes questions concerning students' sex, age, G.P.A., part-time job, job type and number of hours per week, opinion about school, school deficiencies, job preparation, future plan, information about I.V.T.E. and its sources, interest in studying in institute of technology, and major preference. School names and a copy of the questionnaire used for this study are included in Appendix B.

Table 4.11 shows the distribution of students by their major: 431 (84.51%) of the students were in economics and social sciences, 53 (10.39%) were in experimental sciences, and 26 (5.10%) were in math and physics.

All 510 students were male; therefore, the analysis of data from high school students includes just male students. Among the 510 students, 2 (0.39%) were 16 years old, 14 (2.75%) were 17 years old, 160 (31.37%) were 18 years old, 137 (26.86%) were 19 years old, 93 (18.24%) were 20 years old, 42 (8.24%) were 21 years old, 18 (3.53%) were 22 or over, and 44 (8.63%) did not respond

Table 4.11. Distribution of students by their major

Major	Frequency	Percentage
Economics and social sciences	431	84.51
Experimental sciences	53	10.39
Math and physics	<u>26</u>	<u>5.10</u>
Total	510	100.00

to the question (Table 4.12).

Responses to the question about G.P.A. indicated that 12 (2.4%) of the students had an average of A, 19 (3.8%) had an average of B, 53 (10.3%) had an average of C, 32 (6.3%) had an average of D, and 394 (77.2%) of the students did not respond to the question (Table 4.13).

Do you have a part-time job? Among the students, 146 (28.63%) had a part-time job, 344 (67.45%) did not, and 20 (3.92%) of the students did not respond to the question. Table 4.14 shows the distribution of students with their major and part-time job.

If the answer to the above question is yes, how many hours a week? Of 146 students who had a part-time job, 14 (9.59%) of the students worked less than 10 hours per week, 17 (11.65%) less than 20 hours, 35 (23.97%) less than 30 hours, 22 (15.07%) less than 40 hours,

Table 4.12. Distribution of students by their age and major^a

Age	Economics and social sciences	Experimental sciences	Math and physics	Row total
16	2 (0.39) ^b (100.00) ^c (0.46) ^d	-	-	2 (0.39)
17	8 (1.57) (57.14) (1.86)	3 (0.59) (21.43) (5.66)	3 (0.59) (21.43) (11.54)	14 (2.75)
18	132 (25.88) (82.50) (30.63)	14 (2.75) (8.75) (26.42)	14 (2.57) (8.75) (53.85)	160 (31.37)
19	118 (23.14) (86.13) (27.38)	13 (2.55) (9.49) (24.53)	6 (1.18) (4.38) (23.08)	137 (26.86)
20	79 (15.49) (84.95) (18.33)	13 (2.55) (13.98) (24.53)	1 (0.20) (1.08) (3.89)	93 (18.24)
21	35 (6.86) (83.33) (8.12)	6 (1.18) (14.29) (11.32)	1 (0.20) (2.38) (3.85)	42 (8.24)
22 or over	17 (3.33) (94.44) (3.94)	1 (0.20) (5.56) (1.89)	-	18 (3.53)

No response	40 (7.84) (90.91) (9.28)	3 (0.59) (6.82) (5.66)	1 (0.20) (2.27) (3.85)	44 (8.63)
Total	431 (84.51)	53 (10.39)	26 (5.10)	510 (100.00)

^aAge mean = 19.38; age standard deviation = 2.36.

^bTotal percentage.

^cRow percentage.

^dColumn percentage.

Table 4.13. Distribution of students' G.P.A.^a

G.P.A.		Frequency	Percentage
Numeric	Alphabetic		
10	D	3	0.6
11	D	7	1.4
12	D	22	4.3
13	C	21	4.1
14	C	14	2.7
15	C	18	3.5
16	B	9	1.8
17	B	10	2.0
18	A	8	1.6
19	A	1	0.2
20	A	3	0.6
No response ^b	-	<u>394</u>	<u>77.3</u>
Total		510	100.00

^aG.P.A. mean = 14.19; G.P.A. standard deviation = 2.32.

^bThe reason for high frequency of no responses in reporting G.P.A. was either the students' low grade point average that they did not want to report or the students' lack of knowledge of their G.P.A. because they were not reported by their school.

Table 4.14. Distribution of students with their part-time job and major

	Economics and social sciences	Experimental sciences	Math and physics	Column total
Have a part- time job	130 (25.49) ^a (89.04) ^b (30.16) ^c	11 (2.16) (7.53) (20.75)	5 (0.98) (3.42) (19.23)	146 (28.63)
Do not have a part-time job	285 (55.88) (82.85) (66.13)	39 (7.65) (11.34) (73.58)	20 (3.92) (5.81) (76.92)	344 (67.45)
No response	16 (3.14) (80.00) (3.71)	3 (0.59) (15.00) (5.66)	1 (0.20) (5.00) (3.89)	20 (3.92)
Row total	431 (84.51)	53 (10.39)	26 (5.10)	510 (100.00)

^aRow percentage.

^bColumn percentage.

^cTotal percentage.

34 (23.28%) had more than 40 hours per week, and 24 (16.44%) of the students did not respond to the question (Table 4.15).

What kind of job do you have? Among 146 students who had a part-time job, 43 (29.45%) had an industry job, 32 (21.93%) had a non-industry job, 61 (41.78%) were salesmen, and 10 (6.84%) had clerical jobs (Table 4.16).

What is your opinion about your high school education? Answers to this question indicated that 86 (16.86%) of the students were completely satisfied with their high school, 272 (53.33%) were satisfied, 25 (4.90%) were neither satisfied nor dissatisfied, 99 (19.41%) were dissatisfied, 24 (4.71%) were completely dissatisfied, and 4 (0.79%) did not respond to the question. Table 4.17 shows the distribution of students' satisfaction with their major.

What are the deficiencies of your high school education? Responses indicated that 50 (9.81%) of the students believed in lack of equipment, 115 (22.54%) lack of application, 109 (21.37%) lack of relationship to the future job, 28 (5.49%) believed the contents of subjects will be forgotten after a short period of time, 15 (2.95%) responded other factors, and 193 (37.84%) did not respond to the question (Table 4.18).

Table 4.15. Distribution of students with their hours per week part-time job

Hours per week	Frequency	Percentage
10 or less	14	9.59
11-20	17	11.65
21-30	35	23.97
31-40	22	15.07
Over 41	34	23.28
No response	<u>24</u>	<u>16.44</u>
Total	146	100.00

Table 4.16. Distribution of students with their type of part-time job

Type of job	Frequency	Percentage
Industry	43	29.45
Non-industry	32	21.93
Salesman	61	41.78
Clerical	<u>10</u>	<u>6.84</u>
Total	146	100.00

Table 4.17. Distribution of students' satisfaction by their major

	Economics and social sciences	Experimental sciences	Math and physics	Row total
Completely satisfied	78 (15.29) ^a (90.70) ^b (18.10) ^c	6 (1.18) (6.98) (11.32)	2 (0.39) (2.33) (7.69)	86 (16.86)
Satisfied	234 (45.88) (86.03) (54.29)	24 (4.71) (8.82) (45.28)	14 (2.75) (5.15) (53.89)	272 (53.33)
Neither satisfied nor dissatisfied	22 (4.31) (88.00) (5.10)	3 (0.59) (12.00) (15.66)	-	25 (4.90)
Dissatisfied	76 (14.90) (76.77) (17.63)	14 (2.75) (14.14) (26.42)	9 (1.76) (9.09) (34.52)	99 (19.41)
Completely dissatisfied	18 (3.53) (75.00) (4.18)	5 (0.98) (20.83) (9.43)	1 (0.20) (4.17) (3.89)	24 (4.71)
No response	3 (0.59) (75.00) (0.70)	1 (0.20) (25.00) (1.89)	-	4 (0.79)
Column total	431 (84.51)	53 (10.39)	26 (5.10)	510 (100.00)

^aTotal percentage.

^bRow percentage.

^cColumn percentage.

Table 4.18. Distribution of students' opinions about school's deficiencies

School deficiency	Frequency	Percentage
Lack of experimental opportunity	50	9.81
Lack of application	115	22.54
Lack of relationship to the future job	109	21.37
Contents of subjects will be forgotten after a short period of time	28	5.49
Other	15	2.95
No response	<u>193</u>	<u>37.84</u>
Total	510	100.00

Do high schools prepare students for their future jobs? Of the students sampled, 68 (13.33%) answered yes, 270 (52.94%) answered no, 153 (30.0%) didn't know, and 19 (3.73%) did not respond to the question. Table 4.19 shows the distribution of students' responses by their major.

