Clayton Ringgenberg

RESOURCES AND NEEDS FOR HIGHER EDUCATION IN IOWA

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STUDY NO. II

MANPOWER PROBLEMS AND HIGHER EDUCATION IN IOWA:

A NEW ALLIANCE

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CHAPTER I

INTRODUCTION

Many current studies of higher education conducted on state-wide bases have had as their main concern the obtaining of a complete picture of the colleges or universities studied, from which projections into the future might be made by educational experts. These studies have been extensive surveys of present enrollment, and projections of future enrollment; surveys of internal administration; surveys of faculty with emphases on educational status, numbers and needs for the future; and then through comparative and projective techniques, institution by institution throughout a state, a state-wide picture of higher education has been realized. Some directions were then set down for the future.

A new direction for a study in higher education was taken recently by the Iowa Legislature through the Legislative Research Bureau. This study was authorized and funds were granted for it by the 1959 Iowa General Assembly. This new direction took the form of a basic needs study, one part of which was concerned with a study of manpower problems.

The Problem and Its Objectives

The problem of this study was to examine the manpower problems and present programs of higher education in Iowa in order to determine how and to what extent they were related. Once these relationships were found, it was a purpose of this study to analyze them and to propose an alliance for the next decade in Iowa.

Objectives and Purposes of the Study

The major objectives and purposes of this study were as follows:

1. To analyze manpower demands in Iowa for the decade of the sixties by studying the shifting personnel requirements of agriculture, business, industry, and the professions.

2. To analyze qualitatively and quantitatively the educational preparation which present workers, employers, and leaders in education, business, and industry believe necessary for the future.

3. To compare manpower demands and the objectives of college and university curricula and programs in light of their potential alliance for the next decade.

4. To relate higher education and the total manpower problem in Iowa, as they are being related in nation-wide projections.

5. To draw conclusions from the manpower demands and the expressed needs of the people for higher education in Iowa, setting up alternative policies by which college programs may be brought into harmony with the demands and needs.

6. To provide the State Legislature with basic facts necessary for the determination of public policy relating to higher education.

Significance of the Problem

Scientific and technological advances have vaulted America into an era of rapid change. This in itself is difficult to comprehend and to convey to others; nevertheless, free people everywhere, and Americans especially, must make an all-out effort to look at the problems of society as they relate to education, and vice-versa. Educators, business and industrial leaders, statesmen and politicans are discussing and writing today on the subject of manpower problems.

When American educators speak of manpower, references are often made to the gifted student, the guidance and education of the talented, potential leaders of the future. Reference is also made to the major responsibility of school and society for the vocational-professional counseling of all students, as well as of the gifted and talented ones. Questions of a basic value nature arise as soon as individual differences are discussed. Concerns are brought to light when suggestions are made for special programs in schools which hint at elitism or stratification of American youth.

Business and industrial leaders are concerned about the kind of education and training given through institutions of higher learning, especially in relation to the scientific discoveries and technological advances which put demands on workers, which are different from those of the past. It is not unusual for a company or industry to regear its whole operation, including the retraining of personnel, to meet demands of new discoveries and techniques. Having workers who are educated to make changes easily is vital to business and industrial leaders. As never before, higher education and the total economy--the world of work--must be closely interrelated for the best interests and advancement of both, as well as for those of American society as a whole.

Statesmen and politicians continually pose questions about manpower problems especially in times of stress, when strikes, social inequalities, or drastically fluctuating consumer indexes create employment difficulties which directly affect the national and international economy and security. At this time in history, American government officials, military leaders, politicans at home and abroad must view manpower problems even more comprehensively. The involvement of the whole society of free men in work and leisure, and the very close relationships and continuing communications necessary on the international level make this comprehensive outlook mandatory. Many countries which are desirous of creating free and democratic societies need the help of America with their future development in all areas of social endeavor.

This study can contribute to a social awakening which seems necessary if education beyond the high school in Iowa is going to maintain itself at a high level, and continue to make changes essential to the better preparation of the population for working and living in the next decade.

Basic Assumptions

Certain general assumptions were at the base of this inquiry. A clearer view of the problem, its objectives, and the thought that has gone into its analysis require that these assumptions be stated at the outset.

1. It is imperative that Americans retain the emphasis on freedom of the individual to pursue his own way of life, including the choice of his own work. One's life and work must be personally and socially satisfying and significant if present-day manpower problems are to be solved within the traditional framework of a democracy.

2. Available manpower, the human resources of society, are fitted for and placed in the vital areas of the nation's work through the processes of formal education and guidance. Individual abilities, interests and choices are considered in full knowledge of the potential for employment in the basic occupational structure.

3. Higher education contributes to the process of upgrading of both the individual and society; this is a significant phenomenon if scientific, technological, and cultural progress is to continue.

4. Higher education should be made more readily available to a larger number of people in America, being mindful that personal and individual needs, and society's special needs, must be central in its objectives.

5. Tying together the national and world-wide manpower demands more closely with higher education means that changes are in order in the programs and curricular offerings of existing institutions of higher learning, and that new types of institutions will be projected and developed for the future.

6. Programs of general education which include such disciplines as communication skills, art, music, literature, the natural, physical, and social sciences encourage the development of a thoughtful, critical, humane citizenry so necessary to world understanding and to the successful management of international affairs. These courses, liberally taught, serve as the skeletal framework for all formal education beyond the high school.

7. The rate of educational change, characterized by the slow, deliberate, argumentative process of the past, must be accelerated in order to meet individual needs, and present demands for manpower. If higher education is to take its logical and natural position in American society as a major service agency for satisfying both the needs of individuals and of society, change is inevitable. Technology advances so rapidly that one can be prepared to know only that learning is a continuous process. Change must be regarded as a natural phenomenon and its rate must be understood thoroughly if courses, teaching techniques, and educational processes are to keep up with scientific and technological advances.

8. It is possible to learn from the people of the state of Iowa what they think about the education they have received, what education is needed in their present jobs, and what kinds of education beyond the high school they envisage as desirable for the future.

9. A stratified sampling can be taken of a large population and if one applies interview and questionnaire techniques to this sampling, the results will be representative of the larger population.

10. Data gathered by this method can be processed and statistically treated. When these data, in the form of manpower needs, are examined with full knowledge of present programs of higher education in Iowa, which are the resources, recommendations for future planning for education beyond the high school can be made.

Increased size of the college population in the next decade and scientific and technological advances will make it imperative that higher education in Iowa reappraise its curricula and programs in view of the demands of individuals, the state, and society at large.

Hypotheses

Manpower problems and higher education in Iowa are closely related.

Youth in Iowa are not being offered the terminal educational programs needed to prepare them to live and work in a rapidly changing, technologically oriented society.

Changes in the economy of Iowa, as in the nation, will bring about changes in programs of higher education.

Definitions

In order to clarify certain ideas, definitions of manpower, higher education and general education have been formulated. It is within these definitions that the thoughts of this study are framed.

Manpower is that sum total of human resources of a nation, composed of both individuals alone and those working together in groups, voluntarily set to work and daily contributing to the numerous and varied tasks necessary to the development of a freedom-loving, forward-moving society.

This definition is couched in American democratic traditions with the view that these are the only desirable ones for the future. Manpower--human resources--was used in this reference throughout the study. Force or coercion, the rigid, inflexible fitting of people into the occupational structure of society, has no place in this definition, nor in any connotation of this definition of manpower.

Higher education is that formal education beyond the high school which has as its main function to enlarge and enhance the learning experiences of individuals. Higher education permits them to expand their understanding of themselves, of the occupational structure and their role in relation to it, and of people with whom they must learn to live in a dynamic, rapidly changing world. Various kinds of public and private institutions above the high school level, from certificate and diploma-granting schools with specialized curricula, through degree-granting colleges, universities and professional schools, make up a diverse "system" of higher education.

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Various types of educational offerings beyond the high school ought to be available to individuals. Human beings have various kinds of potentials and needs, to say nothing of the needs that society has for individuals with varying ability and educational backgrounds and training. One cannot conscientiously support diversity in higher education for its own sake. But one can support it on the basic premise that individual and societal needs are varied, and that institutions which serve these needs ought to exist and be supported.

General education is that school, college, or university program which provides a breadth and depth of learning considered to be the best preparation for living. Individuals are thereby helped to a self-knowledge that is projected through a national and world view. Further, general education based on the arts and sciences of man is an aid to critical and analytical thinking, cultural and artistic perception and appreciation, and that universal understanding, basic and necessary for living in the world with persons of all faiths, races and nationalities.

Any educational program without an orientation and commitment to the ideas of general education presents a distorted view to its constituency. Therefore, this study is premised on concepts of general education as these permeate the programs and curricula of all education beyond the high school.

History and Background of Iowa Manpower Problems and Higher Education

There are evidences that in present, highly mobile populations the young people of Iowa, like others in neighboring states, are leaving the farms and moving into the cities. The reason this happens is understood when one realizes that within the last 40 years agricultural, scientific, and technological advances have enabled a farmer to more than triple the acreage he tills. He thereby is enabled to serve more of the state and nation's population than he was able to do in previous years. More children of farm families need to find employment in places other than the family enterprise--the farm.

Urbanization, a result of industrial expansion and agricultural changes, has created several problems for young people. For example, their educational programs must be viewed in full light of what they will be doing after they complete a prescribed period of schooling. Urbanization and changes in agricultural pursuits have created new opportunities for young people; however, if education is not planned with special regard to the occupational needs, then young people soon move where they can find the kind of education which will fit them for the work they wish to do.

There is reason to believe that it will be difficult for Iowa to fill the needs of the future labor market with capable young Iowa residents if the statistics from a study by the Employment Security Division are accurate about the aging of employees in manufacturing and related industries in a city like Waterloo. The following quotation from the Waterloo Study gives evidence for this statement:

> The concentration of older workers in the specific occupational categories listed above is one of the outcomes of a generally aging work force. It is of interest to note here the changing age structure of the work force since 1950. A comparison of the age of the work force of Black Hawk County in 1958 with the 1950 census data indicates that the

work force in the area is becoming older. In 1950, 46.5 per cent of the work force was between the ages of 14 and 34, while in 1958 only 38.2 per cent was in this age range. This accounts for an 8.3 per cent decrease in this age range. The 35 to 44 age group registered the largest percentage gain of workers, 5.0 per cent above that of 1950.

The 45 and over age group also registered a gain from 33.1 per cent to 35.5 per cent. If the trend toward an aging work force continues, the replacement of older workers will become a serious problem. The general aging of the work force can be attributed to two factors: the low birth rate during the depression of the thirties, and the migration of young workers to other areas.[1]

Young people, of the number necessary to replace older workers who retire and leave employment for various other reasons, are not entering Iowa industry in large enough numbers. This age imbalance causes problems which tie in with the afore-mentioned observations.

From the publication Iowa Industrial Resources Fact Book, distributed by the Iowa Development Commission, come two good reasons for a gradual increase in industrial and manufacturing enterprises.

Iowa needs additional industry for two vital reasons:

1. To balance her agricultural economy--Iowa's political and economic leaders realized many years ago the need for a balanced economy in the state. This goal has been successfully approached, but not completely realized. Even though the value of industrial output now exceeds cash farm receipts, more plants are needed in the state to provide a broad industrial base.

2. To keep her most priceless resource--her youth--the tremendous development of agricultural machinery since World War II has released thousands of men and women from the farm labor force. Iowa's growing industries have absorbed many of these young people but many others are forced to leave the state to get employment. In spite of Iowa's remarkable gains in manufacturing employment, more industry is needed to keep these people in the state.[2]

Statistics show that much of Iowa's present economy is being greatly enhanced by business and manufacturing interests both agricultural and non-agricultural. Since 1948, again from information in the Fact Book,[3] the value of Iowa's industrial output has more than doubled, now exceeding the value of farm products sold. Leading industries are as follows: (1) food and kindred products,

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[1] Iowa Employment Security Commission, A Look at Waterloo's Work Force, p.25.

[2] Iowa Development Commission, Iowa Industrial Fact Book, p. 22.

[3] Ibid., p. 17.

(2) machinery (except electircal), (3) printing and publishing, (4) chemicals and products, and (5) fabricated metal products.

Other industries contributing to Iowa's industrial economy are electrical machinery, primary metal industries, and stone, clay, gypsum and glass products. Table 1 illustrates Iowa's industrial growth. The Iowa Development Commission prepared this Table in April of 1958. Iowa, it is shown, is ahead of the United States average in percentage of growth of all industries.

TABLE 1. IOWA'S GROWTH BY INDUSTRY CATEGORY COMPARED WITH UNITED STATES (1947-1954)*

	Percentage increase of employees in manufacturing	
	In Iowa	In United States
All industries	16.0	13.0
Electrical machinery	79.0	19.0
Primary metals	74.0	-3.0
Transportation equipment	68.0	46.0
Pulp, paper, and products	68.0	17.0
Rubber products	52.0	-4.0
Miscellaneous manufacturers	38.0	52.0
Controlling and scientific instruments	38.0	10.0
Printing and publishing	25.0	12.0
Lumber and wood products	20.0	1.0
Stone, clay and glass	17.0	7.0
Chemicals and allied products	15.0	17.0
Fabricated metals	14.0	7.0
Food and kindred products	10.0	14.0
Furniture and fixtures	10.0	7.0
Machinery (except electrical)	-4.0	-1.0

*Iowa Development Commission, Preliminary Report 1954 Census of Manufacturers Bulletins: U. S. MCG-1; Iowa MC-114, *MC-S14.

These data support the theory that Iowa is a state in transition and illustrate how deeply the economy of the state is involved with manufacturing and business interests.

Again making use of data compiled by the Iowa Development Commission from findings of the 1954 Census of Manufacturers, the information on Table 2 is reported.

TABLE 2. INFORMATION ABOUT 3,320 MANUFACTURING ESTABLISHMENTS IN IOWA*

Number of plants	Per cent of plants	Number employed	Per cent of number employed	Per cent of payrolls	Per cent of value added by manufacturing
2006	60.4	Less than 10	4.7	3.1	3.4
1040	31.3	10 to 99	40.7	18.1	17.9
180	5.4	100 to 249	17.8	15.9	15.5
63	1.9	250 to 999	18.9	19.0	20.5
31	.9	1000 or more	38.9	43.9	42.7

*Iowa Development Commission, Preliminary Report 1954 Census of Manufacturers Bulletins: U. S. MCG-1; Iowa MC-114, *MC-S14.

Other data furnished by the Development Commission show that the 55 Iowa industrial plants with more than 500 workers employ 49.5 per cent of all manufacturing employees. These plants also provided 54.6 per cent of the total manufacturing payrolls in the state and produce 53.7 per cent of the "value added" by manufacturing.

Comparisons with United States data on manufacturing reveal that Iowa employs 16 per cent of its labor force in manufacturing enterprises while 25 per cent of the total labor force of the United States is employed in manufacturing. Table 3 illustrates additional comparisons between Iowa and United States manufacturing data.

TABLE 3. PERCENTAGE OF MANUFACTURING PLANTS IN IOWA AND IN THE UNITED STATES BY NUMBER EMPLOYED*

Number employed	Iowa	United States
Less than 50	85.4	83.4
50 to 499	12.9	14.9
500 or more	1.7	1.7

*Iowa Development Commission, Preliminary Report 1954 Census of Manufacturers Bulletins: U. S. MCG-1; Iowa MC-114, *MC-S14.

A vital element in state and national economy is the labor force--those human resources--that manpower which it takes to produce and sell goods to the consumer.

Projected figures for the Iowa labor force reveal surpluses in farm laborers in most sections of Iowa, assuming little or no migration.

The following table (Table 4) which appeared in the recent document published by the Iowa College-Community Research Center, illustrates this projected employment scene through 1965.

Surpluses of farm labor are even greater when viewed in relation to agricultural employment specifically, and then projected from this reference. It is vital to the people in the farm labor force to make opportunities for them in Iowa if the state is to hold its residents and continue to make economic progress.

Study Program by State Agencies in Iowa

Certain state agencies in Iowa have involved themselves in the study of manpower problems and education beyond the high school. One main source of information has been the Iowa Employment Security Division. The Vocational Education Division of the Department of Public Instruction also has been active in this area of study.

In 1955, the State Board of Regents, which directs the activities of the teachers college and the state universities, and the Department of Public Instruction, by joint efforts and action, created a new body designed to study problems of higher education. This group, called the Iowa Study Committee, gathered questions and problems, state-wide in higher education, and projected studies for the future. This committee is representative of all types of institutions in Iowa and its membership includes laymen, professional staff, administrative leaders, and members of governing boards of institutions of higher learning. This study committee has no authority to dictate educational policy to any institution. Its main function is to provide information and communication for Iowa educators and laymen.

Also in 1955, the Iowa Employment Security Division began a manpower study program. There seemed to be a need for this division to ascertain basic information about the Iowa occupational scene and labor market in order to give help in employment counseling, job placement, industrial planning, personnel administration and to provide information about educational planning and support. The first study of Polk County, was improved upon in later studies, two of which were the Dubuque Skill of the Work Force Study in 1957[4] and A Look at Waterloo's Work Force,[5] published in 1958.

These studies were meaningful and reveal interesting data for consideration. A brief summary of the Dubuque and Waterloo studies shows some of the trends of the two cities.

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[4]Iowa Employment Security Commission, Dubuque Manpower Resources Survey, 72 pp.

[5]Iowa Employment Security Commission, A Look at Waterloo's Work Force, 35 pp.

TABLE 4. ACTUAL TOTAL EMPLOYMENT IN IOWA, 1950, PROJECTED IOWA TOTAL LABOR FORCE IN 1965, ASSUMING NO MIGRATION, AND PROJECTED TOTAL EMPLOYMENT IN 1965, BY STATE ECONOMIC AREAS*

Economic area	Actual total employment, 1950	Total projected job opportunities (agricultural and non-agricultural), 1965	Projected total labor force, 1965	Projected net labor surplus or deficit, 1965	Projected net labor surplus or deficit, 1965, as a percentage of projected total labor force, 1965
Total (State)	1,002,180	1,092,918	1,252,988	160,070	12.78
Northwest	64,050	62,718	84,392	21,674	25.68
Southwest	129,533	121,069	161,983	40,914	25.26
North-central	40,537	39,775	55,202	15,427	27.95
Central	198,202	242,544	243,814	1,270	0.52
South-central	43,361	38,417	56,112	17,695	31.54
Southern tier	63,027	55,618	78,537	22,919	29.18
North-east	154,299	157,205	192,568	35,363	18.36
East-central	89,856	87,845	113,136	25,291	22.35
Southeast	219,315	287,727	267,244	-20,483	-7.66

*Iowa College-Community Research Center, Iowa, A State in Social and Economic Transition, Table 3.

A Brief of the Dubuque Survey

Dubuque had a population increase of 23.7 per cent in the ten-year period 1940-1950 with recent evidence of increasing population. Of the total work force in Dubuque, the 43 per cent increase in manufacturing has added 2,000 workers to industry from 1950-1958. Sixty per cent of the total work force is in manufacturing, construction, and skilled labor. The economy is rather well balanced due to the diversification of occupations which prevents a "boom or bust" situation during times of nation-wide imbalances.

Educational qualifications for employment are very important, with the majority of entry positions requiring at least high school graduates, with the college graduate desired on several jobs.

Two recommendations of the Dubuque survey involve (1) the expansion and improvement of community training facilities, and (2) the improvement of educational training programs. The details of these recommendations support the need for a more concentrated state-wide effort on joining manpower problems and education beyond the high school. It is evident that industry and higher education need to be planning together for the coming decade in Iowa.

A Brief of the Waterloo Survey

Population increase in the Waterloo area was 26 per cent, over the period 1940 to 1950. Fifty per cent of the total work force is in non-agricultural occupations. As has been pointed out previously, the significance of an older work force was revealed in the Waterloo study. Many young people will be needed to replace the older workers in the next decade. Educational requirements are very important in the Waterloo work situation with 64 per cent of the entry positions requiring at least high school graduates.

The expansion and improvement of opportunities for education and training also are prominent in the recommendations of the Waterloo study. These ideas range from the encouragement of employee self-government programs to the assisting of educational leaders in the development of curricula which will help students to become skilled workers. These recommendations are premised on the idea that a Community Manpower Council should be formulated. Concentrated efforts should be put forth on the study of manpower requirements of industries in Waterloo, both now and in the future, and on the training given by employers such as the apprentice training given in local educational systems.

Department of Public Instruction Studies

Educational Needs of Iowa's Young Adults,[6] 1951, was a study of the high school graduates of 12 counties in Iowa. The State Research Committee authorized

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[6]State of Iowa, Educational Needs of Iowa's Young Adults, 7 pp.

by the Department of Public Instruction surveyed some 2,000 high school graduates and employers and learned much about educational needs and interests.

Results showed that of the 1946 and 1949 graduating classes in the 12 counties selected, one-third of these young adults went on to college, and one-third went to junior college.

Trained interview teams sought out industrial and business leaders to learn what they thought young adults needed in the way of education for the future. It was learned that college graduates were needed for leadership positions in industry and business. Employers wanted more employees with more education, particularly general education, with emphasis on knowledge of, and skills in, language usage. Employers stated that educational facilities on the state and local level were not being used to best advantage.

Public agencies, employers of 16,000 workers, including teachers, and federal employees in Iowa, were cited as having an interest in a large number of workers with education beyond high school.

Most of the 2,000 high school graduates returning applications expressed a desire for more academic and cultural training. English skills were found to be the biggest need of these young adults. Several types of technical-vocational training also were needed.

A study published in March of 1960, by the Department of Public Instruction, shows that of the 27,355 students graduating from Iowa public schools in 1959, 34.24 per cent of them went on to college.[7]

In coupling the results of these studies, with those of Dubuque and Waterloo, it is seen that there is need for the kind of planning which involves business leaders, educational leaders, and community leaders in a cooperative venture with the expressed purpose of providing better educational and employment opportunities for the young adults of Iowa.

Teacher Education in Iowa

Professional upgrading of teachers is a topic of much concern in Iowa. Not only is there a need to prepare better teachers for the lower grades, but also, there is the problem of finding enough teachers for the large number of small local schools scattered over the state. Forward looking administrators and planners in the State Department of Public Instruction are moving ahead with the consolidation of smaller school districts. In the long run this should help to upgrade the quality of education the pupil receives. Migration of teachers both within the state and out of the state continues to be a problem.

The following figures taken from the Cedar Rapids Gazette of January 4, 1960, reveal what has happened to recent Iowa-trained teachers. One-third of the Iowa-trained elementary teachers teach in other states. Nine out of ten elementary

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[7]Iowa Department of Public Instruction, Survey Shows 43.7% of High School Graduates Continue Their Education, 7 pp.

teachers trained in Iowa were teaching in 1960, but three of these nine taught in other states. There is obvious need for examination of this situation to understand the reasons for migration.

Facts About the Labor Force in the Nation and in Iowa

Higher education will have an important role in meeting the nation's manpower needs during the next decade. The United States Department of Labor statistics show that a large number of people will continue to be seeking work. White collar employment will continue to be on the increase. The labor force will be increased from 73 million to 87 million from 1960 to 1970. This is a net increase of nearly one-fifth of the nation's labor force.[8]

Farm employment has decreased by more than five million workers since 1940. Increased mechanization is the major reason for increasing farm productivity and decreasing farm labor forces. Added to these are the results of improved fertilizers and insecticides which increase productivity. Advanced ways of handling and feeding stock help to make farm life more attractive; but fewer people are being involved. With these improvements, however, more people are being served by each farmer.

Major adjustments in the occupational structure must come from new industrial job opportunities, by expansion of present facilities, or by the establishment of new ones. Young people leaving the farm can be provided job opportunities by this means of adjustment as can those farm people who may be needing supplemental income.

Information from the report of the Iowa College-Community Research Center[9] reveals that Iowa farmers have a stake in the further industrial development of Iowa as the Iowa manufacturers have a vital interest in the state's agricultural development. About half of the state's total employees in manufacturing pursuits are engaged in either the processing of farm products or creating products for use on farms. The trend of employment growth in agricultural industries can be expected to continue, for Iowa has a great market for agricultural products. Yet, since industries related to agricultural products are slower in their employment growth than non-agricultural ones, more of the latter must be encouraged in Iowa if surpluses in farm labor are to be absorbed in the state. One other note of interest should be added at this point. Since industries need locations which cut down cost of transportation, the eastern and central sections of Iowa will continue to be the centers of manufacturing activity. Industrial locations on the Mississippi and on the east-west rail and motor routes will be of most value to the state.

These data follow rather closely the national trends as reported in Manpower, Challenge of the 1960's,[10] a publication of the United States Department of Labor.

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[8]Brown, Newell, "The Manpower Outlook of the 1960's Its Implications for Higher Education," Higher Education 16:3, December, 1959.

[9]Iowa College-Community Research Center, op. cit., pp. 13-14.

[10]United States Bureau of Labor, Manpower, Challenge of the 1960's, p. 9.

The kinds of national growth in industries that can be expected in the next decade are construction, finance, insurance and real estate. Trade, government and all other kinds of services will be next in line. Manufacturing will remain about the same. Transportation, public utilities, and mining will grow much slower than all others. Agricultural industries will decline nationally in their growth trends. An over-all rise in total employment of 20 per cent is anticipated, for more people are needing more goods and services.

Some Occupational--Educational Data for Consideration

During the 1950's, professional, office and sales workers together exceeded the number of workers in manual occupations for the first time in America's history. This trend will continue in the 1960's according to the United States Department of Labor, Bureau of Statistics.[11] The most significant growth and the most rapid rate of growth in the next decade will be in the professional and technical occupations, especially engineers, technicians and scientists. The need for skilled craftsmen will continue to increase, as the unskilled occupations will continue to decline over a long period.

What is the significance of this information? The fact is that these large increases in numbers of workers and job opportunities are occurring in occupations which require the most education and training. The following graph shows the per cent of change in employment predicted for the next decade. (Figure 1)

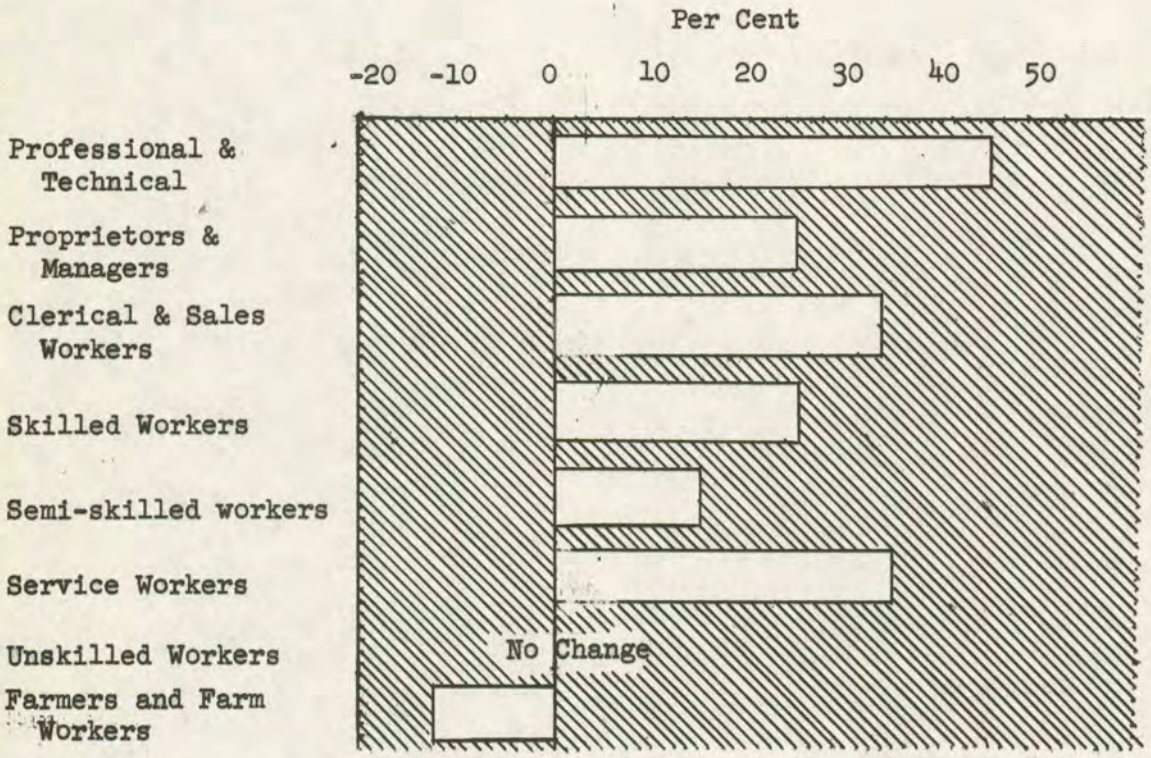

Figure 1. Per Cent Change in Employment 1960-1970.*

*United States Bureau of Labor, Manpower, Challenge of the 1960's, p. 11.

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[11] Ibid., p. 10.

Compare these data with the following (Table 5), also taken from the United States Department of Labor statistics, and the picture becomes clear that the changes in manpower during the next decade are closely related to education beyond the high school--higher education.

TABLE 5. AVERAGE YEARS OF SCHOOL COMPLETED OF THOSE WORKING IN 1959*

Occupational Groups	Years
Professional and technical	16.2
Proprietors and managers	12.4
Clerical and sales	12.5
Skilled	11.0
Semi-skilled	9.9
Service	9.7
Unskilled	8.6
Farmers and farm workers	8.6

*United States Bureau of Labor, Manpower, Challenge of the 1960's, p. 11.

The main reasons cited for the close relationahip of education and manpower are (1) that there is a continuing transition from an agricultural economy to a predominantly industrial one requiring change in educational direction; (2) that research and development are expanding; colleges and universities and industry cooperate in many of these endeavors; (3) that rapid technological improvement requires more education for adjusting to the changes it brings about; (4) that there is an increase in size and complexity of business organizations which put priorities on higher education; (5) that there is growth in clerical and record keeping enterprises which require education and training beyond high school; and (6) that there is a growing need for educational and medical services for an increasing population.

The foregoing national predictions are followed by the predictions that the numbers of new young workers will increase sharply in the 1960's--almost 40 per cent over the 1950's. This has a significant bearing on employers, on educational institutions, and on the young workers themselves. Employers will have a greater interest in the kind of educational preparation; they will need to employ more inexperienced workers which will require more and better training on the job. The educational institutions will have to know what employing institutions are demanding of workers in the way of educational requirements, and a closer relationship with the occupational structure will need to be maintained. Young workers will need to prepare themselves for a rapidly changing and complex world of work. More education and training and better guidance and counseling will be required. Competition for jobs will be keen and those who are capable and well-educated will be in demand.

Again according to the national figures as reported in the Manpower, Challenge of the 1960's[12] document, school enrollments will continue to rise as follows:

High Schools: 50 per cent in the 1960's--as compared with 40 per cent of the 1950's.

Colleges: 70 per cent in the 1960's--as compared with 40 per cent during the 1950's.

Also, it is expected that new young workers will have more education in the next decade with 70 per cent or better of the entrants into the labor force having graduated from high school, as compared with 60 per cent in the decade of the 1950's.

The kind of education workers receive will be distributed percentage wise as in Table 6.

TABLE 6. PER CENT AND KIND OF EDUCATION COMPLETED BY OCCUPATIONAL GROUPS*

Occupational groups	Per cent		
	Less than high school graduation	High school graduation	Some college education
:Professional and technical workers	6	19	75
:Proprietors and managers	38	33	29
:Clerical and sales workers	25	53	22
:Skilled workers	59	33	8
Semi-skilled workers	70	26	4
Unskilled workers	80	17	3
Service workers	69	25	6
:Farmers and farm workers	76	19	5

*United States Bureau of Labor, Manpower, Challenge of the 1960's, p. 17.