Which of the following occupations would you like to enter? Among 510 students, 23 (4.52%) wanted to be teachers, 4 (0.78%) artists, 20 (3.93%) doctors or nurses, 6 (1.17%) lawyers, 9 (1.76%) engineers, 6 (1.17%) farmers, 34 (6.67%) in the army, 18 (3.52%) public administrators, 53 (10.41%) own career, 70 (15.88%) others, and 258 (50.58%)

Table 4.19. Opinions of students about school's job preparation by their major

Students' opinion	Economics and social sciences	Experimental sciences	Math and physics	Column total
High schools prepare student for future job	59 (11.57) ^a (86.76) ^b (13.69) ^c	5 (0.98) (7.35) (9.43)	4 (0.78) (5.88) (15.38)	68 (13.33)
High schools do not prepare student for future job	230 (45.10) (85.19) (53.36)	27 (5.29) (10.00) (50.94)	13 (2.55) (4.81) (50.00)	270 (52.94)
Don't know	127 (24.90) (83.01) (29.47)	18 (3.53) (11.76) (33.96)	8 (1.57) (5.23) (30.77)	153 (30.00)
No response	15 (2.94) (78.95) (3.48)	3 (0.59) (15.79) (5.66)	1 (0.20) (5.26) (3.89)	19 (3.73)
Row total	431 (84.51)	53 (10.39)	26 (5.10)	510 (100.00)

^aTotal percentage.

^bRow percentage.

^cColumn percentage.

of the students did not respond to the question (Table 4.20).

Table 4.20. Distribution of students' job preference

Job	Distribution	Percentage
Teacher	23	4.52
Artist	4	0.78
Doctor or nurse	20	3.93
Lawyer	6	1.17
Engineer	9	1.76
Farmer	6	1.17
Army	34	6.67
Public administrator	18	3.52
Own career	53	10.40
Social worker	79	15.49
No response	<u>258</u>	<u>50.58</u>
Total	510	100.00

What is your plan after high school graduation?

Responses indicated that 294 (57.65%) wanted to attend universities, 37 (7.25%) wanted to attend institutes of technology, 104 (20.39%) wanted to look for a job, and 75 (14.71%) did not respond to the question. Table 4.21 shows the students' future plan by their major.

Table 4.21. Distribution of students' future plan by their major

Future plan	Economics and social sciences	Experimental sciences	Math and physics	Column total
Attend university	245 (48.04) ^a (83.33) ^b (56.84) ^c	31 (6.08) (10.54) (58.49)	18 (3.53) (6.12) (69.23)	294 (57.65)
Attend institute of technology	33 (6.47) (89.19) (7.66)	2 (0.39) (5.41) (3.77)	2 (0.39) (5.41) (7.69)	37 (7.25)
Look for job	97 (19.02) (93.23) (22.51)	6 (1.18) (5.77) (11.32)	1 (0.20) (0.96) (3.85)	104 (20.39)
No response	56 (10.98) (74.67) (12.99)	14 (2.75) (18.67) (26.42)	5 (0.98) (6.67) (19.23)	75 (14.71)
Row total	431 (84.51)	53 (10.39)	26 (5.10)	510 (100.00)

^aTotal percentage.

^bRow percentage.

^cColumn percentage.

How much information do you have about industrial-vocational education? Among 510 students, 20 (3.92%) had much information, 310 (60.78%) had a little information, 159 (31.18%) had no information, and 21 (4.12%) did not respond to the question. Table 4.22 shows the distribution of high schools and the amount of information their students have about vocational-technical education.

If you have information about industrial-vocational-technical education, how did you obtain it? Responses indicated that 28 (5.49%) of the students obtained it from their instructors, 121 (23.72%) from their parents, 38 (7.46%) from their friends, 109 (21.37%) from their own reading, 34 (6.67%) from other sources, and 180 (35.29%) of the students did not respond to the question (Table 4.23).

If you couldn't attend a university, would you like to continue your education in one of the institutes of technology? Among 510 students, 342 (67.06%) wanted to attend institutes of technology, 83 (16.27%) did not want to attend, and 85 (16.70%) did not respond to the question. Table 4.24 shows students willing to attend institutes of technology by their major.

If your answer to the above question is yes, in which area? Among 342 students who wanted to attend institutes of technology, 24 (7.04%) selected electricity, 33 (9.65%)

Table 4.22. Distribution of high schools and amount of information their students have about vocational-technical education

School	Much information	Little information	No information	No response	Column total
1	5 (0.98) (4.90) (25.00)	70 (13.73) ^a (68.63) ^b (22.58) ^c	23 (4.51) (22.55) (14.47)	4 (0.78) (3.92) (19.05)	102 (20.00)
2	-	48 (9.41) (62.34) (15.48)	25 (4.90) (32.47) (15.72)	4 (0.78) (5.19) (19.05)	77 (15.10)
3	1 (0.20) (1.96) (5.00)	27 (5.29) (52.94) (8.71)	21 (4.12) (41.18) (13.21)	2 (0.39) (3.92) (9.52)	51 (10.00)
4	1 (0.20) (1.89) (5.00)	41 (8.04) (77.36) (13.23)	8 (1.57) (15.09) (5.03)	3 (0.59) (15.66) (14.29)	53 (10.39)
5	2 (0.39) (6.67) (10.00)	18 (3.53) (60.00) (5.81)	9 (1.76) (30.00) (5.66)	1 (0.20) (3.33) (4.76)	30 (5.88)
6	3 (0.59) (6.00) (15.00)	24 (4.71) (48.00) (7.74)	21 (4.12) (42.00) (13.21)	2 (0.39) (4.00) (9.52)	50 (9.80)
7	5 (0.98) (10.42) (25.00)	25 (4.90) (52.08) (8.06)	18 (3.53) (37.50) (11.32)	-	48 (9.41)

8	2 (0.39) (3.45) (10.00)	32 (6.27) (55.17) (10.32)	20 (3.92) (74.48) (12.58)	4 (0.78) (6.90) (19.05)	58 (11.37)
9	1 (0.20) (2.44) (5.00)	25 (4.90) (60.98) (8.06)	14 (2.75) (34.15) (8.81)	1 (0.20) (2.44) (4.76)	41 (8.04)
Row total	20 (3.92)	310 (60.78)	159 (31.18)	21 (4.12)	510 (100.00)

^aTotal percentage.

^bRow percentage.

^cColumn percentage.

Table 4.23. Distribution of students and their source of information about industrial-vocational-technical education

Source of information	Frequency	Percentage
Instructor	28	5.49
Parents	121	23.72
Friends	38	7.46
Reading	109	21.37
Others	34	6.67
No response	<u>180</u>	<u>35.29</u>
Total	510	100.00

Table 4.24. Distribution of students' willingness to attend institutes of technology by their major

	Economics and social sciences	Experimental sciences	Math and physics	Column total
Attend	291 (57.06) ^a (85.09) ^b (67.52) ^c	35 (6.86) (10.23) (66.04)	16 (3.14) (4.68) (61.54)	342 (67.06)
Do not attend	72 (14.12) (86.75) (16.71)	5 (0.98) (6.02) (9.43)	6 (1.18) (7.23) (23.08)	83 (16.27)
No response	68 (13.33) (80.00) (15.78)	13 (2.55) (15.29) (24.53)	4 (0.78) (4.71) (15.38)	85 (16.67)
Row total	431 (84.51)	53 (10.39)	26 (5.10)	510 (100.00)

^aTotal percentage.

^bRow percentage.

^cColumn percentage.

electronics, 9 (2.63%) computer programming, 1 (0.29%) chemistry, 60 (17.55%) aviation technology, 34 (9.94%) mechanics, 26 (7.60%) construction, 8 (2.34%) automotive industries, 32 (9.35%) radio and TV, 2 (0.58%) air conditioning and heating, 35 (10.24%) metallurgy, 35 (10.24%) agriculture, 37 (10.82%) business administration, and 6 (1.75%) did not respond to the question (Table 4.25).

Findings Related to Attitude of 8th Grade Junior High School Students

This section includes the attitudes and opinions of 8th grade junior high school students toward vocational education. A random sample of 20 junior high schools with a total of 410 students from 20 districts of the city of Tehran (capital) were selected for this study. A total number of 94,411 students were enrolled in 8th grade in 724 junior high schools in Tehran in 1980 (Ministry of Education, 1980). The main objective of surveying this group was to obtain the attitudes of 8th grade students toward vocational education.

The questionnaire includes questions concerning students' sex, age, G.P.A., parents' level of education and their job, students' decision to continue education through high school, major preference, important factor to select a major, reasons for not continuing education, occupation preference, job information, vocational education

Table 4.25. Distribution of vocational fields preferred by the students

Field	Frequency	Percentage
Electricity	24	7.02
Electronics	33	9.65
Computer Programming	9	2.63
Chemistry	1	0.29
Aviation technology	60	17.55
Mechanics	34	9.94
Construction	26	7.60
Automotive industry	8	2.34
Radio and TV	32	9.35
Air conditioning and heating	2	0.58
Metallurgy	35	10.24
Agriculture	35	10.24
Business administration	37	10.82
No response	<u>6</u>	<u>1.75</u>
Total	342	100.00

information and its sources, students' interest in enrolling in vocational-technical school, and vocational-technical major preference. A list of junior high school names and a copy of the questionnaire used for the study are included in Appendix C.

Of 410 students, 214 (52.20%) were male, and 196 (47.80%) were female. Answers indicated that 1 (0.24%) was 12 years old, 9 (2.20%) were 13 years old, 137 (33.41%) were 14 years old, 131 (31.95%) were 15 years old, 71 (17.32%) were 16 years old, 29 (7.07%) were 17 years old, 6 (1.46%) were 18 years old, and 26 (6.34%) did not respond to the question. Table 4.26 shows distribution of students' age by their sex.

Responses indicated that 25 (6.09%) of the students had a grade point average (G.P.A.) of A, 64 (15.61%) had a G.P.A. of B, 107 (26.09%) had a G.P.A. of C, 34 (8.29%) had a G.P.A. of D, and 180 (43.90%) of the students did not respond to the question. Table 4.27 shows the distribution of students' G.P.A. by their sex.

Among 410 students, 170 (41.46%) of their fathers had no education, 30 (7.32%) had between grades 1-3, 110 (26.82%) had between grades 4-6, 19 (4.63%) had between grades 7-9, 32 (7.81%) had between grades 10-12, 6 (1.50%) had post high school education, 10 (2.42%) had a B.S. degree, 1 (0.24%) had a M.S. degree, and

Table 4.26. Distribution of students' age by their sex^a

Age	Male	Female	Column total
12	-	1 (0.24) ^b (100.00) ^c (0.51) ^d	1 (0.24)
13	4 (0.98) (44.44) (1.87)	5 (1.22) (1.22) (2.55)	9 (2.20)
14	56 (13.66) (40.88) (26.17)	81 (19.76) (59.12) (41.33)	137 (33.41)
15	68 (16.59) (51.91) (31.78)	63 (15.37) (48.09) (32.14)	131 (31.95)
16	45 (10.98) (63.38) (21.03)	26 (6.34) (36.62) (13.27)	71 (17.32)
17	23 (5.61) (79.31) (10.75)	6 (1.46) (20.69) (3.06)	29 (7.07)
18	6 (1.46) (100.00) (2.80)	-	6 (1.46)
No response	12 (2.93) (46.15) (5.61)	14 (3.41) (53.85) (7.14)	26 (6.34)
Row total	214 (52.20)	196 (47.80)	410 (100.00)

^aAge mean = 14.97; age standard deviation = 1.05; males age mean = 15.22; males age standard deviation = 1.12; females age mean = 14.69; females age standard deviation = 0.88.

^bTotal percentage.

^cRow percentage.

^dColumn percentage.

Table 4.27. Distribution of students' G.P.A. by their sex^a

G.P.A.		Male	Female	Row total
Numeric	Alphabetic			
10	D	2 (0.49) ^b (40.00) ^c (0.93) ^d	3 (0.73) (60.00) (1.53)	5 (1.22)
11	D	6 (1.46) (100.00) (2.80)	-	6 (1.46)
12	D	12 (2.93) (52.17) (5.61)	11 (2.68) (47.83) (5.61)	23 (5.61)
13	C	14 (3.41) (46.67) (6.54)	16 (3.90) (53.33) (8.16)	30 (7.32)
14	C	12 (2.93) (32.43) (5.61)	25 (6.10) (67.57) (12.76)	37 (9.02)
15	C	19 (4.63) (47.50) (8.88)	21 (5.12) (52.50) (10.71)	40 (9.76)
16	B	6 (1.46) (19.35)	25 (6.10) (80.65) (12.76)	31 (7.56)

^aG.P.A. mean = 14.85; G.P.A. standard deviation = 2.13; males G.P.A. mean = 14.18; males G.P.A. standard deviation = 2.09; females G.P.A. mean = 15.24; females G.P.A. standard deviation = 2.06.

^bTotal percentage.

^cRow percentage.

^dColumn percentage.

Table 4.27. Continued

G.P.A.		Male	Female	Row total
Numeric	Alphabetic			
17	B	9 (2.20) (27.27) (4.21)	24 (5.85) (72.73) (12.24)	33 (8.05)
18	A	3 (0.73) (18.75) (1.40)	13 (3.17) (81.25) (6.63)	16 (3.90)
19	A	2 (0.49) (25.00) (0.93)	6 (1.46) (75.00) (3.06)	8 (1.95)
20	A	-	1 (0.24) (100.00) (0.51)	1 (0.24)
No response		129 (31.46) (71.67) (60.28)	51 (12.44) (28.33) (26.02)	180 (43.90)
Column total		214 (52.20)	196 (47.80)	410 (100.00)

32 (7.80%) did not respond to the question (Table 4.28). Responses also indicated that 214 (52.19%) of students' mothers had no education, 34 (8.29%) had education between grades 1-3, 83 (20.26%) had between grades 4-6, 15 (3.65%) had grades between 7-9, 21 (5.12%) had grades between 10-12, 2 (0.48%) had post high school education, 1 (0.24%) had a B.S. degree, 1 (0.24%) had a M.S. degree, and 39 (9.53%) did not respond to the question (Table 4.29).

Table 4.28. Students' fathers education level

Education level	Frequency	Percentage
No education	170	41.46
1-3 grades	30	7.32
4-6 grades	110	26.82
7-9 grades	19	4.63
10-12 grades	32	7.81
Post high school	6	1.50
B.S. degree	10	2.42
M.S. degree	1	0.24
Ph.D. degree	--	--
No response	<u>32</u>	<u>7.80</u>
Total	410	100.00

Table 4.29. Students' mothers level of education

Education level	Frequency	Percentage
No education	214	52.19
1-3 grades	34	8.29
4-6 grades	83	20.26
7-9 grades	15	3.65
10-12 grades	21	5.12
Post high school	2	0.48
B.S. degree	1	0.24
M.S. degree	1	0.24
Ph.D. degree	--	--
No response	<u>39</u>	<u>9.53</u>
Total	410	100.00

Tables 4.30 and 4.31 show the relationship between students' vocational interest and their parents' education level.

What is your father's job? Student responses to the question indicated that 97 (23.66%) of the students' fathers have an industry related job, 168 (40.98%) have their own career, 24 (5.85%) are retired, 67 (16.34%) are government employees, 18 (4.39%) are unemployed, 20 (4.88%) are deceased, and 16 (3.90%) did not respond to the

Table 4.30. Relationship between students' vocational interest and their parents' education level

Mothers' education level	Interested in V.E.	Not interested in V.E.	No response	Row total
No education	80 (19.51) ^a (37.38) ^b (54.79) ^c	101 (24.63) (47.20) (49.75)	33 (8.05) (15.42) (54.10)	214 (52.20)
1-3 grades	13 (3.17) (38.24) (8.90)	16 (3.90) (47.06) (7.88)	5 (1.22) (14.71) (8.20)	34 (8.29)
4-6 grades	26 (6.34) (31.33) (17.81)	43 (10.49) (51.81) (21.18)	14 (3.41) (16.87) (22.95)	83 (20.24)
7-9 grades	2 (0.49) (13.33) (1.37)	11 (2.68) (73.33) (5.42)	2 (0.49) (13.33) (3.28)	15 (3.66)
10-12 grades	5 (1.22) (23.81) (3.42)	14 (3.41) (66.67) (6.90)	2 (0.49) (9.52) (3.28)	21 (5.12)
Post high school and higher degrees	1 (0.24) (50.00) (0.68)	3 (0.72) (50.00) (1.49)	-	4 (0.98)
No response	19 (4.63) (48.72) (13.01)	15 (3.66) (38.46) (7.39)	5 (1.22) (12.82) (8.20)	39 (9.51)

Row total	146 (35.61)	203 (49.51)	61 (14.88)	410 (100.00)
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^aTotal percentage.

^bRow percentage.

^cColumn percentage.

Table 4.31. Relationship between students' vocational interest and fathers' education level

Fathers' educational level	Interested in V.E.	Not interested in V.E.	No response	Row total
No education	70 (17.07) ^a (41.18) ^b (47.95) ^c	76 (18.54) (44.71) (37.44)	24 (5.89) (14.12) (39.34)	170 (41.46)
1-3 grades	10 (2.44) (33.33) (6.85)	15 (3.66) (50.00) (7.39)	5 (1.22) (16.67) (8.20)	30 (7.32)
4-6 grades	35 (8.54) (31.82) (23.97)	60 (14.63) (54.55) (29.56)	15 (3.66) (13.64) (24.59)	110 (26.83)
7-9 grades	3 (0.73) (15.79) (2.05)	10 (2.44) (52.63) (4.93)	6 (1.46) (31.58) (9.84)	19 (4.63)
10-12 grades	11 (2.68) (34.38) (7.53)	17 (4.15) (53.13) (8.37)	4 (0.98) (12.50) (6.56)	32 (7.80)
Post high school and higher degrees	4 (0.99) (23.52) (2.74)	10 (2.44) (58.82) (4.92)	3 (0.73) (17.64) (4.92)	17 (4.14)
No response	13 (3.17) (40.63) (8.90)	15 (3.66) (46.88) (7.39)	4 (0.98) (6.56) (12.50)	32 (7.80)

Column total	146 (35.61)	203 (49.51)	61 (14.88)	410 (100.00)
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^aTotal percentage.

^bRow percentage.

^cColumn percentage.