:Occupational groupings included in Iowa Study.

[12] Ibid., p. 15.

Most significant for higher education is the fact that the professional workers are the fastest growing of all major occupational groups. The number of professional, technical, and kindred workers is expected to rise from six and one half million in 1957, to nearly 10.5 million by 1970.[13] This means acceleration of professional programs in all colleges and universities. It is the kindred workers, technicians, and skilled manpower, that the state and nation need to provide for now.

Technicians who give technical support to engineers, scientists and other professional workers will be very much in demand nation-wide. Employment in these technical occupations has shot upward in numbers in the last two decades and will continue to do so.[14]

Due to the need for advanced training and education, college graduates will continue to be fewer in number than the demands for them. College teachers will be needed as never before to satisfy the changing educational scene, and to serve the increased numbers of students desiring education beyond the high school.[15]

Aside from the health of America, education constitutes society's major investment in people. If young people are to be well provided for in the future, more attention must be given to the relating of their needs to those of society. It is evident that the situations in Iowa will follow the changes in the national labor force. Education as a great social enterprise will be directly affected and will thereby need to be examined in light of the local, state, and national scene.

Talent and Giftedness in Manpower and Higher Education

Within considerations of manpower another outstanding problem is that of identifying and recognizing, then educating and training, the talented and gifted young people. Also, there is the fact that talented and gifted individuals exist on the job.

Unfortunately, talent generally has been considered as a magical endowment that was bestowed on certain rare individuals. Motivation is a part of talent. If it is lacking, then obviously talent is hardly functional.

A democratic society tends to support the theory that talent may emerge from individuals of all walks and stations in life regardless of socio-economic background. This talent idea is couched within a cultural concept of the individual. Should there be a background of cultural deprivation, even the most intelligent and talented individuals may be handicapped significantly. For many years the public schools have been involved in working with young people from all kinds of backgrounds. Studies have shown that motivation is still a part of talent and intelligence patterns. If individuals have a driving desire to transcend their

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[13] Brown, op. cit., p. 4.

[14] Ibid., p. 4.

[15] Ibid., p. 6.

culture and have the ability and educational opportunities, they may do so. It is, however, a long, hard struggle.

From this discussion one might conclude that most certainly the lower the cultural, socio-economic level, the more difficult it is for talent to emerge. Educational opportunities provide the common core for balancing some of these inequalities; however, they may not alleviate all individual problems resulting from major cultural, economic or ability deficiencies.

In 1950, President Dwight D. Eisenhower established the Conservation of Human Resources project at Columbia University Graduate School of Business Administration with the purpose of expanding studies in the field of human resources. One of these studies, published in 1954, written by Douglas Bray, was titled Issues in the Study of Talent. From it comes the following statement which speaks clearly to the point of talent in our society:

> The principal conclusion emerging from this review was that superior performance in any society is limited by the number of individuals with a high order of intelligence but that in our society the number of such individuals could be substantially increased through improving the opportunities for members of the lower socio-economic classes to become interested in and to acquire a good education.[16]

With this discussion of talent it is important to mention, in passing, the several educational programs under the title of the "gifted" student. Much has been done in educational research and experimentation with gifted students and doubtless more will be done in the future. Since this is mainly educational technique, it will not be dealt with here except the acknowledgement of its importance to talent in the manpower situation. One idea gathered from reading about the gifted sums up this subject rather well. This idea relates giftedness to all individuals. Many of the educational endeavors in business and industry have had a guiding principle that giftedness is applicable to a whole population. The challenge is to discover at what special things each individual is gifted. Therefore, if educational opportunities of a wide variety are offered, certainly many people are going to be touched by them, and their individual talents will be recognized.

One of the best statements found for summarizing this discussion of the manpower and talent problem comes from the document Ohio's Future in Education Beyond the High School, published in 1958. In the section of Basic Principles, formulated by the Ohio Commission responsible for preparing this report, 14 excellent statements appear. The first of these statements follows:

> Of all the assets of the State, we regard our human resources and future manpower as our supreme value. It follows that our highest responsibility is to provide for the fullest possible development of

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[16] Bray, Douglas, Issues in the Study of Talent, p. 51.

the talents and potentialities of our young people and of our citizens in general.[17]

Summary

Several aspects of the broad problem of manpower and higher education have been projected through the Iowa scene. It is well known that there are national trends and needs which now have a bearing on Iowa, and will have more direct bearing in the near future.

Manpower, or those human resources of a state and nation, are the most valuable assets known. Misuse of this major ingredient in a democratic society can mean losses which could be irreparable.

All people, together, are involved in the recognition, education and putting to work of the many capable and talented individuals in America. Higher education must be alert to societal and individual needs. Business, agriculture, education, government, and lay people must join together in an all-out effort to study, evaluate, plan and program, support, then continually reevaluate and relate manpower problems and higher education, else grave lacks will be fostered in our economy and society.

A state such as Iowa is in a transitional period where the business and industrial interests have increased over the traditionally one-direction economy, namely agriculture. This creates many dilemmas, yet it has many challenges too, for this has been the American pattern. A state must provide multidirectional opportunities for its population if it wants to hold its youth and adults, and to attract high qualtiy people into its borders to live and work. The economy of a state must be multidimensional in order to provide these opportunities.

Education, particularly higher education, has long been recognized as a principle ingredient of upgrading the economy and people. Each state, therefore, must know the kinds of educational institutions it has, and how their programs and offerings serve the needs of the people.

Technological changes and their social, economic, and political consequences need to be understood better in order to set priorities and plan for manpower problems and higher education. There are diverse agencies in Iowa, state and local, civic, business, and the educational, which see the need for a closer alliance between manpower problems and higher education for the next decade.

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[17]The Ohio Commission on Education Beyond the High School, Ohio's Future in Education Beyond the High School, p. 5.

not necessary

CHAPTER II

RELATED LITERATURE

State studies of higher education have originated, for the most part, from the concerns of legislators who make decisions for the support of state colleges and universities. Studies have been similar in purposes and objectives, but methods for state-wide research projects have differed. Certain studies were included in this review as samples of common approaches to state surveys.

Problems of state studies were similar partly because examination and study of higher education was a new procedure. A primary purpose was to survey institutions and programs, to array information, and to examine it for consequences. Special studies were projected in areas of operation such as administration, finances, facilities, students and enrollment, faculty needs, and curricula. In summary, the main purpose of state studies was to create "images" of institutions of higher education so that all people might see them. From this total scene the problems, some proposed solutions, and plans for the future were projected.

The institutional and state-wide self-study was a method of research in which colleges and universities joined together and decided upon the research procedure, and the purposes and objectives for a given study. When the data were in, they were reviewed and incorporated in a report.

The report of the Indiana Conference[1] is an example of a voluntary, state-wide self-study involving both private and public colleges and universities. This study had as its main purpose the analysis of capital, operating, personnel and curricular needs of higher education in Indiana. The Indiana Conference was organized in 1944 and was composed of 30 major colleges and universities in the state. Its purpose was to create a forum in which problems facing higher education in Indiana could be studied jointly by state-supported and private institutions. The view taken by member institutions was that higher education was a common responsibility of all Indiana institutions. Also, it was a major conviction of the conference that sharing of responsibility could show that present colleges and universities could expand to meet rapidly growing needs of education in Indiana without the establishment of new institutions. The report set forth the nature of the job to be done, and indicated guide lines which colleges and supporting agencies might follow. A study of this kind, and an association like this one, show that voluntary research and self-study in higher education can produce results in research and study projects.

Another method for a state study, one which was used in North Dakota, was to employ a director and a survey team, from out of state, experienced in higher education and familiar with survey work. This survey team then did the study for the state and presented its final report.

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[1] A Report to the Indiana Conference of Higher Education, A Survey of Needs and Resources: The Capital, Operating, Personnel, and Curriculum Needs of Higher Education in Indiana, 68 pp.

The North Dakota Survey[2] was a comprehensive, state-wide survey of institutions to determine higher education resources and evaluate them in view of future need for expansion and acceleration. Data were gathered by, (1) a review of documentary and literary resources, (2) a questionnaire and report-form procedure, and (3) interviews and observations. Information was studied, analyzed, and interpreted by the staff and research assistants in Washington and a report of two volumes prepared for the state Legislative Research Committee.

The Michigan Study[3] resembled the North Dakota survey in that it was also a survey team project. This was an exhaustive survey of many areas and services of higher education in Michigan and was published in 12 individual staff study reports which were briefed in the final report. Subjects of the staff studies suggest the extent of this study. The community college, geographic origins of college students, medical and nursing education programs, physical facilities, student personnel services, instructional programs, extension and field services, and student aid programs were some of the studies made by the staff. Recommendations for actions were made on the basis of data gathered in the staff studies and were presented by the director. The study spanned a two-year period, ending in September, 1958, when the final report was made to the Michigan Legislative Study Committee on Higher Education.

Surveys of specific programs and specialized schools of higher education have been commissioned by some states in order to examine a given educational area on a state-wide basis. The Oregon Study[4] was a specialized state-wide study by a survey team from outside the state. A professional consultant was engaged by the Oregon State Board of Education. The proposal for the study was presented with the aim of surveying vocational-technical education in Oregon. The report was comprehensive and represented a concentrated effort to analyze specific programs of higher education. Such programs as vocational education in agriculture, homemaking education, distributive education, trade and industrial education, technical education, occupational information and guidance were examined and reviewed in the final report. Procedures of the survey included observation at certain institutions, not all of which were visited. Questionnaires were administered to a sampling of youth and adults throughout the state. Conferences and interviews were held with professional and lay persons. Analyses were made of records, reports and other written materials in offices of the State Department of Education and in some of the schools. Newspapers were analyzed for the "flavor" of the state press and for attitudes toward vocational-technical education.

Continuous state study programs directed by officers assigned to areas of higher education were found to be a part of the system of education beyond high school in some states. This is another method which may be used in a state study of higher education.

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[2]Hollis, E. V., Higher Education in North Dakota, vol. 1. 121 pp.

[3]Russell, J. D., Higher Education in Michigan, 185 pp.

[4]Flesher, M. A., and others, Public Vocational-Technical Education in Oregon, 368 pp.

The California Studies[5] were examples of a continuous study and restudy of higher education and its various needs and problems. California has planned, programmed and developed state higher education at three levels: the junior colleges, four-year college programs, and the state university. Coordination and planning, as well as policy, came from state offices responsible for the various programs. The studies indicated that the people of California who desired higher education at any level had been provided for.

State studies, organized within the state and making use of committees of citizens with widespread interests, constitute still another method used in studying higher education. When such committees and the staffs of colleges and universities are involved in a project of importance to the whole state, many new ideas and programs may emerge. The Colorado Study[6] was conducted by a staff from the state with the support of consultants in higher education. This study will continue until 1961; therefore, progress reports show but a partial picture of the total study. Colorado has had a growth problem exceeded only by California and has planned accordingly. This study resulted in a "holding action" on development of new institutions and four-year colleges until plans could be made for the facilities that were desired and needed. A new objective of state-wide studies was introduced, that of determining projected as well as immediate needs.

A state study commissioned by the 1947 legislature, Higher Education in Minnesota,[7] was an endeavor to study a state system of higher education and to examine and evaluate the broad pattern of public and private collegiate education. The Minnesota study attempted an examination of higher learning beginning with the social and economic setting of the state and proceeding to an examination of public secondary schools, and junior colleges. Liberal arts colleges, teacher training schools and university education also were examined. The last section of the report was concerned with the future of higher education in the state and set long-range goals for colleges and universities, many of which have already been accomplished. It was evident from this study that Minnesota had long been committed to higher education, for even before there was a state capitol there was a state university. Several colleges and universities now provide programs in occupational training, professional education and in general education and liberal arts. Diversity among the institutions allows students to select from a variety of programs and institutional settings due to continued cooperation between public and private schools in the state.

Barriers to higher education in Minnesota were economic, geographic, and cultural as well as the barrier of limited curricula. The logical procedure for allowing more capable young Minnesotans to come into higher education seemed to be that of lowering these barriers, and long-range goals were set with these facts in mind. Significant to a state-wide survey of higher education was the recommendation which the Minnesota study made in regard to extending professional training programs in areas where demonstrated shortages existed. More two-year

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[5]California State Department of Education, A Study of the Need for Additional Centers of Public Higher Education in California, 172 pp.

[6]Cofelt, J. J., and Homan, E. C., Education Beyond the High School in Colorado, 213 pp.

[7]Minnesota Commission on Higher Education, Higher Education in Minnesota, 419 pp.

courses with general education and vocational training for the semi-professional and technical fields were recommended, in order to provide opportunities for more capable young people. It was decided that, in Minnesota, the public junior college was the best place for this type of training.

Ohio's Future in Education Beyond the High School[8] was the report of a state study commissioned by the governor who, in 1957, appointed a commission to examine various phases of the state programs of education beyond the high school, and to prepare recommendations for future developments. This commission was composed of business leaders, civic leaders and educational leaders. This was an example of involvement of those groups in a society which hold vital interests in common. This particular study has implications in regard to manpower considerations. Its first recommendation stated that, of all the state's assets, the human resources--manpower--should be considered as of supreme value. The higher responsibility of the state should be to provide for the fullest development of the talent and potential of young people in particular, and all citizens in general. Some subjects covered in this study were: enrollment outlook, quality of education--the top priority, college faculty, Ohio's present facilities and future need, graduate and professional education, and finally, the financial implications of the recommendations. This study and the one titled Meeting Ohio's Need for Vocational and Technical Education,[9] show that many subjects of importance to Ohio's higher education scene were considered.

Higher Education in Wyoming,[10] was another internally directed study of a state-wide system of higher education. The 1957 Legislature commissioned the study and selected nine representatives of the University's colleges as a steering committee. Subcommittees were formed (with a membership total of 37) for the purpose of collecting facts; then, 25 representatives of business and industry, agriculture, labor, government, education and the professions were appointed to an Advisory Committee. The Western Interstate Commission for Higher Education and the United States Office of Education were asked to send consultants for assistance and advice. The study lasted 18 months and in the summer of 1958, a 303 page report was submitted from which recommendations were developed by the Advisory Committee.

This study was an example of one in which a state took the primary initiative for its own study of higher education, organized its interested citizens into work teams, then called on consultants to help with analysis and study of the data in preparation for the recommendations. The recommendations were made by the Advisory Committee, a state citizen's group.

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[8]The Ohio Commission on Education Beyond the High School, Ohio's Future in Education Beyond the High School, 66 pp.

[9]The Ohio Trade and Educational Service, Meeting Ohio's Need for Vocational and Technical Education, 145 pp.

[10]A report prepared cooperatively by representatives of the general public, state officials, and educators, for the use of all who are concerned about meeting the needs for education beyond high school in Wyoming, Higher Education in Wyoming, 45 pp.

Review of Philosophical Literature Related to Manpower and Higher Education

References to manpower and higher education are to be found in books and articles of the social sciences, in philosophical writings, and in specific types of educational literature.

The National Manpower Council,[11] in 1952-1953, was engaged in a one-year study and investigation of the quality of the nation's manpower resources. The staff of this study included presidents and professors of colleges and universities, business and industrial executives, and government officials. The Council reported that this study was exploratory and not definitive. Its aims were to frame the problem, to identify its most important facets, and to suggest where research and evaluation were to be undertaken. Only by a directed and purposeful effort, this study reported, can the United States achieve adequate resources of scientific and professional manpower. A cooperative effort must be put forth with government, industry, educational institutions and professional and occupational groups joining in a common course of action.

The National Manpower Council was established at Columbia University in 1951, under a grant from the Ford Foundation, with its main purposes those of studying significant manpower problems and examining the quality of America's human resources. The study stated that the numbers preparing for work in fields where shortages were anticipated could be increased by altering the distribution of young people going into scientific and professional fields. This could not be imposed but, rather, should be a matter of guiding and communicating. Secondly, by expanding the size of the total college population, more young people of ability could be educated in each field. Individuals should still decide for themselves the kind of education and career to choose. Career choices should grow out of long-range considerations, and schools and colleges should have well-informed guidance programs to point up areas of career opportunities for the future. Lively competition among fields of study ought to be maintained, for prestige and status are enhanced by it. A final statement of this study reported that a more positive and sympathetic climate for all intellectual endeavors should be developed and maintained if professional and scientific careers, as well as education as a whole, are to become attractive to able young people.