Table 4.32. Relationship between students' vocational interest and their fathers' job

Fathers' job	Interested in V.E.	Not interested in V.E.	No response	Row total
Industry related	33 (8.05) ^a (34.02) ^b (22.60) ^c	49 (11.95) (50.52) (24.14)	15 (3.66) (15.46) (24.59)	97 (23.66)
Own career	73 (17.80) (43.45) (50.00)	72 (17.56) (42.86) (35.47)	23 (5.61) (13.69) (37.70)	168 (40.98)
Government employee	4 (0.98) (16.67) (2.74)	14 (3.41) (58.33) (6.90)	6 (1.46) (25.00) (9.84)	24 (5.85)
Retired	19 (4.63) (28.36) (13.01)	38 (9.27) (56.72) (18.72)	10 (2.44) (14.93) (16.39)	67 (16.34)
Unemployed	7 (1.71) (38.89) (4.79)	8 (1.95) (44.44) (3.94)	3 (0.73) (16.67) (4.92)	18 (4.39)
Deceased	7 (1.71) (35.00) (4.79)	10 (2.44) (50.00) (4.93)	3 (0.73) (15.00) (4.92)	20 (4.88)
No response	3 (0.73) (18.75) (2.05)	12 (2.93) (75.00) (5.91)	1 (0.24) (6.25) (1.64)	16 (3.90)

Column total	146 (35.61)	203 (49.51)	61 (14.88)	410 (100.00)
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^aTotal percentage.

^bRow percentage.

^cColumn percentage.

question. Table 4.32 shows the relationship between students' vocational interest and their father's job.

What is your mother's job? Answers indicated that 370 (90.2%) of the students' mothers are housewives, 8 (2.0%) are teachers, 12 (2.9%) are workers, 2 (0.5%) are nurses, 3 (0.7%) are government employees, 1 (0.2%) is retired, 4 (1.0%) are deceased, and 10 (2.4%) of the students did not respond to the question (Table 4.33).

Do you plan to continue your education? Among 410 students, 383 (93.4%) wanted to continue their education, 26 (6.3%) did not, and 1 (0.2%) did not respond to the question (Table 4.34).

Table 4.33. Distribution of students' mothers job

Job	Frequency	Percentage
Housewife	370	90.28
Teacher	8	1.95
Worker	12	2.92
Nurse	2	0.48
Government employee	3	0.73
Retired	1	0.24
Deceased	4	0.97
No response	<u>10</u>	<u>2.43</u>
Total	410	100.00

Table 4.34. Distribution of students' willingness to continue their education

	Frequency	Percentage
Continue education	383	93.49
Do not continue education	26	6.34
No response	<u>1</u>	<u>0.24</u>
Total	410	100.00

If yes, in what major? Answers indicated that 112 (27.33%) of the students selected experimental sciences as their high school major, 33 (8.05%) selected economics and social sciences, 1 (0.24%) selected literature, 18 (4.39%) selected physics and math, 84 (20.48%) selected vocational education, 8 (1.95%) selected social services, and 154 (37.56%) did not respond to the question (Table 4.35).

What is the most important factor in selecting your major? Responses indicated that 67 (16.36%) of the students indicated social value as a major factor for selecting their major, 218 (53.17%) indicated self interest, 2 (0.49%) indicated higher income, 15 (3.65%) indicated parent's guidance, 5 (1.22%) indicated a combination of theory and practice, 12 (2.92%) indicated opportunity to enter a university, 7 (1.70%) indicated other factors, and

Table 4.35. Distribution of students' major selection

Major	Frequency	Percentage
Experimental sciences	112	27.33
Economics and social sciences	33	8.05
Literature	1	0.24
Physics and math	18	4.39
Vocational education	84	20.49
Social services	8	1.95
No response	<u>154</u>	<u>37.56</u>
Total	410	100.00

84 (20.49%) of the students did not respond to the question. Table 4.36 shows important factors concerning the students' major selection.

If you do not plan to continue your education, what is the reason? Among 95 students who did not plan to continue their education, 24 (25.27%) indicated lack of money as a major reason, 28 (29.47%) indicated lack of interest, 13 (13.68%) indicated lack of ability, 18 (18.94%) indicated parents' disagreement, and 12 (12.64%) indicated other factors (Table 4.37).

Table 4.36. Distribution of factors concerning students' major selection

Important factors	Frequency	Percentage
Social value	67	16.36
Self interest	218	53.17
Higher income	2	0.49
Parents guidance	15	3.65
Combination of theory and practice	5	1.22
Opportunity to enter university	12	2.92
Other factors	7	1.70
No response	<u>84</u>	<u>20.49</u>
Total	410	100.00

Table 4.37. Distribution of important factors due to discontinuation of education

Important factors	Frequency	Percentage
Lack of money	24	25.27
Lack of interest	28	29.47
Lack of ability	13	13.68
Parents' disagreement	18	18.94
Other factors	<u>12</u>	<u>12.64</u>
Total	95	100.00

Which of the following occupations would you like to enter? Student responses indicated that 38 (9.26%) wanted to have their own career, 19 (4.64%) wanted to be public administrators, 34 (8.29%) wanted to be in the army, 115 (28.05%) wanted to be doctors or nurses, 8 (2.05%) wanted to be artists (photography, painting, etc.), 74 (18.04%) wanted to have a job related to industry, 39 (9.52%) wanted to be engineers, 4 (0.98%) wanted to be farmers, 43 (10.48%) wanted to be teachers, 1 (0.24%) selected other job, and 35 (8.54%) did not respond to the question (Table 4.38).

Have you obtained sufficient information about the jobs from your teacher? Of 410 students, 283 (69.02%) did obtain information from their teacher, 67 (16.34%) did not, and 60 (14.64%) did not respond to the question (Table 4.39).

How much information do you have about industrial-vocational-technical education? Student answers indicated that 36 (8.78%) had much information, 253 (61.71%) had little information, 64 (15.61%) had no information, and 57 (13.90%) did not respond to the question. Table 4.40 shows distribution of students' amount of information about I.V.T.E. by their sex.

If you have information about industrial-vocational-technical education, how did you obtain it? Among 289 students who had information about I.V.T.E., 192 (66.4%) obtained their information from their instructor,

Table 4.38. Students' future job selection

Future job	Frequency	Percentage
Own career	38	9.26
Public administrator	19	4.64
Army	34	8.29
Doctor or nurse	115	28.05
Artist	8	1.95
Industry	72	18.04
Engineer	39	9.52
Farmer	4	0.98
Teacher	43	10.48
Other	1	0.24
No response	<u>35</u>	<u>8.54</u>
Total	410	100.00

Table 4.39. Distribution of students by their sex and job information

Job information	Male	Female	Row total
Have job information	142 (34.63) ^a (50.18) ^b (66.36) ^c	141 (34.39) (49.82) (71.94)	283 (69.02)
Do not have job informa- tion	39 (9.51) (58.21) (18.22)	28 (6.83) (41.79) (14.29)	67 (16.34)
No response	33 (8.05) (55.00) (15.42)	27 (6.59) (45.00) (13.78)	60 (14.63)
Column total	214 (52.20)	196 (47.80)	410 (100.00)

^aTotal percentage.^bRow percentage.^cColumn percentage.

Table 4.40. Students' amount of information about V.E. by their sex

Information about V.E.	Male	Female	Row total
Much information	30 (7.32) ^a (83.33) ^b (14.02) ^c	6 (1.46) (16.67) (3.06)	36 (8.78)
Little information	131 (31.95) (51.78) (61.21)	122 (29.76) (48.22) (62.24)	253 (61.71)
No information	24 (5.85) (37.50) (11.21)	40 (9.76) (62.50) (20.41)	64 (15.61)
No response	29 (7.07) (50.88) (13.55)	28 (6.83) (49.12) (14.29)	57 (13.90)
Column total	214 (52.20)	196 (47.80)	410 (100.00)

^aTotal percentage.^bRow percentage.^cColumn percentage.

30 (10.4%) from their parents, 27 (9.4%) from their friends, 37 (12.8%) from their own reading, and 3 (1.0%) from other sources.

Would you like to continue your education in vocational school? Student responses indicated that 146 (35.61%) wanted to continue their education in vocational school, 203 (49.51%) did not want to continue, and 61 (14.88%) did not respond to the question. Table 4.41 shows students' interest in pursuing vocational education by their sex.

If you would like to continue your education in vocational school (Honareston-i-Sanati), what would be your favorite major? Of 146 students who wanted to continue their education in vocational school, 27 (18.5%) selected electricity as their favorite major, 33 (22.6%) selected electronics, 52 (35.6%) selected mechanics, 1 (0.7%) selected machinery and instruments, 12 (8.2%) selected metallurgy, 2 (1.4%) selected air conditioning and heating, 12 (8.2%) selected construction, and 7 (4.8%) selected other majors (Table 4.42).

Table 4.41. Students' interest in pursuing vocational education by their sex

Students' interest	Male	Female	Row total
Interested in V.E.	125 (30.49) ^a (85.62) ^b (58.41) ^c	21 (5.12) (14.38) (10.71)	146 (35.61)
Not interested in V.E.	58 (14.15) (28.59) (27.10)	145 (35.37) (71.43) (73.98)	203 (49.51)
No response	31 (7.56) (50.82) (14.49)	30 (7.32) (49.18) (15.31)	61 (14.88)
Column total	214 (52.20)	196 (47.80)	410 (100.00)

^aTotal percentage.^bRow percentage.^cColumn percentage.

Table 4.42. Students' favorite major

Major	Frequency	Percentage
Electricity	27	18.49
Electronics	33	22.61
Mechanics	52	35.62
Machinery and instruments	1	0.68
Metallurgy	12	8.23
Air conditioning and heating	2	1.36
Construction	12	8.22
Others	<u>7</u>	<u>4.79</u>
Total	146	100.00

Results of the Hypotheses Testing

Hypothesis 1

It was hypothesized that the variable "interest in V.T.E." is independent of the variable sex. That is, it was hypothesized that the proportion of 8th grade junior high students classified as interested or not interested in V.T.E. is unaffected by the sex classification of the student. Item number 15 on the questionnaire was used to test this hypothesis. On this item, students were asked to respond whether they were interested in continuing their education in vocational school. Of 349 students who responded to this question, 183 (52.44%) were male and 166 (47.56%) were female; 125 (35.82%) male students and 21 (5.02%) female students were interested in vocational education; 145 (41.55%) female and 58 (16.62%) male students were not interested in vocational education.

A chi square procedure was utilized to test this hypothesis. The result of this analysis showed that the variable "interest in V.T.E." is dependent upon the variable sex. That is, the proportion of 8th grade junior high school students classified as interested or not interested in V.T.E. is affected by the sex classification of the students. The null hypothesis was rejected with the chi square value of 110.8; $p < .001$. The results of this test are reported in Table 4.43.

Table 4.43. Chi square test of students interested or not interested in vocational education

Vocational education interest	Sex		Row total
	Male	Female	
Interested in vocational education	125 (35.82) ^a (85.62) ^b (68.31) ^c	21 (6.02) (14.38) (12.65)	146 (41.83)
Not interested in vocational education	58 (16.62) (28.57) (31.69)	145 (41.55) (71.43) (87.35)	203 (58.17)
Column total	183 (52.44)	166 (47.56)	349 (100.00)

Chi square test:

$$\chi^2 = 110.80 \quad p < .001$$

^aRow percentage.

^bColumn percentage.

^cTotal percentage.

Hypothesis 2

It was hypothesized that there is no significant difference between the mean grade point average of 8th grade junior high school students interested and not interested in enrolling in vocational high school. To test this hypothesis, items 3 and 15 on the questionnaire were used. On item 3, students were asked about their grade point average, and on item 15, students were asked to respond whether they were interested or not interested in enrolling in vocational high school.

A t-test procedure was utilized to test this hypothesis. The results, as presented in Table 4.44, indicate significant difference between the mean grade point average of 8th grade junior high school students interested and not interested in enrolling in a vocational high school. With a t-value of -4.26 ($p < .001$), the null hypothesis was rejected, and therefore, students who are interested in enrolling in vocational high school have lower mean grade point averages than students who are not interested. As Table 4.44 indicates, the standard deviation of two groups are almost the same.

Hypothesis 3

It was hypothesized that the variable "interest in V.T.E." is independent of the variable "amount of

Table 4.44. t-test of students' interest in enrolling in vocational high school with their grade point average

Variable	N	Mean	Standard deviation	t-value	2-tailed probability
G.P.A.					
Interested students	64	13.96	2.02	-4.26	0.000
Non-interested students	133	15.30	2.07		

information". That is, it was hypothesized that the proportion of interested and non-interested 8th grade junior high school students is the same for students also classified as having much information and no information about V.T.E.

A chi square procedure was utilized to test this hypothesis. The null hypothesis was rejected with the chi-square value of 14.28, $p < .001$. The results of this analysis indicate that the variable "interest in V.T.E." is dependent upon the variable "amount of information." That is, the proportion of interested and non-interested 8th grade junior high school students is not the same for students also classified as having much information, little information, and no information about V.T.E. The results of this test are reported in Table 4.45.

As Table 4.45 shows, 61.11% of the students who had much information about vocational education were interested in it; 43.78% of the students who had little information about vocational education were interested in it, while 56.22% of them were not interested; 23.81% of the students who had no information about vocational education were interested in vocational education, while 76.19% of them were not interested (Table 4.45).

Table 4.45. Chi square test of 8th grade students' interest and students' information about V.T.E.

Vocational education interest	Vocational education information			Row total
	Much	Little	None	
Interested in vocational education	22 (6.32) ^a (15.07) ^b (61.11) ^c	109 (31.32) (74.66) (43.78)	15 (4.31) (10.27) (23.81)	146 (41.95)
Not interested in vocational education	14 (4.02) (6.93) (38.89)	140 (40.23) (69.31) (56.22)	48 (13.79) (23.76) (76.19)	202 (58.09)
Column total	36 (10.34)	249 (71.55)	63 (18.10)	348 (100.00)

Chi square test:

$$\chi^2 = 14.28 \quad p < .001$$

^aRow percentage.

^bColumn percentage.

^cTotal percentage.

Hypothesis 4

It was hypothesized that there is no significant difference between the mean grade point average of 12th grade high school students interested or not interested in enrolling in institutes of technology.

A t-test procedure was utilized to test this hypothesis. The results failed to reject the null hypothesis and the test results, as presented in Table 4.46, indicate no significant difference between the mean grade point average of 12th grade high school students interested or not interested in enrolling in institutes of technology.

Hypothesis 5

It was hypothesized that there is no significant difference among the proportion of 12th grade high school students classified into three groups based on the amount of information they had about V.T.E.

A chi square procedure was utilized to test this hypothesis. The results of this analysis indicate that the proportion of interested and non-interested 12th grade high school students is the same for students also classified as having much information, little information, and no information about V.T.E. The results of this test are reported in Table 4.47. The chi square value of 3.84, $p < .1$, was not significant to reject the null hypothesis.

Table 4.46. t-test of students' interest in enrolling in institute of technology with their grade point average

Variable	N	Mean	Standard deviation	t-value	2-tailed probability
G.P.A.					
Interested students	75	14.30	2.30	1.29	0.20
Non-interested students	23	13.60	2.14		

Table 4.47. Chi square test of 12th grade students' interest in enrolling in institute of technology and their information about V.T.E.

Vocational education interest	Vocational education information			Row total
	Much	Little	None	
Interested in institute of technology	18 (4.39) ^a (5.47) ^b (90.00) ^c	207 (50.49) (62.92) (82.14)	104 (25.37) (31.61) (75.36)	329 (80.24)
Not interested in institute of technology	2 (0.49) (2.47) (10.00)	45 (10.98) (55.56) (17.86)	34 (8.29) (41.98) (24.64)	81 (19.76)
Column total	20 (4.88)	252 (61.46)	138 (33.66)	410 (100.00)

Chi square test:

$$\chi^2 = 3.54 \quad p < .1$$

^aRow percentage.

^bColumn percentage.

^cTotal percentage.

Hypothesis 6

It was hypothesized that there is no significant difference among the mean grade point average of 12th grade high school students interested in going to universities, institutes of technology, or job market.

A one-way analysis of variance was used to test the hypothesis. The null hypothesis was rejected with a F-value of 3.72, $p < .05$. The results, as presented in Table 4.48, indicate significant difference between groups. The Scheffe test found that differences existed between the mean grade point average of 12th grade high school students interested in going to a university and students interested in going to the job market. The results indicate that students planning to go to institutes of technology have significantly lower G.P.A.s than students planning to go to universities, and higher G.P.A.s than students planning to go to the job market.

Table 4.48. Analysis of variance, mean, standard deviation, and Sheffe multiple comparison test relating to students interested in going to a university, an institute of technology, and the job market

Source	df	SS	MS	F	F prob.
Between groups	2	37.01	18.50	3.72	.02
Within groups	<u>96</u>	<u>447.07</u>	4.97		
Total	98	514.08			

Group	Mean		Standard deviation		N
Going to university	14.74		2.48		62
Going to institute of technology	13.90		1.85		10
Going to job market	13.37		1.64		27

Group	1	2	3	Mean	
Going to university (Grp 1)				*a	
Going to institute of technology (Grp 2)					
Going to job market (Grp 3)					

^aAsterisk (*) denotes pairs of groups significantly different at the 0.05 level.

CHAPTER V. SUMMARY, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

Summary

Statement of the problem

Self-sufficiency is the main goal of the economic policy of the Islamic Republic of Iran; however, there are some barriers that the government faces that make it difficult to achieve self-sufficiency. Some of these barriers are as follows:

1. About 400,000 students are interested in entering universities and colleges, but less than 80,000 students can enter each year; the remainder have no plans for continuing education, and are consequently, unprepared for the job market.
2. Migration to the big cities, especially to the city of Tehran (the capital), is increasing every day because of the shortage of rural income, and the lack of welfare in the rural areas.

In order to achieve economic self-sufficiency, it is necessary for Iran to develop a deliberate, long-term plan to provide semi-skilled, skilled and technical manpower for industries and rural services. Based on the research findings, this would no doubt necessitate an expansion of vocational-technical education.

Purposes of the study

The purposes of this study were:

1. To study the present situation of vocational-technical education in Iran.
2. To obtain direct data from the administrators of the Advanced Council for Concordance of Civil Vocational-Technical Education regarding the need for semi-skilled, and technical manpower for industries.
3. To determine the attitudes and opinions of 8th grade junior high school students toward continuing their education in vocational-technical institutions.
4. To determine the attitudes of 12th grade high school students toward continuing their education in institutes of technology.
5. To determine the attitudes of 12th grade vocational-technical school students toward the curriculum, teachers, and facilities.

Method of procedure

The procedure used in this study included a survey employing a questionnaire; the population that was selected for this study included three groups.