Wolfle,[12] a prominent authority in the manpower field, examined the need for specialized talent, and better methods of identification, education and employment of talent in American society. Some topics of value to manpower studies included in Wolfle's work were educated manpower--a national resource--fields of specialization, college graduation trends, occupational distribution of college graduates, supply and demand in specialized fields, and the use of manpower data. This work was an overview of professional, technical and scientific careers and information necessary for understanding their place in society.

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[11] National Manpower Council, A Policy for Scientific and Professional Manpower, 257 pp.

[12] Wolfle, Dael, America's Resources of Specialized Talent, 283 pp.

In summary, Wolfle stated that in view of increasing demand and rising population, specialization will continue to intensify. There is no evidence that a saturation point has been reached. Most specialized groups are increasing in numbers and consist of college graduates. For example, in 1900 one youth in 60 graduated from college; now, one in eight graduates from college. College education reputedly contributes to occupational flexibility, offering great advantage in a technologically advancing society. Wolfle stated that college graduating classes should be twice their present size. He also considered the proper utilization of trained personnel an imperative in the solution of manpower problems in America, where placement of professional workers has received less emphasis and attention than that of skilled labor. Educated women are less likely to be employed than educated men. The United States could make better use of its educated women than it does. Also, the large population over 65 years of age, still capable of productive work, is not made use of in the best manner. In summary, Wolfle stated that, better utilization of all segments of the educated population is possible and would be socially profitable.

Smuts,[13] under the research program of the Conservation of Human Resources Project, begun by President Eisenhower in 1950 at Columbia University, used an historical approach to the study of the role of women in the work scene in America. Women in the work scene have become a vital and increasingly important resource during the past 50 years, since one-third of the working force today is women and one-third of all women work. Higher education should therefore examine its offerings and role in relation to the education of women.

Dobbins,[14] editor of The Strength To Meet Our National Needs, reported that higher education must know that it is "everybody's business" now, as education has all but replaced apprenticeship. By 1970, 85 per cent of the students in the population of America will be attending high school, compared to 11.5 per cent who attended in 1900. At that time, education beyond high school served 15 per cent of the nation's youth who graduated from high school. Present predictions are that by 1970 the number of high school graduates continuing their education will increase to 50 per cent, or more.

Higher education has become an instrument for serving and creating professions. There is a social trend to expand offerings to serve the population. At present there also is need for men and women with shorter training periods than those which degree programs allow. For example, Dobbins stated that three to five technicians are now needed for every fully-trained engineer. Estimates for the future needs run much higher. Dobbins further stated that a cross section of American people should be permitted to give their views and convictions about future needs of education beyond the high school. Talented and capable people should be selected and educated to fit them for the creative processes in society.

In the summary and conclusions of this document, the Commission called for an all-out effort to study manpower problems. Educators, in collaboration with other leaders, ought to make local studies of population trends, technological advances, and related manpower requirements. Continued upgrading of work

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[13]Smuts, R. W., Women and Work in America, 180 pp.

[14]Dobbins, C. G., The Strength to Meet Our National Needs, 125 pp.

forces ought to be encouraged. There must be more effective education for more people. More and better teachers need to be prepared and new programs should be developed beyond high school. The gifted ought to receive education to the highest level of their abilities. In summary, Dobbins reported that educated citizenry is the priceless ingredient in the nation's future well-being.

The Rockefeller Report[15] presented a thorough discussion of various aspects of quality and excellence in an ever-expanding and proliferating, technological society. Individual creativity could be stifled and even snuffed out in a highly organized conforming society; therefore, there was great concern expressed in this report for the encouragement of the imaginative, the individual, and the creative genius that keep a mass society "on its toes" and set standards of high quality. The search for talent and excellence is a critical aspect of a nation's existence, and should be attended to in an atmosphere which seeks to strength and nurture the best in a society.

Ulich,[16] has postulated a philosophy of education and general living which advances the theory that man must strive to rise above the self; that aspirations do not necessarily have limitations; and that perfection is the right goal. The nature of man, society, and of civilization are carefully analyzed by Ulich in The Human Career. The challenge of his thesis lies in its emphasis upon religion and humanism as motivation.

Ulich is convinced that America has the potential for being much better and greater. Humanism, religion, and transcendence as he defined each, help men and institutions raise themselves to a higher level of life and influence. His writings have provided background for the general education ideas vital to all programs of education beyond the high school.

Smith[17] brought to the discussion of purposes of higher education a philosophical approach focusing on the values with which education is concerned and pointed up the lack of clear-cut directions to these values which lead to a healthy diversity. He stated that it is diversity that adds strength and richness to life.

Smith advised that America move toward a clarification of the aims of institutions of higher learning. He maintained that education cannot accept any aim less than the "quickening of life." Absolutism and relativism were discussed with the suggestion that education ask what a value is absolute "for" and relative "to"? The dialectical complements of objectivity and commitment as Smith discussed them were given new meaning. Freedom and authority, with the infusion of "ceiling and floor authorities," "dreadful freedom" and other aspects of the subjects gave one a basis for the definition of freedom as Smith explained it: "spontaneous expression of authentic selves." Smith further stated that education should develop a student's capacity to distinguish between authorities which support freedom and those which stifle it. Education should nurture the inner springs of freedom: love, creative work, and reality. Part II of this book presented an extensive and illuminating discussion of the

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[15]Rockefeller Report, The Pursuit of Excellence, Education in the Future of America, 49 pp.

[16]Ulich, R., The Human Career, 247 pp.

[17]Smith, Huston, The Purposes of Higher Education, 213 pp.

aims of liberal education. Smith's work should arouse colleges and universities to the reexamination of their basic goals, setting their sights on a continuous enterprise of philosophy whereby values are at the fore and are dealt with realistically and openly.

Review of Related Literature in Higher Education

Glenny[18] conducted a study of state coordinating structures--boards of higher education, boards of regents, and other agencies for state-wide planning and organization, analyzing the coordinating structures in several states. He presented information about staff, budgets, purchasing, legislative organization and staff agencies, and drew conclusions which were of significance to state studies of higher education. Friendly relations between public and private institutions were at their best, in his opinion, in Indiana and Ohio. Other states ranged from what he considered hostility to vague indifference. He felt that there was need for private and public colleges and universities to function as complementary agents in a democratic society. Society cannot afford competitive educational institutions. He concluded that, due to the need for economy and efficiency in management, state coordinating agencies are developing rapidly. Some form of coordinating board existed in one-third of the states at the time this study was made.

Alternatives to control and direction through state coordinating boards were suggested by Glenny in an overview of the several states and the comparisons of methods used by each.

Moos and Rourke[19] studied the impact of state administrative controls upon the management of state colleges and universities. These controls, they pointed out, are of vital concern to the citizen, to the society and especially to those working in the field of higher education. A total of 344 educational institutions were studied. All were state supported, four year degree-granting colleges and universities. Opinion and fact were in evidence in the study; but every effort was made to keep the two separated. Two years and two months were devoted to this study, in which Dr. Milton Eisenhower, President of Johns Hopkins University, served as general chairman with Moos as the director and Rourke as assistant. Many of the suspicions, anxieties, and frustrations of educational personnel in dealing with state government leaders were brought out in this report. Centralized supervision in state government was viewed as a threat to many higher education institutions due to the tendency for closer supervision; but more, it was viewed as "plain interference." The study pointed up difficulties which exist for both the state official and the university official with neither being blameless. Moos and Rourke further stated that, due to difficulties inherent in the growth of colleges and universities, nothing should be permitted to impede them, for education is too precious to be

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[18]Glenny, L. A., Autonomy of Public Colleges, The Challenge of Coordination, 325 pp.

[19]Moos, M. C., and Rourke, F. E., The Campus and the State, 414 pp.

continually threatened by outside forces. While public accountability and efficient management ought to obtain, colleges and universities should not be jeopardized by threats of political and economic bigotry. Colleges and universities should follow the efficiency and economy movement, putting greater emphasis on good management by employing competent budget and finance officers. There are many shortcuts in business practices which colleges and universities should employ.

The main function of state-supported universities should be a dynamic enterprise of innovation and creativity, both of which well may bring more criticism and controversy than praise and acclaim. The study pointed out that this role of stirring society must be maintained, else democracy becomes complacent, the citizenry apathetic, and minds become stilted and conformity reigns. The best public colleges and universities should lead rather than follow state government in adopting new practices in business and general management, as well as in general programming. Higher education, as an agency of the state, cannot be directed as just any state agency, for it is quite different if it is doing its job. Broad restrictions upon the operating freedom of institutions leave little room for imagination, vitality and creativity--all of which nourish higher education.

Henninger,[20] an authority in technical education, presented the role of technical institutes in American higher education. He stated that there is urgent need for education beyond high school to provide technical education which is more intensive and practical than that possible in engineering colleges. This study dealt with such matters as the philosophy and objectives of technical institutes, curriculum, student body, faculty, financial structure, and administrative patterns. The institute was justified because of the kind of political, economic and technological forces currently impinging upon educational institutions. Technicians are required in large numbers to back every professional man in the field, therefore, educational training, specialized in nature, has to be encouraged. Technical institute programs should not be construed as feeder programs for universities. They are not comparable to the first two years of college but, rather, are terminal in nature. Their major objective is to give the student a high degree of proficiency in technology, solidly based in math, English, basic science and technological principles. Better manpower balance was reported as another aim of the technical institutes, with an ever-growing supply of competent, upgraded manpower needed to work in technical enterprises.

This book has many direct relationships to manpower problems. The team approach to engineering and technical professions is employed. The three-man team, consisting of engineer, technician, and craftsman is needed. According to the Henninger study this makes for a three-level educational program:

1. Collegiate and university program for engineers and scientists

2. Technical institutes for engineering and scientific technicians

3. Vocational-trade programs for craftsmen and apprentices.

General education receives minor program emphasis in the technical institute, except for communications skills. Programs usually serve community needs and interests. A major problem of the technical institute is that of gaining status as an area of higher education, gaining status in the national patterns

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[20]Henninger, G. R., The Technical Institute in America, 275 pp.

of technological manpower as seen by the public, including parents, potential students, and employers. This book demonstrated another educational alternative for satisfying individual and societal interests and needs.

Johnson[21] reported on a study of general education programs and experiments at the junior college level in California, which regards the junior college as an upward extension of public schools. This study reported that contemporary social problems and man's relation to man are vital issues with which education should be grappling. General education has aimed at equipping young people with knowledge of contemporary situations, helping them learn how to examine, weigh, evaluate and, finally, make enlightened decisions. These ideals derive from a broadly conceived educational climate rather than from a narrowly conceived one. Too narrow specialization can make for inadequate citizenship while general education endeavors to establish a balance between general and specialized studies.

This study involved all junior colleges in California and wrestled with the major problem of today: "How can America produce enough technologists to satisfy the needs and yet create a citizenry capable of responsible, effective and creative citizenship in a democracy?" Johnson stated that the values inherent in general education are such that they require an understanding of ourselves, of others, of literature, art, music, critical thought, and a wide range of intellectual interests.

Trowbridge,[22] in the Arkansas report on general education, reviewed methods for improving instruction in the liberal arts and sciences. An introductory chapter titled "Forty Years of General Education," gave the historical and philosophical background of the subject. The Fund for the Advancement of Education provided over two million dollars for the study. The funds were designated for the purpose of revising and improving undergraduate curricula for general education in the 15 colleges which participated.

The report presented specific programs and projects of the various colleges, showing how they revised curricula, set new programs in motion and, in general, how they made an all-out attempt to upgrade offerings in the liberal arts. This project, under the sub-title of the Arkansas Experiment in Teacher Education, was a challenging one, differing greatly from many state-wide undertakings.

Review of Articles Related to Manpower and Higher Education

Articles which have bearing on the manpower and higher education alliance were found in periodical literature of several fields. As in preceding pages articles having a direct bearing on the manpower-higher education subject, have been reviewed. Additional references appear in the bibliography.

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[21]Johnson, Lamar, General Education in Action, 403 pp.

[22]Trowbridge, Hoyt, General Education in the Colleges of Arkansas, 154 pp.

Brown[23] assigned to higher education a major, pivotal role in the nation's manpower needs during the next decade, basing this conclusion on studies and statistics from the United States Department of Labor. His concerns were that more people will be seeking employment than ever before, there will be an acceleration of the trend toward white collar occupations, jobs traditionally associated with higher education, and there will be a rise in the level of training and educational requirements for most jobs. Professional workers will constitute the fastest growing of the major occupational groups. This rapid increase has significance for higher education since most professional workers are educated in colleges and universities. There will be a growing demand for college graduates in all fields of endeavor in the next decade, Brown reported. Colleges and universities must place the expansion of facilities and programs high on priority lists, in order to provide appropriate opportunities for the millions of young people needed to maintain our national strength and economy.

Richardson[24] pointed out that the role of federal government in higher education is something of an enigma. It is varied yet limited, for American education has long been cherished as a matter of state, local and private responsibility. Quality is a major concern of this article, in view of the fact that, educational institutions will have to step up their production, which could result in a "watering-down" of programs.

Richardson projected a need for a broad federal approach to higher education due to pressure of manpower needs, cultural interdependence, national defense, and world leadership. Also, problems of financing higher education continue to compound and proliferate. Therefore, Richardson pointed out, there should be a deliberate and objective development of a coherent national policy for federal assistance to higher education.

Clague,[25] in an article in a compendium carrying the sub-title "American Civilization and Its Leadership Needs, 1960-1990," set forth the need for the development of means and procedures for collecting accurate, current, and detailed occupational data. As Commissioner of Labor Statistics in the United States Department of Labor, Clague maintained that lack of this information has seriously handicapped analyses of manpower needs and resources. The major changes expected in the work force are: a sharp increase in the youngest age group 14 to 24; a smaller increase in male workers 25 to 44 (meaning that women workers will be needed), and increase of workers 45 and over. Again, rapid growth in so-called white-collar workers and slower growth in blue-collar occupations is expected. Continuous rise of the skill level for craftsmen is predicted. Clague stated that the need for better education and increased numbers of people will create new manpower problems and intensify previous ones.

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[23]Brown, Newell, "Manpower and Higher Education in the 1960's," Higher Education 16:3-6, December, 1959.

[24]Richardson, E. L., "Towards a National Policy for Higher Education," Higher Education 6:3-7, September, 1959.

[25]Clague, Ewan, "Occupational Statistics: A Tool for Determing Needs," The Annals of the American Academy of Political and Social Science 324:20-28, September, 1959.

Brown,[26] Dean of the Columbia University Graduate School of Business, reviewed two major questions asked of colleges and universities in the business divisions: "What is the colleges' job?" "Are they really doing it?" Brown criticized colleges and universities and their business schools for (1) not defining objectives precisely, and (2) trying to do too many things for too many people. Two books often referred to in this article were: Higher Education for Business, by James E. Howell, and The Education of American Businessmen, by Frank C. Pierson.

These two books and this article are significant criticisms and analyses of the whole field of business education in colleges and universities. This author stated that scholars and teachers must take the lead, and ought to be involved completely, in the processes of business education. Practitioners and business leaders must know the skills and techniques of the world of work. Business is not a monolith but, rather, a concern of everyone; no one person or institution speaks for all of business.

This article supported the involvement of higher education with the business world--the world of work--and discussed what it means to educate manpower for the American economy.

Iowa Publications Related to Manpower Problems

Also important in this state study was the literature of the state, namely, newspapers, magazines of the state, publications and materials distributed through various state agencies.

Iowa has shown interest in higher education and manpower studies. Some state offices which have published studies and research articles dealing with manpower-higher education considerations are the Iowa Development Commission, Office of Public Instruction, and Iowa Employment Security Division. Other offices which provided pertinent literature were the Iowa Manufacturer's Association, the Chamber of Commerce, the State Universities at Iowa City and Ames, and the federal office of Apprenticeship Training.