Group 1 included all 12th grade vocational school students enrolled in the 46 vocational schools in Tehran.

The researcher selected a random sample of eight vocational schools, with a total of 368 students.

The main objective of surveying this group was to obtain students' evaluation of instructors, program, facilities, and equipment. Another objective was to determine the students' interest in continuing their higher education in technical institutions and colleges.

Group 2 included all 12th grade high school students enrolled in 330 high schools in Tehran. The researcher selected a random sample of one high school from each of the two districts and a total number of nine high schools from 20 districts. The total number of 12th grade high school students surveyed was 510, most of whom were studying economics and social sciences, the experimental sciences, math and physics.

The main objective of surveying this group was to obtain the attitudes of 12th grade students toward vocational education.

Group 3 included all the 8th grade boys and girls in junior high school in 20 districts in Tehran. The researcher selected a random sample of one junior high school from each district. Twenty junior high schools, with a total number of 196 girls and 214 boys, were selected for this study.

The main objective of surveying this group was to determine the interest of the 8th grade students in

vocational education and their intentions of enrolling in vocational schools.

Coding

The questionnaires were coded for computer data analysis, with important points specified through the coding (the researcher used SAS computer language for his study). The chi square procedure was utilized to test for significant relationships between categories. The t-test and the analysis of variance were utilized to test the significant differences between the means. A five percent margin of error was used for the purpose of this study.

Discussion

This study examines the present situation of vocational-technical education in Iran. Data were collected from junior high school and vocational school students in order to ascertain their attitudes toward and interest in vocational-technical education. The attitudes of each group are discussed in the following three sections.

Discussion of 12th grade vocational school students

This section concerns the attitudes and opinions of 12th grade Iranian vocational school students toward their curriculum, teachers, and facilities. In Tehran and its suburban areas, there were 47 boys' vocational schools, with

a total of 31,299 students, and one female vocational school, with a total of 127 students, in 1980 (Ministry of Education, 1980). Of 31,172 male students, 8895 were in the 9th grade, 8307 were in the 10th grade, 8281 were in the 11th grade, and 5657 were in the 12th grade. Of 127 female students, 24 were in the 9th grade, 15 were in the 10th grade, 41 were in the 11th grade, and 47 were in the 12th grade. Statistics show that only 0.40% of vocational school students were female. Of the 368 male students surveyed by the researcher, 245 (66.57%) were in auto mechanics, 13 (3.53%) were in wood industries, 54 (14.67%) were in machine shop, 10 (2.72%) were in electricity, 14 (3.81%) were in construction, and 29 (7.88%) were in metal works. Distribution of students by their major indicates that most students (66.57%) were in auto mechanics and very few were in wood industries, metal works, or construction. Statistics show that of 47 vocational schools, 44 have curriculum in electrical wiring, 35 have a curriculum in auto mechanics, 22 have a curriculum in construction, 16 have a curriculum in general mechanics and nine have a curriculum in electronics. Less than five vocational schools had a curriculum in wood industries, ceramics, heating and air conditioning, drafting, foundry, dyeing, metal works, printing and casting in 1981. A complete list of Tehran's vocational schools with their curriculum is

included in Appendix D.

Of 75 students who reported their grade point average, 18 (24%) had a D grade average, 41 (54.66%) had a C grade average, 13 (17.34%) had a B grade average, and 3 (4%) had an A grade average. Compared to the high school students' mean G.P.A., vocational school students have a slightly lower mean G.P.A.

The students' mean age was 20.19, with the standard deviation of 2.98. Compared to high school students whose mean age was 19.38 with the standard deviation of 2.36, vocational school students are slightly older than high school students. Of the 368 students, 141 (38.31%) had a part-time job, 39 (27.66%) had industry-related jobs, 25 (17.74%) had jobs in auto mechanics, and 17 (12.05%) had non-industry-related jobs. This study indicates that vocational school students are better able to find a part-time job--particularly in industry-related jobs--than are high school students.

Only 77 (20.93%) of the students surveyed had received guidance about their future careers from instructors or counselors; 209 (56.79%) had not. This indicates that there is a need for more career counseling of vocational education students.

Responses of students indicated that only 14 (3.81%) planned to continue their studies at an institute of

technology, 101 (27.44%) at a university, 91 (24.72%) planned to work in their major field, and 45 (12.23%) planned to work in other fields. Compared to high school students, vocational school students have less interest in attending institutes of technology. This brings about a critical situation in Iran's vocational-technical education.

Among the students who were not satisfied with their schools, 56 (43.1%) cited lack of equipment and machinery and 63 (48.83%) cited lack of experienced instructors as factors. Students' responses are further indications of a need for improvement of equipment and instruction. Students cited these as major reasons for their lack of preparation for future jobs.

Discussion of 12th grade high school students

This section concerns the attitudes and opinions of 12th grade Iranian high school students toward vocational education. Most graduating high school students are interested in entering universities, but due to the shortage of institutes of higher education in Iran, almost 80 percent of all applicants are unable to enter universities. The researcher wanted to find out the attitudes of high school students who may have been unable to enter universities toward vocational education.

All 510 high school students surveyed in this study were male because the questionnaires were distributed to the

male high schools. Of 510 students, 431 (84.51%) were in the economics and social sciences, 53 (10.39%) were in experimental sciences, and 26 (5.10%) were in math and physics.

The 12th grade students' mean age was 19.38 years and the standard deviation was 2.36. Compared to vocational school students, whose mean age was 20.19 with the standard deviation of 2.98, high school students are slightly younger and have a better G.P.A. One hundred and forty-six (28.63%) of the high school students had a part-time job, and 344 (67.45%) did not. More students majoring in the economics and social sciences had part-time jobs than students majoring in math and physics or the experimental sciences.

It was interesting to note that 358 (70.19%) students were satisfied or completely satisfied, while 123 (24.12%) were dissatisfied or completely dissatisfied with their high school. Of 510 students, 224 (43.91%) cited lack of their curricula's application and relationship to the future job as their school's deficiencies. It was noted that 68 (13.33%) students surveyed believed that high schools prepare students for their future jobs, while 270 (52.94%) did not. Two hundred and seventy (52.94%) planned to attend a university, 37 (7.25%) planned to attend an institute of technology, and 140 (20.39%) planned to enter

the work force. Twenty (3.92%) students had much information, 310 (60.78%) had little information, and 159 (31.18%) had no information about vocational education. The survey indicates that there is a need for more information to high school students about vocational education through counseling, public relations, and/or the mass media. Of students who had some information about vocational education, only 28 (5.49%) had obtained it from their parents.

Most students hoped to attend the university; for those who could not, an institute of technology was their first choice for continuing education. Should they fail to be accepted at a university, 342 (67.06%) students said they wanted to attend an institute of technology, while only 83 (16.27%) said they did not.

Discussion of 8th grade junior high school students

This section concerns the attitudes and opinions of 8th grade junior high school students toward vocational education. Of 410 students surveyed, 214 (52.19%) were male and 196 (47.81%) were female. The students' mean age was 14.97 years, which is a common age for this group of students, and their mean G.P.A. was 14.85 out of a possible score of 20, with a standard deviation of 2.13. The female students had a significantly higher mean G.P.A. than did male students.

The educational level of these students' parents was very low: 41.46% of the fathers had no education at all, 34.14% had education between 1-6 grades, 12.44% had education between 7-12 grades, and only 2.66% had received B.S. or M.S. degrees. None had received Ph.D. degrees. The educational level of the students' mothers was similar, but lower. In this category, 52.10% of the mothers had no education, 28.55% had attended school until the sixth grade, 8.77% had attended school until 12th grade, only one had received a B.S. degree, one had received a M.S. degree, and none had received a Ph.D. degree.

The collected data indicated that the students whose fathers had attended school until the 12th grade were more interested in vocational education than were the other groups of students. The data (see Table 4.32) also indicate that no significant relationship exists between students' vocational interest and their father's profession.

Furthermore, 90% of the students' mothers were housewives; very few were teachers and workers.

Of the students who hoped to continue their education, 84 (20.48%) planned to study in vocational education and the rest of the students planned to study in the experimental sciences, math and physics, or the economics and social science fields. Interestingly, 218 (53.17%) of the students indicated self-interest as a major factor in their choice

of major, 15 (3.65%) indicated parental guidance, and 12 (2.92%) indicated opportunity to enter the university. Concerning students' information about vocational education, 36 (8.78%) students had much information, 253 (61.71%) had little information, and 64 (15.61%) had no information about vocational education. Data indicated that 164 (35.61%) students wanted to continue their education in vocational school.

Conclusion

The findings of this research were similar to those identified by Lotfipour 10 years earlier. One distinct difference was that an increased student interest in vocational education was noted in this research.

This study was limited by the delay in analysis of the data which were collected in 1982 and processed in 1987. This study was further limited by analysis of students perceptions and opinions to generalized questions. The data were limited to a regional representation of student perceptions and interests in vocational education.

Based on the analysis of data reported in Tables 4.43 through 4.48, it was concluded that vocational education in Iran is male-oriented, female students have very little interest in pursuing vocational education, and students who have lower grade point averages are more interested in

vocational education. Furthermore, students who have more information about vocational education are more interested in it. There is strong interest among high school students in attending an institute of technology should they fail to be accepted by a university, but there is a lack of information about vocational education in high schools. The researcher believes that there is evidence to support the need for the Ministry of Education to provide more counseling for students and offer some vocational courses in high schools in order to encourage students to continue their education in vocational-technical areas. This would bring about more student satisfaction and higher achievement in high school, particularly for students who were dissatisfied with their high school education because of its lack of relevance to the work place.

Based on the results of interviews that the researcher made with experts in the Advanced Council of Concordance for Vocational and Technical Education, there is a strong demand for graduates from the I.V.T.E. in semi-skilled and skilled technical areas, but the vocational school students should be more familiar with machinery and equipment being used in industries. Furthermore, students should also be up-to-date with new technology in order to adapt with industries.

The analysis of data based on students responses in Tables 4.7 and 4.8 indicates that there is a lack of

machinery and experienced instructors. There are not adequate resources available to provide I.V.T.E. in Iran. The machinery and equipment used in vocational schools are not similar to what is used in industry. It is evident that there is a need for the Ministry of Education to put an effort into major revision and evaluation of textbooks, instructors and equipment.

Finally, more investment in I.V.T.E. to improve instructional procedures, textbook quality and vocational school equipment and machinery would enhance the supply of semi-skilled and skilled manpower resources.

Recommendations

Based on the findings of this study, the following recommendations are suggested to improve vocational-technical education in Iran.

1. Administration

- (a) Participate in international conferences in order to learn about current issues in vocational education.
- (b) Study vocational-technical education in developing countries who have similar cultures and geography, and development problems.
- (c) Subscribe to professional publications and periodicals in order to remain current with

new developments.

- (d) Revise policies in enrolling high school students in order to adjust enrollment in different fields and to meet the country's future needs. In other words, more students should be enrolled in physics and math, the experimental sciences and culture and literature, and fewer should be enrolled in economics and the social sciences.
- (e) Expand technical colleges throughout the country in order to attract and train high school graduates who cannot attend universities in vocations and industries.
- (f) Make local decisions in different states according to the local needs.

2. Adult education

- (a) Continue the existing effort to fight against illiteracy at all ages throughout the country.
- (b) Retrain workers and technicians to improve their skills and increase their knowledge.
- (c) Train and educate unemployed adults to prepare them for the job market.
- (d) Expand rural industrial and vocational education to fill villagers' spare time and

increase their income in order to prevent them from migrating to the cities.

3. Curricula

- (a) Provide more opportunities for vocational school students to enter universities and institutes of higher education by strengthening their knowledge of theoretical subjects such as calculus, trigonometry, algebra, chemistry and physics.
- (b) Offer some vocational courses in high schools in order to give students experience in applying science to the industries.
- (c) Provide and expand laboratories and workshops in high schools in order to link theoretical courses with practice and application.
- (d) Emphasize majors in vocational schools according to the current needs of industries.

4. Evaluation

- (a) Ongoing evaluation of vocational schools' textbooks, machinery, equipment, and instructional procedures.
- (b) Harmonize vocational schools' workshops, machinery, and equipment with industry's. This will help vocational school graduates adapt themselves to industry.

- (c) Hire qualified vocational and technical instructors in order to increase the quality of instruction in vocational schools.
- (d) Strengthen the skills of current instructors through retraining.
- (e) Ongoing evaluation of administrative procedures and policies.
- (f) Ongoing evaluation of career guidance and counseling in vocational schools.

5. Guidance and counseling

This study indicated that 60.78% of high school students had little information and 31.18% had no information about vocational education. Among the students who had information about vocational education, just 5.49% obtained it from their instructors. This study also indicated 61.71% of junior high school students had little information and 15.61% had no information about vocational education. Evidently there is a strong need for career guidance and counseling in both junior and senior high schools. The Ministry of Education should establish guidance and counseling centers in each school to assist and inform students about their educational opportunities and guide them in selecting their future fields of study.

6. Research

More research needs to be conducted about vocational and technical education in other cities besides the capital city of Tehran. The researchers should study the present vocational-technical education in cities such as Tabriz, Isfahan, Mashhad, Ahvaz, etc. The studies will help administration understand vocational educational problems throughout the entire country for better policy making, evaluation and revision.

More research and study also needs to be conducted about vocational and technical education in other developing countries, such as India, Pakistan, and Egypt, in order to learn from their experiences.

The author recommends that researchers be more precise in selecting questionnaire items and in discussing these items with experts. The researchers should also try to collect data from a different sample of the population, and the Ministry of Education should cooperate with researchers in sampling and data collection.

7. Public relations

- (a) Strengthen the relations between vocational-technical education and industries in order

to keep vocational schools up-to-date.

- (b) Dedicate one week per year for introducing vocational education to the nation through radio, television, and daily newspapers.
- (c) Establish organized field trips for students to visit industries.

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APPENDIX A. LIST OF VOCATIONAL HIGH SCHOOLS
(HONARESTAN) IN POPULATION SURVEYED
AND A COPY OF QUESTIONNAIRE

Table A.1. 367 students in 12th grade vocational high schools in Tehran

Name of vocational high school	Number of students	Percentage
1. Honarestan-i-Sanati No. 1 of Tehran	48	13.04
2. Honarestan-i-Sanati No. 2 of Tehran	42	11.42
3. Honarestan-i-Sanati No. 3 of Tehran	37	10.15
4. Honarestan-i-Sanati No. 4 of Tehran	42	11.42
5. Honarestan-i-Sanati No. 8 of Tehran	59	16.04
6. Honarestan-i-Sanati No. 16 of Tehran	45	12.22
7. Honarestan-i-Zamimeh	59	16.03
8. Honarestan-i-Feyzieh	<u>36</u>	<u>9.78</u>
Total	368	100.00

Questionnaire for the 12th grade Vocational-Technical School
(Honarestan-i-Sanati) students

Name of Vocational-Technical School: _____

Major: _____

Dear Student:

The accompanying questionnaire is a part of a research project designed to gather information about the state of "Industrial-Vocational-Technical Education in Iran."

The purpose of this questionnaire is to obtain the opinions of the 12th grade students toward industrial-vocational-technical education in Iran (Tehran).

Note: Your answers will be kept confidential, and they will be used solely for research purposes.

Please answer all questions and circle just one item.

1. Sex: a. Male b. Female
2. Age: _____
3. Grade Point Average: _____
4. Do you have a part-time job? a. Yes b. No
5. If yes, what is your job?
6. What is your plan after graduation?
 - a. Study in a university
 - b. Study in an institute of technology
 - c. Work in your major field
 - d. Work in other fields
7. Have you obtained sufficient guidance about your future job from your instructor or counselor?
 - a. Yes b. No

8. What is your opinion about your school?
- a. Completely satisfied
 - b. Satisfied
 - c. Neither satisfied nor dissatisfied
 - d. Dissatisfied
 - e. Completely dissatisfied
9. What are the deficiencies of your school?
- a. Lack of equipment and machinery
 - b. Lack of textbooks
 - c. Lack of instructors
 - d. Lack of experienced instructors
 - e. Lack of similarity of shop equipment being used in school and that being used in industries
 - f. Others
10. Do vocational-technical schools prepare their students for future jobs?
- a. Yes
 - b. No
 - c. I don't know
11. If the answer is no, specify the important factor.
- a. Lack of machinery
 - b. Lack of experienced instructors
 - c. Lack of textbooks and their low quality
 - d. Lack of appropriate buildings
 - e. Lack of appropriate administration
 - f. Lack of concordancy between industrial-vocational-technical education and industry's needs
 - g. Lack of similarity of shop equipment being used in school and that being used in industry
 - h. All of the above
12. Do you think that the students are able to find a job in their major field?
- a. Yes
 - b. No
 - c. I don't know
13. If your answer is no, why?
- a. Lack of experience
 - b. Lack of sufficient jobs
 - c. Both
 - d. Other, please specify

Thank you for your cooperation. If you have any comments, please write them below.

APPENDIX B. LIST OF HIGH SCHOOLS IN POPULATION
SURVEYED AND A COPY OF QUESTIONNAIRE

Table B.1. 510 students in the areas of economics and humanities, experimental sciences, and math and physics

Name of high school	Number of students	Percentage
Darolfonoon	102	20.00
Shahid Ayat	77	15.09
Shahid Chamran	51	10.00
Shahid Shahsavari	53	10.39
Susan	30	5.88
Kaveh	50	9.80
Beheshti	48	9.42
Shariati	58	11.37
Imami	<u>41</u>	<u>8.05</u>
Total	510	100.00

9. Do high schools prepare students for their future jobs?
- a. Yes b. No c. I don't know
10. Which of the following occupations would you like to enter?
- | | | |
|-------------------------|------------------|-------------------------|
| a. Teacher | b. Artist | c. Doctor or nurse |
| d. Lawyer | e. Architect | f. Scientist |
| g. Businessman | h. Engineer | i. Farmer |
| j. Soldier or policeman | k. Accountant | l. Public Administrator |
| m. Own career | n. Social worker | o. Others |
11. What is your plan after high school graduation?
- a. Attend a university
b. Attend an institute of technology
c. Look for a job
12. How much information do you have about industrial-vocational-technical education?
- a. Much information
b. Little information
c. Almost nothing
13. If you have information about industrial-vocational-technical education, how did you obtain it?
- a. Instructor b. Parents c. Friends
d. Reading e. Others (please specify)
14. If you couldn't attend a university, would you like to continue your education in one of the institutes of technology?
- a. Yes b. No
15. If your answer is yes, in what area?
- | | |
|-------------------------|------------------------------|
| a. Electricity | h. Automotive industries |
| b. Electronics | i. Radio & T.V. |
| c. Computer Programming | j. Airconditioning & heating |
| d. Chemistry | k. Home economics |
| e. Aviation technology | l. Metallurgy |
| f. Mechanics | m. Agriculture |
| g. Construction | |

Thank you for your cooperation. If you have any comments, please write them down below.