The Iowa Development Commission has an interest in bringing industry into Iowa as well as in keeping business and industry in the state. A few examples of related publications of this agency follow:

Iowa Industrial Fact Book,[27] 1959, was a publication presenting Iowa's industrial potential and growth in order to help management visualize and better understand the industrial climate of Iowa. This information has implications for business leaders and for lay readers.

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[26]Brown, Courtney, and others, "Are We Really Educating Our Business Leaders?" Saturday Review 46:16-17, 44-46, November 14, 1959.

[27]Iowa Industrial Fact Book, 23 pp.

Iowa Industrial Facts,[28] 1958, presented a graphic picture of Iowa's industrial development. The growth of industry was pictured on maps of the state with observations such as the following:

a. The center of manufacturing in the U.S. is moving westward

b. Iowa is in a strategic, geographic position for this move

c. There is need for further industrial expansion in Iowa due to shift in emphasis from all agriculture to business and industry

d. Communities need to support industrial expansion and "retool" to meet new demands

e. Value added to a county by industrial interests is considerable and general economy is thereby improved.

This was a valuable resource document for the study of manpower problems in Iowa.

Community Guide for Industrial Development[29] was written for the purpose of setting down principles and guide lines essential to a community industrial program. A community with potential for industrial growth can get assistance both in materials and personnel from the Iowa Development Commission, thereby setting up a planned program for attracting and holding industry. This guide related that prior to this program residents and "community fathers" must be oriented and sold on a new idea. Average annual loss in migrations from Iowa since 1950 has been 27,000 people. Valuable assets are being depleted by this mass migration. Iowa must create opportunities for those farm-reared people who have been displaced by increased mechanization.

This "how to" book was most carefully written and constitutes a helpful resource for a community organizing a development program. The first discussion is titled, "Why Industrial Development?" The next "Organization," and the third "Making a Community Survey and Appraisal." "The Industrial Development Corporation," "Acquiring and Developing Industrial Sites," and "Prospect Promotion" are the final sections.

Directory of Manufacturers in the New Iowa[30] served as a guide to 3,466 manufacturing plants in Iowa, and to the 2,570 products made in Iowa, listing 691 cities in which manufacturing plants are located. This publication resulted from a cooperative effort with the Bureau of Business and Economic Research of the State University of Iowa. The purpose of the directory was to supply prospective buyers of Iowa products with ready information as to the Iowa manufacturers. Much use was made of this directory during the gathering of data for the Iowa Higher Education Study.

Certain studies and publications from the Office of Public Instruction are related to manpower and higher education. Many of the responsibilities and

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[28] Iowa Industrial Facts, 9 pp.

[29] Community Guide for Industrial Development, 18 pp.

[30] Directory of Manufacturers in the New Iowa, 255 pp.

activities of this office center about public secondary education and the junior college. General upgrading of schools has been a major project of this office with its specific program that of school district reorganization.

Some Characteristics of Good Schools,[31] 1958, was written to inform the general public about characteristics of good schools. Pupil and financial resources help to determine the quality of a school system. Opinions of board members, pupils, and administrators are also important. Many statements in this document enlarge the perspectives of what good schools are. For example, in a section on organizational structure minimum pupil-teacher ratio in high school was listed as 12 to 1; maximum class enrollment of 30 students for high school academic classes and 45 for physical education, typewriting, instrumental and vocal music.

Another section on educational programming recommended that a continuous study and planning program should involve lay groups, including school boards, and all levels of professional staff. Further, educational programs should provide for all children and youth in the school district. Many basic ideas pertinent to education, yet often not well understood, were clearly and concisely brought together in this document.

The Drop-Out Problem in Iowa High Schools[32] was a study proposed by the Life Adjustment Education Commission with funds provided by the United States Office of Education, the Iowa State Department of Public Instruction, and the State University of Iowa. The commission's main interest was to encourage each school to begin its own follow-up of graduates thereby gathering data on its program results and former students. Early drop-outs often enter the labor force ill-prepared and ill-advised. Manpower and education are involved directly with the whole drop-out picture in secondary schools. The drop-out problem, as summarized, is a complex one involving personal characteristics of students as well as characteristics of the school, the home, and community life. Intelligence seems to be a significant factor in school persistence, as does socio-economic status. Drop-out was viewed here as a process, not as just a simple event.

Surveys of occupations and of community, industrial and educational facilities and programs have become valuable in assessing manpower needs, and the relationships existing between manpower problems and higher education. The Iowa Employment Security Commission has made several community occupational surveys. The high cost of these studies has forced temporary abandonment. Reviews of three of these studies follow:

Occupational Index Survey,[33] 1957, was the study of Polk County in which the city of Des Moines is located.

The community occupational survey was an organized method of obtaining information about the local labor market. The cooperation of educational agencies, clubs and organizations was solicited, thus making this survey a sort of community assessment venture.

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[31] Some Characteristics of Good Schools, 13 pp.

[32] The Drop-Out Problem in Iowa High Schools, 88 pp.

[33] Occupational Index Survey, 60 pp.

The survey workers were the counseling and guidance teachers from the Iowa public school system. A questionnaire was prepared to gather the data from 4,091 employers with one or more employees.

The results of these surveys became the "vital statistics" for the study of manpower problems in Iowa, and may be used for industrial development and labor turnover problems. When community educational programs are analyzed the close relationship of manpower and education can be viewed.

A Look at Dubuque Manpower Resources,[34] 1957, was a cooperative venture with the joint efforts of the Dubuque Chamber of Commerce, the Industrial Development Committee and the Iowa Employment Security Commission. Dubuque has advantages over some areas of Iowa due to its adequate water supply, inexpensive water transportation on the Mississippi River, and a specially developed industrial site of 217 acres with river frontage. The number of available workers, an important asset to good development, is another major advantage in Dubuque. A portion of the study was concerned with available skills in the area, age of the present work force, and training facilities available. A supplemental statistical data booklet[35] was published with this survey.

A Look at Waterloo's Work Force,[36] in 1958, was a study similar in most aspects to the Dubuque study, using the same technique with similar sponsoring groups in the Waterloo Community. Purposes of this study were listed as follows:.

1. To aid in vocational counseling
2. To provide some tools for evaluating training programs in the area
3. To stimulate local employers to evaluate and plan for future manpower needs
4. To serve as a basis for job development programs of the Iowa State Employment Service
5. To aid in securing new industries.

It was the consensus of the sponsoring groups that detailed information was needed on the training requirements, replacement needs, and the composition of the work force.

The three universities in Iowa--Iowa State University at Ames, State University of Iowa at Iowa City, and Iowa State Teachers College at Cedar Falls--have contributed to the literature of the state of Iowa in many fields. Those containing manpower data were selected and some representative publications reviewed.

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[34] A Look at Dubuque Manpower Resources, 16 pp.

[35] Dubuque Manpower Resources Survey, 70 pp.

[36] A Look at Waterloo's Work Force, 35 pp.

Iowa Business Digest,[37] a publication of the State University of Iowa, College of Business Administration, Bureau of Business and Economic Research, published monthly since 1930, has published many informative articles about business and economic trends in Iowa. One such issue was titled "Iowa--A State in Economic and Social Transition--A Panel Presentation." This was a report of papers presented at a conference of the Iowa Council for the Social Studies, in conjunction with the annual meeting of the Iowa State Education Association on November 6, 1959. One paper dealt with the subject of Iowa's role in national economy, another with agricultural problems. Others dealt with manufacturing and industrial outlooks. Subjects such as employment prospects in Iowa, and the social consequences of change in Iowa were reviewed in detail.

These articles and accompanying data were presented in the light of a transitional theory, which held that changes in Iowa were due to urbanization. Aspects characteristic of urbanization and transition are that (1) growth in specialization will occur; (2) large organizations come into being; (3) bureaucracy and formal controls are established; (4) segmented interpersonal relations develop.

Rural-Urban Migration in Iowa, 1940-1950,[38] was a research bulletin of the Agricultural Experimental Station of the Iowa State University, published in 1954. This bulletin revealed some important facts. For example, prior to 1900, the state gained more than one million persons in-migrating; and since 1900, it has lost more than one million by out-migration. Population reductions in southern and southwestern Iowa were counter-balanced by increased populations in urbanized areas in central and eastern Iowa. The outlook for Iowa was reported as "continued slow growth."

Strayer[39] directed a study of the public universities in Iowa in 1950. The State Board of Education commissioned this study and employed the services of the director who was asked to report on the study of six major areas which were:

1. The administration of publicly supported higher education including a discussion of the responsibilities of the Board of Education, relationship of the board to the three state university presidents, the governor, the general assembly, the interim committee of the legislature and the public.

2. The desirable relationships among the three institutions

3. The functions of the finance committee of the board

4. The development of educational programs in the three universities

5. The forecast of programs to be developed and the financing of publicly supported higher education over the next 15 years (1950-1965).

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[37] Iowa Business Digest, 12 pp.

[38] Rural-Urban Migration in Iowa, 1940-1950, 56 pp.

[39] Strayer, G. D., Report of a Survey of the Institutions of Higher Learning in the State of Iowa, 98 pp.

6. The adequacy of support for the universities and the state's ability to finance the program of higher education.

Recommendations appeared in the context of the report and each was explained by the findings. The findings of this study were pertinent to the administrative functions of higher education from the state to the local levels. This was basically an analysis of current operations. The survey team acted as consultants formulating recommendations for changes and improvements as they saw them.

The final chapter on financing of higher education in Iowa revealed some pertinent data. For example, it was found that Iowa ranked fairly high in its ability to support higher education compared with neighboring states; that increases in college enrollments were in evidence from the data; that financial support to strengthen staffs in the state universities would, of necessity, need to be increased; that state appropriations and tuition fees would have to be raised as cost indexes increased nation-wide.

Doud,[40] former State Senator in Iowa, prepared a survey of publicly and privately supported colleges in Iowa in 1954. This study was done by questionnaire method and analysis of arrayed catalog materials from the schools participating. This was a survey of liberal arts facilities similar to all institutions, governing boards and their composition, qualifications of the administrative head, ranking of faculty, tenure of faculty, salary scale, student enrollment, and physical facilities. This survey presented in chart form left the summary, conclusions and recommendations for the reader to make on his own. The value of the data was limited by this lack; however, the survey did reveal numerous facts about Iowa colleges and universities.

Baumback[41] reported on a study of student financial resources completed in March of 1959. This was an analysis of student resources at the three state universities and was done at the request of the Board of Regents. Sound and practical research design and sampling were evidenced in this study. A 1 to 20 sampling fraction was reported, adequate for the study and separate data was gathered at each university to offset any differences in student population. The purpose of the study was to determine the amount of money that should be requested for scholarships and loan programs and the level at which tuition rates should be set. The registrars of the three state schools, Iowa State, State University of Iowa and Iowa State Teachers College, contributed time and energy to this study. Conclusions pointed to the fact that students in Iowa universities were obliged to seek financial aid from sources other than parents' combined income and the student's own earnings. The greater part of the slack must be taken up by scholarships and loans. Unless the amount of tuition increases were to be matched by a similar increase in scholarship aid, students from marginal income families would be forced to drop out of the universities. These students would be predominantly men interested in professional and business majors in which acute shortages of persons now exist in Iowa. These data and others in this study were pertinent and contribute much to considerations of manpower problems and higher education.

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[40]Doud, A. L., A Factual Survey of Public and Privately Supported Colleges in Iowa as of June, 1954, 55 pp.

[41]Baumback, C. M., A Report of the Financial Resources of Students at Public Institutions in Iowa, 16 pp.

Summary

On the basis of certain research studies, important agencies in Iowa have drawn conclusions about situations in manpower and higher education.

The Iowa Development Commission has made a clear-cut case for encouragement of more industry and manufacturing enterprises into the state. On the basis of research and continuing studies, support was given for a shift from an all agricultural economy to one which emphasizes business and industry as well. Also, planned programs for industrial development in key communities were suggested in certain documents published by the commission.

Several contributions to manpower and education considerations have come from studies made by the staff in the Office of Public Instruction. Studies outlining characteristics of good schools and of student drop-out problems were made, as were continuing studies of follow-up on students, their occupational career patterns and results of current educational programs.

Surveys of community industrial and educational facilities and programs have been made which were significant contributions to studies of manpower and higher education. The Iowa Employment Security Division has sponsored several of these surveys in cooperation with other agencies in communities studied. These surveys involve the sponsorship, participation and cooperation of business, educational and civic groups which make them all-out "community" endeavors. The results of studies like these become "vital statistics" for use in solving the problems of manpower and higher education.

Iowa as a state currently in a period of social and economic transition has been a subject for study and discussion by educators, businessmen and lay people. Changes in the economy and social situations of Iowa have been attributed to urbanization which characteristically has been responsible for (1) increasing specialization; (2) creating larger organizations and more formalized controls; (3) developing segmented interpersonal relations.

The population shift inherent in urbanization has been a subject for research at the university level. Results of rural to urban migration predict that the outlook for population growth in Iowa is "continued slow" unless other forces enter to speed it up.

Surveys of the state universities in Iowa have been sponsored by the Board of Regents from which information was gathered pertinent to the internal operations and planning functions of higher education. Also, the Legislative Budget and Financial Control Committee sponsored a survey of public and private colleges in Iowa.

In addition to the above surveys, a student financial resources study completed in 1959, and sponsored by the Board of Regents, contributed certain data to the subject of "means of support" for students attending public universities in Iowa. It was suggested in the conclusions to this study that parents and students now contribute to the limit of their resources, and, therefore, students are obliged to seek funds from other sources for their support. These data have significance for future planning and development of higher education in Iowa.

CHAPTER III

METHODOLOGY AND PROCEDURES

Significant as a principle of operation in a state-wide effort such as this study is that of involvement of citizenry. The Iowa Legislative Assembly of 1959 commissioned the Iowa Legislative Research Bureau to carry out a study of facilities and needs of higher education in the state. The Research Bureau, in turn, contracted with Dr. Raymond C. Gibson, Professor of Higher Education, Indiana University, to prepare a proposal for the study and to direct it. Dr. Gibson engaged a survey team for the study. Groups in Iowa, such as the Governor's Citizen's Advisory Committee and the Iowa Association of College Presidents, contributed ideas and assistance during the study.

These groups, the colleges and universities, various agencies of the state government, and other citizens of Iowa were directly involved in the study.

The manpower and higher education alliance with which this study was concerned was a major aspect of the over-all Iowa Higher Education Study. Methods, procedures, and the survey instrument were products of decisions made by the survey team.

A single study can begin the processes which can be transferred into a state system, to become a continuous endeavor under the direction of concerned groups in the state and departments of state government. The Iowa Study was proposed as a unit, with the goal of completing (a) college enrollment projections, (b) a manpower study, (c) a junior college study, and (d) faculty needs, by October of 1960.

Survey of Basic Occupations: A Determinant of Needs for Higher Education

A new approach to a state-wide study of higher education was inaugurated with the Iowa Study of Higher Education. This was a survey of selected occupations and was proposed as a basis for the determining of higher educational needs for the coming decade. Basic occupations surveyed were those which most often require, or whose workers would benefit from, one, two or four years of education beyond high school. Six of the 11 occupational groups classified by the United States Census were chosen to be surveyed. The occupational groupings were: (1) professional, technical and kindred workers; (2) farmers and farm managers; (3) managers, officials and proprietors; (4) clerical and kindred workers; (5) sales workers; and (6) craftsmen, foremen and kindred workers.