APPENDIX C. LIST OF JUNIOR HIGH SCHOOLS IN
POPULATION SURVEYED AND A COPY OF QUESTIONNAIRE

Table C.1. Twenty junior high schools randomly selected from 20 districts of the city of Tehran

Name of junior high school	Sex	Number of students	Percentage
Samadieh Labbaf	Male	22	5.37
Shariati	Male	21	5.12
He'ayat	Male	20	4.87
Aval-i-Moharram	Male	25	6.10
Seyed Azizollah	Male	20	4.87
Sousan	Male	21	5.12
Mohammadi	Male	24	5.86
Twenty Second of Bahman	Male	21	5.12
Moddaber	Male	18	4.39
Ayatollah Sadr	Male	22	5.37
Iran	Female	23	5.61
Zeynab	Female	21	5.12
Pars	Female	18	4.39
Thirteenth of Aban	Female	19	4.63
Bentol Hoda Sadr	Female	22	5.37
Danesh	Female	24	5.86
Maktabozzahra	Female	18	4.39
Alavi	Female	22	5.37
Maryam	Female	9	2.20
Besat	Female	<u>20</u>	<u>4.87</u>
Total		410	100.00

Questionnaire for the 8th grade Junion High School (Madreseh-i-rahnamai) Students

Dear Student:

The accompanying questionnaire is a part of a research project designed to gather information about the state of "Industrial-Vocational-Technical Education in Iran" (Tehran).

The purpose of this questionnaire is to determine your interest to continue your education in vocational-technical school.

Note: Answers will be kept confidential and they will be used solely for research purposes.

Please answer all questions and circle just one item.

Name of Junior High School _____

1. Sex: a. Male b. Female

2. Age: _____

3. Grade Point Average: _____

4. What is the level of your parents' education?

Mother

- a. 0-3
- b. 4-6
- c. 7-9
- d. 10-12
- e. 2 year college
- f. B.S.
- g. M.S.
- h. Ph.D.

Father

- a. 0-3
- b. 4-6
- c. 7-9
- d. 10-12
- e. 2 year college
- f. B.S.
- g. M.S.
- h. Ph.D.

5. What is your father's job?

6. What is your mother's job?

7. Do you plan to continue your education?

- a. Yes
- b. No

8. If yes, in what major?
- | | |
|-----------------------------------|------------------|
| a. Experimental science | b. Humanities |
| c. Economics | d. Literature |
| e. Health | f. Mathematics |
| g. Vocational-technical education | h. Social worker |
| | i. Other |
9. What is the most important factor in selecting your major?
- | | |
|-------------------------------------|------------------------------------|
| a. Social value | b. Self-interest |
| c. Higher income | d. Parents' guidance |
| e. Combination of theory & practice | f. Opportunity to enter university |
| g. Others | |
10. If you do not plan to continue your education, what is the reason?
- | | |
|------------------------|--------------------------|
| a. No money | b. No interest |
| c. No ability (mental) | d. Parents' disagreement |
| e. Others | |
11. Which of the following occupations would you like to enter?
- | | |
|-----------------------------------------|-------------------------|
| a. Own career | b. Public administrator |
| c. Soldier | d. Doctor and nurse |
| e. Artist (photography, painting, etc.) | f. Industry employee |
| | g. Other |
12. Have you obtained sufficient information about the jobs from your teacher?
- | | |
|--------|-------|
| a. Yes | b. No |
|--------|-------|
13. How much information do you have about industrial-vocational-technical education?
- | |
|-----------------------|
| a. Much information |
| b. Little information |
| c. No information |
14. If you have information about industrial-vocational-technical education, how did you obtain it?
- | | | |
|---------------|------------|------------|
| a. Instructor | b. Parents | c. Friends |
| d. Reading | e. Others | |

15. Would you like to continue your education in vocational school?
- a. Yes b. No
16. If you like to continue your education in vocational-technical school (Honares-i-Sanati), what would be your favorite major?
- a. Electricity b. Electronics
c. Mechanics d. Machinery & instruments
e. Metallurgy f. Airconditioning & heating
g. Others

Thank you for your cooperation. If you have any comments, please write them down below.

APPENDIX D. VOCATIONAL SCHOOL NAMES AND MAJORS
IN TEHRAN

1. Honarestan-i-Shahid Beheshti

Electricity
Auto mechanics
Mechanics
Wood industries
Electronics

2. Honarestan-i-Nomber 2

Electricity
Auto mechanics
Mechanics
Construction

3. Honarestan-i-Nomber 3

Electricity
Auto mechanics
Mechanics

4. Honarestan-i-Nomber 4

Electricity
Auto mechanics
Mechanics

5. Honarestan-i-Nomber 5

Electricity

6. Honarestan-i-Nomber 6

Electricity
Auto mechanics

7. Honarestan-i-Nomber 7

Electricity
Electronics
Heating and air conditioning

8. Honarestan-i-Nomber 8

Electricity
Auto mechanics
Construction

9. Honarestan-i- Nombor 9
Electricity
Auto mechanics
Construction
10. Honarestan-i-Nomber 10
Electricity
Auto mechanics
Construction
11. Honarestan-i-Assad-Abadi
Electricity
Auto mechanics
12. Honarestan-i-Towhid
Electricity
Auto mechanics
Mechanics
13. Honarestan-i-Danesh-o-Fann
Auto mechanics
14. Honarestan-i-Be'sat
Electricity
Auto mechanics
Construction
15. Honarestan-i-Road and Construction
Construction
16. Honarestan-i-Dokhtaran (girls vocational school)
Electricity
Construction
Electronics
Ceramics
17. Honarestan-i-Enghelab-Tehran
Electricity
Auto mechanics

18. Honarestan-i-Azadi

Electricity
Auto mechanics
Mechanics

19. Honarestan-i-Pasdaran-i-Enghelab-i-Eslami

Electricity
Auto mechanics

20. Honarestan-i-Azadi-Phelestin

Electricity
Mechanics
Heating devices
Heating and air conditioning
Electronics
Industrial drafting

21. Honarestan-i-Iran technic

Electricity
Auto mechanics

22. Honarestan-i-Behbahani

Electricity
Auto mechanics
Mechanics
Foundry

23. Honarestan-i-Sizdah-i-Aban

Electricity

24. Honarestan-i-Pisheh

Electricity
Auto mechanics
Construction
Mechanics

25. Honarestan-i-Payam-i-Omid

Electricity
Mechanics
Foundry

26. Honarestan-i-Shahid Sarvandi

Electricity
Auto mechanics
Construction
Electronics

27. Honarestan-i-Ghods

Electricity
Auto mechanics
Construction
Wood industries

28. Honarestan-i-Herfeh

Electricity

29. Honarestan-i-Hafez

Electricity
Construction
Mechanics

30. Honarestan-i-Khaneh San-at

Auto mechanics

31. Honarestan-i-Yarjani

Electricity

32. Honarestan-i-Hadid

Electricity
Auto mechanics
Mechanics

33. Honarestan-i-Sanaye-Shimiai

Chemistry industries
Dyeing

34. Honarestan-i-Nemouneh

Electricity
Construction
Mechanics
Electronics

35. Honarestan-i-Kar-Amouz
- Electricity
 - Auto mechanics
 - Construction
 - Mechanics
36. Honarestan-i-Mobtaker
- Electricity
 - Auto mechanics
 - Construction
 - Electronics
37. Honarestan-i-Shohada
- Electricity
 - Auto mechanics
38. Honarestan-i-Mojtamae Number 1
- Electricity
 - Auto mechanics
 - Construction
 - Mechanics
 - Metal industries
 - Heating devices
 - Electronics
 - Printing
 - Foundry
39. Honarestan-i-Nezam-e Mafi
- Electricity
 - Construction
 - Mechanics
40. Honarestan-i-Paayghah-e-Enghelab
- Electricity
 - Auto mechanics
41. Honarestan-i-Nejatollahi
- Electricity
 - Auto mechanics
 - Construction

42. Honarestan-i-Asre-Enghelab

Electricity
Auto mechanics
Mechanics

43. Honarestan-i-Andarz goo

Electricity
Auto mechanics
Construction

44. Honarestan-i-Feyzieh

Electricity
Auto mechanics
Construction

45. Honarestan-i-Shahre-rey

Electricity
Auto mechanics
Construction
Mechanics
Metal industries
Foundry
Electronics

46. Honarestan-i-Karaj

Electricity
Auto mechanics
Construction

47. Honarestan-i-Varamin

Electricity
Auto mechanics
Construction