It was assumed that, since craftsmen, foremen and kindred workers have had a median number of school years completed (9.3 for men and 9.9 for women) occupational groups requiring educational preparation below this median would

make little use of higher education programs. Forty-four occupations we chosen from these six major categories. These were:

1. Professional, technical and kindred workers:

(a) accountant
(b) architect
(c) chemist
(d) dietitian
(e) draftsman
(f) nurse
(g) optometrist
(h) photographer
(i) surveyor

2. Farmers and farm managers:

(a) farm owner
(b) farm manager

3. Managers, officials, and proprietors:

(a) buyer
(b) credit manager
(b) store manager
(d) hotel manager
(e) restaurant manager
(f) wholesale manager
(g) railroad conductor
(h) county official
(i) city official
(j) state official
(k) federal official

4. Clerical and kindred workers:

(a) attendant in physician's office
(b) bookkeeper
(c) bank teller
(d) cashier
(e) typist
(f) secretary

5. Sales workers:

(a) advertising agent
(b) salesman
(c) realtor
(d) broker
(e) sales clerk

6. Craftsmen, foremen and kindred workers:

(a) electrician
(b) foreman
(c) jeweler
(d) watchmaker
(e) machinist
(f) radio and television repairman
(g) mechanic
(h) optician
(i) lithographer
(j) toolmaker
(k) printer

The professional category was expanded to include groups of educators, college faculty and administrators, plus leaders in business, industry, manufacturing, and agriculture. These professions traditionally have been vitally concerned with manpower problems and higher education. On one hand, the majority of professional workers graduate from the college or university, and on the other hand, the majority of them have daily contacts and relationships with workers. Such associations give professional workers continuing contacts with manpower problems.

Research Methods

Initially the survey team's consideration of research methods centered about the use of the interview technique; however, it was agreed that this technique had limitations which made it less desirable for this study than the questionnaire method.

For surveying a large population, the questionnaire method seemed best for obtaining data on higher education and information about individuals in the occupational structure of Iowa. Questions of a precise and unambiguous nature were formulated in order to satisfy requirements of the questionnaire method of research. It was recognized by the survey team that there were certain disadvantages in this method; for example, (1) individual interpretation of the questions, (2) the problem of semantic barriers, and (3) the "no-response" segment of the sample. However, notwithstanding these points, it was the unanimous opinion of the survey team that no other research method would yield data of the scope needed in this study.

In addition to members of the survey team, experts in questionnaire construction were involved in the process of item construction. Individual items were formulated, categorized, reviewed, refined and redrafted. Preliminary copies of the questionnaire were examined by the survey team and the final draft developed.

The survey instrument was designed to show interrelationships by statistical analysis within and between the occupational groups and responses. Items dealt with certain aspects of education beyond the high school. Persons completing the instrument were asked to indicate reactions to items on a three point scale: (1) very important, (2) important, (3) not important.

Five areas of information were covered in the questionnaire and items were formulated within each. The areas were:

Part I. Personal Data

Part II. Education requirements, training, skills and abilities presently required of persons in a particular occupation

Part III. Temperaments, skills and abilities required of persons in a particular occupation

Part IV. Amount and type of formal education and on-the-job training the subject received

Part V. Problems of higher education in meeting needs of society and of individuals.

Two forms of the questionnaire were printed. Form A (Appendix A) was completed by the workers in the occupational groupings. Form B (Appendix B) was completed by the professional workers in business, industry and manufacturing, agriculture, and education. Form B was an exact duplication of the last two pages of Form A.

Sampling

Data were gathered from a five per cent sample of the universe of Iowa workers in the first six basic occupational groups, as classified by the United States Census. This resulted in the selection of a sample of 4,000 individuals. The sample consisted of workers in the basic occupational groups, and representatives from business, agriculture, and education.

Distribution

Headquarters for the Iowa Higher Education Study were established in the State House in Des Moines, Iowa. Instruments were mailed to various agencies which had consented to assist with their distribution. These were:

1. Superintendents of Schools
2. County Agricultural Extension Directors
3. College and University Administrators and Faculty
4. Junior College Administrators and Faculty
5. Chamber of Commerce Officers
6. Business, Industrial and Manufacturing Firms
7. Other Iowa Associations and Organizations.

Distribution of the instruments was made as follows:

1. The above groups consented to participate in the distribution of questionnaires.

2. An occupational title was stamped at the top of each questionnaire. For example, the statement of the instrument read: To be filled out by _____. (Accountant, Nurse, Optometrist was stamped on the blank.) Otherwise, questionnaires were not identified by individuals filling them out.

3. Packets of the questionnaires were assembled.

4. Packets were mailed to each of the above groups with a cover letter of explanation and instruction, and with return self-addressed envelopes enclosed.

5. Questionnaires were carried to the designated workers by recipients of the packets.

Packets were assembled for superintendents of schools on the basis of type and size of population of towns and cities, in accordance with the following criteria:

1. Towns of 500 to 999 population received 5 copies form A of the Questionnaire on Selected Occupations plus 1 form B stamped Educator for the principal or superintendent to complete.

2. Cities of 1,000 to 2,999 population received 10 copies form A of the Questionnaire on Selected Occupations and 3 copies form B stamped Educator.

3. Cities of 3,000 to 4,999 received 20 copies form A of the Questionnaire on Selected Occupations and 3 copies form B stamped Educator.

4. Cities of 5,000 to 14,999 received 30 copies form A of the Questionnaire on Selected Occupations and 3 copies form B stamped Educator.

5. Cities 15,000 or more received 40 copies form A of the Questionnaire on Selected Occupations and 3 copies form B stamped Educator.

County Agricultural Extension Directors were sent a packet of 5 copies form A of the Questionnaire on Selected Occupations. The cover letter requested that they complete a copy marked Agriculture and request a Farm Owner and Farm Manager, the Extension Director's Assistant, and a Home Demonstration Agent to complete a similar one.

Presidents of colleges and universities were sent packets of the form B on higher education. The cover letter of instruction requested the president to complete one and the deans and department chairmen, whom he designated, to do likewise. The formula for setting up packets of these mailings was based on the population of the colleges and universities.

Colleges of	300 or less students	received 10 copies
	301 to 1000	20 copies
	1001 to 5000	30 copies
	5001 or more	40 copies

Each junior college dean was sent a packet containing one copy each of the 44 occupations surveyed by the Questionnaire on Selected Occupations, and three form B instruments to be filled out by the administrators or teachers designated by them. The dover letter and directions given to junior college administrators suggested that they choose students whose parents were in a basic occupation.

Chamber of Commerce presidents in cities of 5,000 or more population received a packet of five copies of form A of the Questionnaire on Selected Occupations. A later mailing of the same packet was sent to Chamber of Commerce presidents in cities of 1,000 to 4,999. Each packet contained a form B questionnaire on higher education stamped Community Leader. A cover letter was included with an explanation of the study and instructions.

A different distribution technique was used with business, industrial, and manufacturing firms. The Iowa Development Commission provided a list for the sampling of firms, by type of industry and size of firm. Fifty firms with from 4 to 249 employees were selected and 100 with 250 or more employees were chosen. The selection criteria for type of firm were applied to the universe of Iowa employers for March, 1959. Where possible the sample was equitably drawn from the full geographical distribution.

Five copies of form A of the Questionnaire on Selected Occupations were mailed to each of 50 firms employing from 4 to 249 workers. These copies bore stamped occupations according to the type of workers employed. A form B questionnaire was enclosed with each packet for the president, manager, or owner of the firm.

Firms of 250 or more employees were requested by letter to return an order for form A of the Questionnaire on Selected Occupations. They were asked to consent to employees completing the questionnaires. A letter from the Iowa Development Commission accompanied this mailing. When this order was received at the State House Office of Higher Education Study, it was filled and returned immediately with a cover letter. Each owner or top administrator was asked to complete the form B questionnaire on higher education.

From a list of Iowa Associations compiled by the Greater Des Moines Chamber of Commerce, 50 organizations with special relationship to the Questionnaire on Selected Occupations received packets. Some of these were: the Iowa Nursing Association, the Iowa Daily Press Association, and the Iowa Association of Optometrists.

Geographical Coverage

Initially it was planned to distribute the Questionnaire on Selected Occupations over the entire state. Villages of 500 or more population were reached by either the school superintendents or the Chamber of Commerce officers. A cross check was made of towns and cities on the Iowa map by an east to west and north to south scanning before mailings were set up. Although the study attempted to offer representation to as many of the total population as possible, many of the basic occupations were not represented in the smallest towns; it was therefore necessary to choose those which were available in each community. Returns indicated a widespread geographical coverage of the state. This will be dealt with in Chapter IV.

Interviews

In order to convey the purpose of the study, to answer questions about it, and to solicit cooperation and assistance, personal contacts and interviews were conducted. These interviews provided a broad view of manpower problems and higher education and a perspective on political, economic, and social characteristics of Iowa. Some organizations and individuals represented in the interviewing phase of the study were:

1. Secretary to the Board of Regents
2. Governor's Study Committee on Higher Education
3. Advisory Committee to the Director of the Legislative Research Bureau
4. Inter-Institutional Technical Institute Study Committee of Iowa

5. Presidents and other officials of all senior colleges and universities in Iowa

6. Deans of all public and private junior colleges in Iowa

7. Secretary of the American Junior College Association and other officials in Washington, D. C.

8. Officials in the American Council on Education and in the U. S. Office of Education

9. Attendance at one meeting of the state Board of Regents

10. Meeting with a representative citizens group of 40 people

11. Superintendent of Public Instruction

12. Secretary to the Manufacturer's Association

13. Reporters of Iowa Daily Press Association and from specific newspapers

14. Director and Associates of the Iowa Development Commission

15. Iowa Employment Security Commission

16. President of the Greater Des Moines Chamber of Commerce

17. Executive Director of the Iowa College Foundation

18. President of the Hach Chemical Company

19. Counselors at Des Moines Technical High School

20. Principal of East High School, Des Moines

21. Members of the Citizen's Advisory Committee

22. Director, U. S. Department of Labor, Bureau of Apprenticeship Training, Des Moines

23. Assistant to the Governor of Iowa

Analysis of Data

Completed questionnaires totaling 3,652 were sorted into occupational categories and numbered. Responses were coded, and punched on IBM cards for mechanical processing and tabulation.

Frequency tables were set up and a statistical analysis was made, results of which are reported in Chapter IV.

Tabulations by number and mean responses were made for each item of the Questionnaire on Selected Occupations.

Curricula of Four-Year Colleges and Universities in Iowa

Programs and curricula of public and private degree-granting colleges and universities were studied. Catalogs, brochures, and literature from each institution were examined. Programs were compared with manpower needs in Iowa.

These data were helpful in comparing college programs with results of the Questionnaire on Selected Occupations.

The results indicated a strong liberal arts emphasis in most of the colleges and universities of Iowa. These facts were important to the conclusions and recommendations in Chapter V.

CHAPTER IV

ANALYSIS OF DATA FROM THE NEEDS SURVEY

Introduction

A total of 3,652 Iowa citizens responded to the Questionnaire on Selected Occupations of the Iowa Higher Education Study. Of this total number, 2,075 were individuals among the top six basic occupational categories as classified by the United States Census Bureau. These categories were (1) professional, technical and kindred workers; (2) farmers and farm managers; (3) managers, officials and proprietors; (4) clerical and kindred workers; (5) sales workers; and (6) craftsmen, foremen and kindred workers. Hereafter in this study these six occupational groupings will be referred to as "Occupational Groups". Individuals in these categories completed form A of the questionnaire.

All other respondents, or 1,577 individuals, were selected representatives from agriculture, business and industry, and education. These citizens were asked to complete form B of the questionnaire, which was the last half of form A, and dealt with problems pertinent to higher education. These 1577 individuals are members of the six basic occupational groups, but they were selected on the basis of their status as employers or leaders in their groups.

Geographical Representation

Questionnaires were returned from all sectors of Iowa and Table 7 illustrates the distribution of these returns by size of town and city. The state was first divided into quadrants for reporting these data, with lines being drawn north to south from Scarville through Garden Grove, and east to west from Miles to Onowa. A section from each of these quadrants was marked off for the central sector. The boundaries of the central sector were located by drawing lines from Waterloo west to Manson, south to Fontanelle and east to Oskaloosa.

TABLE 7. NUMBER OF IOWA TOWNS AND CITIES RETURNING QUESTIONNAIRES

Population	Geographical location and number of towns and cities in sampling					Total
	North-east	South-east	Cen-tral	North-west	South-west	Total
Less than 500	6	6	7	9	4	32
500 to 999	8	11	12	11	5	47
1,000 to 4,999	18	19	20	22	19	98
5,000 to 14,999	5	8	7	9	4	33
15,000 or more	3	9	4	1	0	17
Total	40	53	50	52	32	227

A close examination of this table revealed that the largest number of returns was concentrated within cities of 1,000 to 4,999 population. In Iowa a city is defined as a community having 2,000 or greater population, but the national classification for cities begins at 2,500. However, due to the desire for widespread representation in this study, the arbitrary population divisions noted in Table 7 were established for distribution of the questionnaire. This decision was in deference to the large number of small communities in Iowa. The returns as presented in Table 7 reveal a widespread and varied sampling of small, medium and large communities over the whole state.

Specific Data from the Questionnaire

Tying in closely with geographical location was the first question in Part I of the Questionnaire on Selected Occupations which asked where respondents lived. Other questions on personal data followed in this section. Table 8 was presented to give a total picture of the place of residence of the respondents.

Of the 2,075 respondents, the majority, 1,784, or 86 per cent, reported that they lived in the city. The number reporting residence on the farm was 158, or eight per cent of the total of 2,075 individuals. Those reporting residence as non-farm, or rural, represented 123 of the total, or six per cent. This was not an unusual response considering, (1) the nature of the occupations represented within the occupational groups, many of which were found in larger numbers in the more populated towns and cities, and (2) the fact that a proportionately larger number of questionnaires was sent to the more densely populated towns and cities.

TABLE 8. PLACE OF RESIDENCE OF RESPONDENTS

Occupational groups	Farm		Non-farm rural		City	
	Number	Per cent	Number	Per cent	Number	Per cent
Professional, technical and kindred workers	6	2.0	18	4.0	407	94.0
Farmers and farm managers	98	63.0	10	7.0	47	30.0
Managers, officials and proprietors	13	3.0	25	5.0	464	92.0
Clerical and kindred workers	26	7.0	31	9.0	298	84.0
Sales workers	7	3.0	13	5.0	250	92.0
Craftsmen, foremen and kindred workers	8	2.0	26	8.0	318	90.0
Total	158	8.0	123	6.0	1784	86.0

Tables 9 to 13 dealt with personal data and education required for respondents' work. It will be noted that 76 per cent of the respondents to this question were males and that 24 per cent were females. Included with this information is that found in Table 10 which makes possible the comparison between the distribution of males and females in the total labor force in Iowa.

Data in Table 11 indicated the average ages of the respondents. The average or mean age for the total group was 43 years. Managers, officials and proprietors reported the highest average age in years, that being 48. The youngest group was the clerical and kindred workers.

The question of gross annual incomes of the occupational groups was recorded in Table 12. Median incomes were presented for each. A gross annual income of $6,250 was reported as most common to four of the six groups. Correspondingly, the $6,250 figure was found to be the median for all groups combined. Farmers and farm managers had the highest gross annual income figure, while clerical and kindred workers had the lowest. High gross income for farmers does not give the true picture of income for farm groups.

Part II of the questionnaire dealt with education requirements, training, skills and abilities required of persons in the occupations.

The amount of education required by employers was indicated by the data of Table 13.

Indications were that high school graduation was the minimal education requirement by employers of the workers in the six occupational groups. College graduation was required by the professional and technical groups and the farmers and farm managers. This tendency to require college work for farm groups was a self-imposed standard.

Table 14 concerned additional training required by employers such as apprenticeship, cooperative training with both work and study, trade school training, or work in a business school.

Most respondents in all occupational groups reported that no additional training was required by employers. However, farm managers, farmers, managers, officials and proprietors, and sales workers reported that employers required some form of cooperative training for their occupations. Craftsmen, foremen and kindred workers reported that apprenticeship training was required by employers in their occupations.

Part IV of the questionnaire dealt with amount and type of formal education and on-the-job training the respondents had received. Corresponding in large part to the amount of education required by employers was the actual amount of education completed by the respondents. Table 15 indicated but one minor exception to this trend; namely, farmers and farm managers reported that employers required college graduation. The sampling of farmers and farm managers gave evidence that they actually had completed a high school education. Perhaps this was a personally projected requirement since so many individuals in this occupational group reported that they were "self-employed."

TABLE 9. SEX DISTRIBUTION OF RESPONDENTS

Occupational groups	Number			Per cent		
	Male	Female	Total	Male	Female	Total
Professional, technical and kindred workers	315	115	430	73.0	27.0	100.0
Farmers and farm managers	154	1	155	99.0	1.0	100.0
Managers, officials and proprietors	454	46	500	90.0	10.0	100.0
Clerical and kindred workers	68	285	353	20.0	80.0	100.0
Sales workers	221	47	268	82.0	28.0	100.0
Craftsmen, foremen and kindred workers	344	5	349	98.0	2.0	100.0
Total	1556	499	2055	76.0	24.0	100.0

TABLE 10. DISTRIBUTION OF IOWA WORKERS BY SEX IN SIX OCCUPATIONAL GROUPS*

Occupational groups	Number			Per cent		
	Male	Female	Total	Male	Female	Total
Professional, technical and kindred workers	40,574	36,551	77,125	6.0	6.0	12.0
Farmers and farm managers	197,339	2,379	199,718	31.0	0.5	31.5
Managers, officials and proprietors	73,788	10,257	84,045	11.0	2.0	13.0
Clerical and kindred workers	34,950	63,371	98,321	5.0	10.0	15.0
Sales workers	45,880	25,065	70,945	7.0	4.0	11.0
Craftsmen, foremen and kindred workers	112,004	3,270	115,274	17.0	0.5	17.5
Total	504,535	140,893	645,428	77.0	23.0	100.0

*Source: 1950 Census of Population, Vol. II, Part 15, Iowa, Table 73.

TABLE 11. MEAN AGES OF RESPONDENTS

Occupational groups	Age brackets						Total	Mean age
	17-28	24-28	29-34	35-50	51-65	65 or over		
Professional, technical and kindred workers	26	30	73	213	75	11	428	42
Farmers and farm managers	0	6	17	84	39	10	156	45
Managers, officials and proprietors	2	11	47	235	173	34	502	48
Clerical and kindred workers	68	42	53	146	41	4	354	37
Sales workers	12	25	50	118	56	10	271	42
Craftsmen, foremen and kindred workers	5	28	48	193	68	9	351	43
Total	113	142	288	989	452	78	2062	43

TABLE 12. GROSS ANNUAL INCOMES

Occupational groups	Income brackets									Total	
	$1,000-1,999	$2,000-2,999	$3,000-4,999	$5,000-7,499	$7,500-9,999	$10,000-14,999	$15,000-24,999	$25,000-50,000	Over $50,000		Median income
Professional, technical and kindred workers	7	8	89	106	81	69	34	12	4	410	$6,250
Farmers and farm managers	2	3	7	31	23	31	31	14	7	149	12,500
Managers, officials and proprietors	4	13	55	139	120	87	45	11	8	482	6,250
Clerical and kindred workers	18	87	161	58	12	9	2	1	0	348	3,500
Sales workers	6	28	29	77	50	40	27	5	3	265	6,250
Craftsmen, foremen and kindred workers	1	2	48	185	50	32	9	6	2	335	6,250
Total	38	141	389	596	336	268	148	49	24	1989	$6,250

TABLE 13. AMOUNT OF EDUCATION REQUIRED BY EMPLOYER

Occupational groups	Less than high school	High school graduate	Education beyond high school				College graduate	Graduate study	Total	Mode
			One year	Two years	Three years	Four years				
Professional, technical and kindred workers	2	112	5	13	44	35	166	44	421	College Graduate
Farmers and farm managers	0	33	1	4	1	5	40	2	86	College Graduate
Managers, officials and proprietors	6	234	5	23	3	24	100	34	429	H. S. Graduate
Clerical and kindred workers	3	311	4	13	7	4	4	1	347	H. S. Graduate
Sales workers	8	158	2	13	1	15	44	1	242	H. S. Graduate
Craftsmen, foremen and kindred workers	9	246	10	12	0	1	11	2	291	H. S. Graduate
Total	28	1094	27	78	56	84	521	139	1816	

TABLE 14. ADDITIONAL TRAINING REQUIRED BY EMPLOYER

Occupational group	None	Apprenticeship	Cooperative work-study	Trade school	Business college	Total	Mode
Professional, technical and kindred workers	109	92	89	7	7	304	None
Farmers and farm managers	36	25	37	1	6	106	Cooperative work-study
Managers, officials and proprietors	132	70	158	3	22	396	Cooperative work-study
Clerical and kindred workers	153	33	55	1	67	310	None
Sales workers	79	22	122	4	3	230	Cooperative work-study
Craftsmen, foremen and kindred workers	33	110	41	28	1	214	Apprenticeship
Total	542	352	502	44	106	1546	

TABLE 15. FORMAL EDUCATION COMPLETED BY RESPONDENTS

Occupational groups	Less than high school	High school graduate	Educational level education beyond high school				College graduate	Graduate study	Total	Mode
			One year	Two years	Three years	Four years				
Professional, technical and kindred workers	10	66	20	14	42	43	158	63	416	College graduate
Farmers and farm managers	3	50	8	8	3	7	49	10	138	H. S. graduate
Managers, officials and proprietors	23	155	29	56	30	23	98	56	470	H. S. graduate
Clerical and kindred workers	6	224	39	45	14	5	13	4	350	H. S. graduate
Sales workers	16	100	17	25	13	7	76	8	262	H. S. graduate
Craftsmen, foremen and kindred workers	30	167	26	38	11	12	16	8	308	H. S. graduate
Total	88	762	139	186	113	97	410	149	1944	

Where individuals received their formal education, whether in Iowa or outside, was the subject of another question in Part IV. Table 16 indicates the findings on this question.

TABLE 16. WHERE RESPONDENTS' EDUCATION WAS COMPLETED

Occupational group	In Iowa		Outside Iowa		Total
	Number	Per cent	Number	Per cent	
Professional, technical and kindred workers	259	61.0	166	39.0	425
Farmers and farm workers	137	88.0	18	12.0	155
Managers, officials and proprietors	342	69.0	154	31.0	496
Clerical and kindred workers	300	85.0	51	15.0	351
Sales workers	202	75.0	67	25.0	269
Craftsmen, foremen and kindred workers	246	71.0	102	29.0	348
Total	1486	73.0	558	27.0	2044

Individuals responding to the question of where they received formal education indicated: 27 per cent received education outside of Iowa and 73 per cent received it within the state.

Another question ascertained the high school courses which had the strongest influence on the respondents. Replies revealed data as reported in Table 17. Courses most often reported as having the strongest influence were "general" and "college preparatory." Sales workers reported that the commercial or business course influenced them most.

Of the 1,115 individuals reporting that they had attended college, Table 18 illustrates the major courses of study which they followed. The number having attended college represented 54.0 per cent of the 2,075 respondents in the occupational groups.

What might seem to be a high percentage of respondents attending college, 54.0 per cent, could be explained by the fact that the six occupational groups sampled were chosen mainly because they reportedly made use of education beyond the high school, higher education, in their occupations. The modal report of

TABLE 17. HIGH SCHOOL COURSES HAVING STRONGEST INFLUENCE ON RESPONDENTS

Occupational groups	High school courses									Total
	Never attended high school	General course	College prep.	Agriculture	Commercial or business	Distributive education	Home economics	Indus. Arts	Vocational	
Professional, technical and kindred workers	1	91	201	1	49	3	19	47	7	419
Farmers and farm workers	12	65	25	32	13	1	0	2	0	150
Managers, officials and proprietors	24	143	146	19	131	7	3	11	8	492
Clerical and kindred workers	2	59	56	3	222	2	9	0	1	354
Sales workers	5	80	69	10	81	5	3	9	3	265
Craftsmen, foremen and kindred workers	29	121	44	2	36	1	0	44	61	338
Total	73	559	541	67	532	19	34	113	80	2018

TABLE 18. MAJOR COURSE OF STUDY FOLLOWED IN COLLEGE

Occupational group	Major courses					Total	Mode
	Profes-sional	Science, literature, and arts	Business or commerce	Technical curricula	Other		
Professional, technical and kindred workers	204	53	51	13	21	342	Professional
Farmers and farm managers	14	29	9	6	27	85	Science, literature and arts
Managers, officials and proprietors	102	56	125	3	17	303	Business or commerce
Clerical and kindred workers	21	18	86	1	6	132	Business or commerce
Sales workers	26	33	73	2	10	144	Business or commerce
Craftsmen, foremen and kindred workers	38	12	30	17	12	109	Professional
Total	405	201	374	42	93	1115	

courses followed in college reveals that those courses most closely related to the work of the various occupations had been taken in college with but one exception; namely, more craftsmen, foremen and kindred workers checked professional than any other course. An explanation for this might be that the foremen included in the sample represent a group of workers highly trained in their special field of business and industry.

Table 19 indicates that the modal requirement for on-the-job training is approximately three months for all occupational groups except managers, officials and proprietors. Six months or more are required among 122 of 1713 respondents.

TABLE 19. ON-THE-JOB TRAINING RECEIVED

Occupational groups	Time periods					Total	Mode
	0-1 week	2-3 weeks	1 month	3 months	6 months or more		
Professional, technical and kindred workers	99	20	19	189	19	346	3 months
Farmers and farm managers	17	7	8	54	6	92	3 months
Managers, officials and proprietors	123	26	79	55	41	324	0-1 week
Clerical and kindred workers	102	25	25	233	34	419	3 months
Sales workers	53	23	41	99	15	231	3 months
Craftsmen, foremen and kindred workers	26	10	19	239	7	301	3 months
Total	420	111	191	869	122	1713	3 months

Attitudes Toward Higher Education and Society

Questions 15 to 37 survey attitudes with reference to education, the changing needs of workers and society, and possible gaps in present programs of higher education in Iowa.

These questions were constructed in a way that would permit each respondent to check each problem or statement as: (1) Very important; (2) Important; or (3) Not important. Results were summarized by means of weighted average of responses on each item. This mean represents the typical response. The weighted average or mean was determined as follows: an item rated "very important" by one respondent received a numerical value of one; an item rated "important" received a numerical value of two; an item rated "not important" received a numerical value of three. Each of the three numerical values for a given question was multiplied by the number of respondents checking that value. The sum of these three products was divided by the sum of the respondents to the question. The process is the same as that used in figuring grade-point averages.

Example: 125 respondents checked an item very important; 30 respondents checked the same item important; and 75 respondents checked the item as not important.

$$\text{Mean response } \bar{X} = \frac{(125 \times 1) + (30 \times 2) + (75 \times 3)}{230} = \frac{410}{230} = 1.78$$

$\bar{X} = 1.78$. Typical rating assigned by these 230 respondents, as a whole, was 1.78. In terms of the intensity of the attitude, this value of 1.78 is roughly three-fourths of an interval below "very important" or about one-fourth of an interval above "important."

Values assigned in the weighting process correspond to rank order of intensity of the attitude. The lower the mean in each case, the more important the item. The higher, or closer the mean is to three, the less important the item.

This lengthy explanation is included to help laymen more adequately to understand tables 20 to 35. It is important to note that means are tabulated for each of the six occupational groups, and for tables 26 to 35, means are computed for nine groups. The three additional groups, beginning with Table 26, are leaders in (1) agriculture, (2) business and industry, and (3) education.

An analysis of variance was used to test the significance of differences among mean responses of groups to items.

On-the-job training. Table 20 presents mean responses of the occupational groups to questions 16 and 17, both of which are related to on-the-job training.

16. How important was your formal on-the-job training in your present occupation? (Check if you had any) 1___ 2___ 3___

17. How important do you think additional on-the-job training would be in your present occupation? 1___ 2___ 3___

TABLE 20. IMPORTANCE OF ON-THE-JOB TRAINING

Amount	Occupational Groups						
	Profes-sional workers	Farmers	Managers	Clerical workers	Sales workers	Craftsmen	Mean
Formal (initial)	1.53	1.56	1.51	1.56	1.55	1.28	1.50
Additional	2.09	2.25	1.92	2.32	1.93	1.82	2.04
Mean (total)	1.81	1.91	1.72	1.94	1.74	1.55	1.78

Means for the different occupational groups on the importance of formal on-the-job training ranged from 1.28 for craftsmen to 1.56 for clerical workers and farmers. The average mean for all groups on this item was 1.50 which rates the item at the mid-point between "important" and "very important," craftsmen giving the item the highest value of any group.

Additional on-the-job training drew similar responses, e.g., craftsmen rated the item highest (1.82) and clerical workers and farmers rated it lowest or 2.32 and 2.25 respectively. The average mean for all groups on this item was 2.04 which gave it a value of slightly less than "important." Differences between the means for questions 16 and 17 were significant at the .01 level of confidence.

Temperaments and work. Table 21 presents mean responses of the six occupational groups to the importance of certain temperaments. This table covers question number eight from the questionnaire.

8. How important are these temperaments for your occupation?
   a. Ability to do repetitious tasks 1___ 2___ 3___
   b. Ability to accept supervision and criticism 1___ 2___ 3___
   c. Ability to work in isolation or alone 1___ 2___ 3___
   d. Ability to work under stress 1___ 2___ 3___
   e. Ability to adjust to variety and change 1___ 2___ 3___
   f. Ability to influence the opinions and judgment of other people 1___ 2___ 3___
   g. Ability to work with other people 1___ 2___ 3___

On the importance of ability to do repetitious tasks, mean responses ranged from 1.44 for farmers to 1.89 for sales workers. The average mean was 1.67, which meant that the typical attitude was roughly one-third of an interval above "important."

Means for the six occupational groups on the importance of ability to accept criticism and supervision ranged from 1.37 for managers, officials and proprietors to 1.96 for farmers and farm workers. The average mean for all

TABLE 21. IMPORTANCE OF CERTAIN ABILITIES FOR OCCUPATIONAL GROUPS

Occupational Groups	To Do Repetitious Tasks	To Accept Supervision and Criticism	To Work in Isolation or Alone	To Work Under Stress	To Adjust to Variety and Change	To Influence Opinions and Judgment of People	To Work with People	Mean
Professional, technical and kindred workers	1.67	1.50	1.35	1.46	2.14	1.30	1.16	1.51
Farmers and farm workers	1.44	1.96	1.56	1.51	1.30	1.95	1.58	1.61
Managers, officials and proprietors	1.88	1.37	2.14	1.33	1.38	1.43	1.11	1.52
Clerical and kindred workers	1.51	1.42	2.28	1.50	1.63	2.25	1.20	1.68
Sales workers	1.89	1.46	2.03	1.41	1.37	1.22	1.09	1.50
Craftsmen, foremen and kindred workers	1.65	1.39	2.09	1.47	1.58	1.85	1.35	1.63
Mean	1.67	1.52	1.91	1.45	1.57	1.67	1.25	1.57

groups on this item was 1.52, giving an intensity of attitude midway between very important and important.

Means for the six occupational groups on the importance of ability to work in isolation or alone ranged from 1.35 for professional, technical and kindred workers to 2.28 for clerical and kindred workers. The average mean for the six groups on this item was 1.91, indicating an intensity of attitude approximately 10 per cent of an interval above "important."

On the importance of ability to work under stress, means of the six occupational groups ranged from 1.33 for managers, officials and proprietors, to 1.51 for farmers and farm workers. The average mean for the six groups on this item was 1.45, indicating an intensity of attitude approximately mid-point between "important" and "very important."

Concerning the importance of ability to adjust to variety and change, the means of the six occupational groups ranged from 1.30 for farmers and farm workers to 2.14 for professional, technical and kindred workers. All groups gave this item a greater intensity of attitude than did the professional group. The average mean for the six occupational groups was 1.57, placing the item approximately at the mid-point between "important" and "very important."

On the significance of ability to influence opinions and judgment of people, the means for the six groups ranged from 1.22 for sales workers to 2.25 for clerical and kindred workers. It is interesting that sales workers rated this item higher than any other group. The average of the means for the six occupational groups for this item was 1.67, indicating an intensity of attitude about one-third of an interval above "important."

Concerning ability to work with people, means of the six occupational groups ranged from 1.09 for sales workers to 1.58 for farmers and farm workers. The average mean for the six occupational groups was 1.25, giving this item an intensity of attitude one-fourth of an interval below "very important."

From Table 21, and an analysis of variance, it is noted that ability to work in isolation or alone was least important of the abilities and the mean response to this item was significantly different from the mean response to ability to work with people. This difference in the means was significant at the .01 level of confidence. Ability to work under stress was significantly more important than ability to work in isolation, the differences in means being significant at the .01 level of confidence.

Importance of physical skills. Table 22 presents the results and mean responses of the occupational groups to question number nine. This question deals with certain physical skills necessary or desirable for certain types of occupations.

9. How important are these physical skills and factors for your occupation?
   a. Skill in moving and using the hands easily . . . 1___ 2___ 3___
   b. Skill in coordinating the eyes, hands, and fingers . 1___ 2___ 3___
   c. Skill in observing differences in form and shape. . 1___ 2___ 3___
   d. Skill in coordinating hand and foot . . . . . 1___ 2___ 3___

TABLE 22. IMPORTANCE OF PHYSICAL SKILLS AND FACTORS

Occupational Groups	Physical Skills and Factors				
	Skill in using hands easily	Skill in coordinating eyes, hands, and fingers	Skill in observing differences in form and shape	Skill in coordinating hand and foot	Mean
Professional workers	1.60	1.63	1.78	2.60	1.90
Farmers	1.86	1.95	2.08	2.01	1.98
Managers	2.14	2.11	2.27	2.51	2.26
Clerical workers	1.42	1.47	2.44	2.68	2.00
Sales workers	2.31	2.30	2.28	2.61	2.38
Craftsmen	1.31	1.35	1.50	2.27	1.61
Mean	1.77	1.97	2.05	2.45	2.02

Means for the different occupational groups, on the importance of skill in using the hands easily, ranged from 1.31 for craftsmen to 2.31 for sales workers. The average mean for the six occupational groups on this item was 1.77, indicating an intensity of attitude approximately one-quarter of an interval above "important." The reader should note that the mean responses of the different occupational groups seemed to be closely related to the type of work performed by the groups.

On the importance of coordinating eyes, hands and fingers, the mean responses of the six occupational groups ranged from 1.35 for craftsmen to 2.30 for sales workers. The average for all six groups was 1.97, giving this item an intensity of attitude slightly above "important." Note that craftsmen and sales workers are at the extremes with respect to this item.

On the importance of skill in observing differences in form and shape, the means of the six occupational groups ranged from 1.50 for craftsmen to 2.44 for clerical workers. The average of the means for the six groups was 2.05, placing this item at the level of "important."

Concerning the significance of skill in coordinating hand and foot, means for the six occupational groups ranged from 2.01 for farmers to 2.68 for clerical workers. The average mean for the six groups was 2.45 placing this item midway between "important" and "not important."

Differences observed between the various groups in their responses to the skills indicated in question nine were significant at the .05 level of confidence, and differences between the means assigned to skills were significant at the .01 level of confidence.

Importance of certain skills and abilities. Table 23 presents mean responses of the occupational groups to question number 10 which listed fourteen skills and abilities for evaluation.

10. How important are these skills and abilities for your occupation?

a.	Expressing one's self well in writing	1___	2___	3___
b.	Reading various kinds of materials	1___	2___	3___
c.	Speaking and conversing with people	1___	2___	3___
d.	Using simple arithmetic	1___	2___	3___
e.	Using complex mathematics	1___	2___	3___
f.	Keeping accurate records	1___	2___	3___
g.	Making intelligent decisions	1___	2___	3___
h.	Supervising other people	1___	2___	3___
i.	Using research in solving problems	1___	2___	3___
j.	Following written or oral instructions	1___	2___	3___
k.	Making plans and following them through	1___	2___	3___
l.	Engaging in research activities	1___	2___	3___
m.	Using of various simple tools	1___	2___	3___
n.	Operating machines or equipment	1___	2___	3___
o.	Planning and operating training programs	1___	2___	3___

Means for the different occupational groups on the importance of expressing one's self well in writing ranged from 1.54 for managers to 2.36 for craftsmen. The average of all means for this item was 1.87, indicating an intensity of attitude slightly higher than "important."

On the importance of reading various kinds of materials, the means of the six occupational groups ranged from 1.50 for professional workers to 2.00 for clerical workers. The average mean for all groups on this item was 1.65, giving the item an intensity of attitude approximately one-third of an interval above "important."

Concerning the importance of speaking and conversing with people, means for the six occupational groups ranged from 1.07 for sales workers to 1.64 for farmers. The average of all means for the item was 1.39, indicating an intensity of attitude roughly .4 of an interval below "very important."

On the significance of using simple arithmetic, means for the six occupational groups ranged from 1.28 for farmers to 1.59 for craftsmen. The average mean for the six groups was 1.42, indicating an intensity of attitude .6 of an interval above "important." It is very significant that farmers assigned the highest value to this item.

On the importance of using complex mathematics, means for the six groups ranged from 2.19 for professional workers to 2.70 for farmers. Farmers came out at the opposite end of the range on this item in comparison with the intensity of their attitude on the importance of simple arithmetic. The average mean for the six groups on this particular item was 2.52, indicating an intensity of attitude at the mid-point between "important" and "not important."

TABLE 23. IMPORTANCE OF CERTAIN SKILLS AND ABILITIES

Skills and Abilities	Occupational Groups						
	Professional workers	Farmers	Managers	Clerical workers	Sales workers	Craftsmen	Mean
Expressing one's self well in writing	1.67	1.99	1.54	1.96	1.72	2.36	1.87
Reading various kinds of materials	1.50	1.51	1.52	2.00	1.62	1.75	1.65
Speaking and conversing with people	1.35	1.64	1.19	1.48	1.07	1.61	1.39
Using simple arithmetic	1.46	1.28	1.40	1.42	1.38	1.59	1.42
Using complex mathematics	2.19	2.70	2.60	2.60	2.65	2.38	2.52
Keeping accurate records	1.30	1.00	1.28	1.22	1.46	1.78	1.34
Making intelligent decisions	1.16	1.06	1.09	1.48	1.21	1.32	1.22
Supervising other people	1.62	1.64	1.33	2.38	1.77	1.89	1.77
Using research in solving problems	1.78	1.89	2.06	2.50	2.18	2.20	2.54
Following written or oral instructions	1.39	1.76	1.41	1.29	1.41	1.36	1.44
Making plans and following them through	1.34	1.22	1.27	1.71	1.33	1.55	1.40
Engaging in research activities	2.19	2.44	2.33	2.70	2.42	2.46	2.42
Using various simple tools	2.04	1.82	2.53	2.54	2.66	1.45	2.17
Operating machines or equipment	2.10	1.64	2.42	1.62	2.61	1.39	1.97
Planning and operating training programs	2.28	2.67	1.98	2.73	2.24	2.36	2.38
Mean	1.69	1.75	1.73	1.97	1.84	1.83	1.80

On the significance of keeping accurate records, mean responses of the six occupational groups ranged from 1.00 for farmers to 1.78 for craftsmen. The average mean for all groups was 1.34, indicating a value of approximately one-third of an interval below "very important." Readers will note that this is the first item thus far in the report which has received a mean response from any group of 1.00.

Concerning the importance of making intelligent decisions, mean responses of the six groups ranged from 1.06 for farmers to 1.48 for clerical workers. The average mean for the six groups was 1.22, indicating an intensity of attitude about one-fifth of an interval below "very important." Again, it was the farmers who gave this item the highest rating.

On the importance of ability to supervise other people, mean responses of the six groups ranged from 1.33 for managers to 2.38 for clerical workers. The average of all means on this item was 1.77, indicating an intensity of attitude one-fourth of an interval above "important."

On the significance of using research in solving problems, mean responses of the six groups ranged from 1.78 for professional workers to 2.50 for clerical workers. The average mean for the six groups was 2.54, placing this item midway between "important" and "very important." It is significant to note here that professional workers place a higher value upon ability to do research than any other group.

Concerning the importance of following written or oral instructions, mean responses of the six groups varied from 1.29 for clerical workers to 1.76 for farmers. The average of all means on this item was 1.44, placing the item midway between "important" and "very important."

Concerning the importance of making plans and following them through, mean responses of the six groups ranged from 1.22 for farmers to 1.71 for clerical workers. The average of all means on this item was 1.40, indicating an intensity of attitude .4 of an interval below "very important."

Mean responses on the importance of engaging in research activities ranged from 2.19 for professional workers to 2.70 for clerical workers. The average mean for the six occupational groups on this item was 2.42, giving the item an intensity of attitude .4 of an interval below "important."

Mean responses on the importance of using various simple tools ranged from 1.45 for craftsmen to 2.66 for sales workers. The average of all means for the six groups was 2.17, giving this item an intensity of attitude approximately one-fifth of an interval below "important."

On the significance of operating machines or equipment, mean responses ranged from 1.39 for craftsmen to 2.61 for sales workers. The average mean for all groups was 1.97, indicating an intensity of attitude slightly higher than "important."

There was no significant difference between the values assigned to these skills by the six occupational groups, but the differences in the means for the skills and abilities were significant at the .01 level of confidence.

Intensity of the typical attitude toward the various skills and abilities presented in Tables 21 to 24 indicates that workers in the six occupational groups attach great significance to certain skills and competencies as well as habits that may be acquired through formal education.

Significance of additional education. Table 24 presents the responses of the six occupational groups to question 15 of the questionnaire.

15. How important would additional education be in achieving the following goals?
    a. In obtaining a new job in which you are interested 1___ 2___ 3___
    b. For the success of anyone going into your occupation . . . . . 1___ 2___ 3___
    c. For advancement or promotion in your present occupation . . . . . 1___ 2___ 3___

TABLE 24. IMPORTANCE OF ADDITIONAL EDUCATION FOR CERTAIN GOALS

Goals	Occupational Groups						
	Profes-sional workers	Farmers	Managers	Clerical workers	Sales workers	Crafts-men	Mean
Obtaining a new job	1.86	1.72	1.75	1.82	1.82	1.64	1.77
Success in respondent's occupation	1.70	1.93	1.70	2.06	1.81	1.72	1.82
Advancement or promotion in occupation	1.83	2.12	1.94	2.11	1.93	1.69	1.94
Mean	1.80	1.92	1.80	2.00	1.85	1.68	1.84

Means for the different occupational groups concerning the significance of additional education for obtaining a new job ranged from 1.64 for craftsmen to 1.86 for professional workers. The average mean for all groups was 1.77, placing the item roughly one-fourth of an interval above "important."

Concerning the importance of additional education for success in the respondents' occupations, mean responses of the six groups ranged from 1.70 for professional workers and managers to 2.06 for clerical workers. The average mean for the six groups was 1.82, indicating a value for this item approximately .2 of an interval above "important."

On the importance of additional education for advancement or promotion in respondents' occupations, mean responses ranged from 1.69 for craftsmen to 2.12 for farmers. The average mean for the six groups was 1.94 giving the item

a value slightly above the level of "important." Differences between groups in their responses to the items in this group of questions and between means for the three items in the question were significant at the .05 level of confidence. This means that there is a significant difference between the groups in the importance that they attach to additional education for obtaining a new job, for success in their present positions, and for advancement or promotion in their various occupations. It may be noted that craftsmen, foremen and kindred workers regarded additional education as important to them, and the difference between their responses and responses of other groups was significant at the .01 level of confidence.

Significance of high school education. Table 25 presents mean responses of the six occupational groups to question 18 from the questionnaire. This item deals with the significance of high school education in the achievement of four objectives.

18. How important was your high school education in meeting the following four objectives?
    a. Providing experiences necessary for developing effective citizenship . . . . . 1___ 2___ 3___
    b. Preparing you for success in college . . . 1___ 2___ 3___
    c. Developing personal qualities, habits and appreciations necessary for wholesome living. . 1___ 2___ 3___
    d. Developing vocational skills and abilities necessary for success in your work . . . 1___ 2___ 3___

Means for the different occupational groups on the significance of high school education in providing experiences necessary for developing effective citizenship ranged from 1.52 for clerical workers to 1.71 for professional workers. The average mean for the six groups was 1.61, giving the item an intensity of attitude about .4 of an interval above "important."

On the importance of high school education as a preparation for success in college, mean responses of the six occupational groups ranged from 1.48 for professional workers to 1.69 for craftsmen. The average mean was 1.59, indicating an intensity of attitude approximately .4 of an interval above "important." The range of mean responses for developing personal qualities necessary for wholesome living was from 1.42 to 1.70. The average mean was 1.59, indicating an intensity of attitude of "very important."

Mean responses of the six occupational groups concerning the significance of secondary education in the development of vocational skills and abilities necessary for success in one's work ranged from 1.47 for clerical workers to 2.07 for farmers. Professional workers gave the item a mean of 2.05. The average mean for the six groups was 1.87, giving the item an intensity of attitude slightly higher than "important." There were no significant differences between the means on the four parts of this question, and there were no significant differences between the average means of the various occupational groups on this question. The typical response to the four items was approximately .4 of an interval above "important."

Objectives of college education. Table 26 presents mean responses of nine occupational groups to question number 20 in the questionnaire. The three additional groups incorporated in this table are leaders in agriculture, in business and industry, and in education. This increased the sample from 2075 to 3652.

TABLE 25. IMPORTANCE OF HIGH SCHOOL IN MEETING CERTAIN GOALS

Goals	Occupational Groups						
	Profes-sional workers	Farmers	Managers	Clerical workers	Sales workers	Crafts-men	Mean
Providing experiences for developing effective citizenship	1.71	1.62	1.60	1.52	1.59	1.63	1.61
Preparing one for success in college	1.48	1.60	1.54	1.67	1.54	1.69	1.59
Developing personal qualities, habits and appreciations necessary for wholesome living	1.70	1.65	1.58	1.42	1.53	1.65	1.59
Developing vocational skills and abilities necessary for success in one's work	2.05	2.07	1.91	1.47	1.83	1.88	1.87
Mean	1.74	1.74	1.66	1.52	1.62	1.71	1.64

20. Please rate these goals of a college education.

a. Understanding and enjoying the arts and sciences of man	1___	2___	3___
b. Acquiring and using the skills and habits of critical thinking.	1___	2___	3___
c. Learning to express one's thoughts effectively in writing and speaking	1___	2___	3___
d. Developing skill in active, responsible and effective citizenship	1___	2___	3___
e. Learning effective ways to use leisure time. .	1___	2___	3___
f. Preparing one's self for a satisfying home and family life	1___	2___	3___

Means for the nine occupational groups on the significance of understanding and enjoying the arts and sciences of man, as a goal of college education, ranged from 1.37 for educators to 1.74 for craftsmen, individuals in education placing the highest value upon this item and craftsmen placing the lowest value on the item. The average mean for the nine occupational groups was 1.57, indicating an intensity of attitude close to the mid-point between "important" and "very important."

On the importance of acquiring and using skills and habits of critical thinking, means for the nine groups ranged from 1.09 for educators to 1.48 for clerical workers. It is significant that individuals in business and industry and in agriculture rated this item 1.26 and 1.25 respectively. Moreover, these means for the three groups of leaders in education, business and agriculture indicate substantial agreement upon the importance of the ability to engage in critical thinking as a legitimate goal of college education. The average mean for the nine groups was 1.33 for this item, giving it an intensity of attitude only one-third of an interval below "very important." It is highly significant that leaders in education accorded to this objective of a college education a higher value than any of the six objectives listed in question number 20.

On the importance of expressing one's thoughts effectively in writing and in speaking, mean responses for the nine groups ranged from 1.12 for leaders in business and industry to 1.37 for craftsmen. Educators gave this item a mean of 1.16. The average mean for this item was 1.23, indicating a value only one-fourth of an interval below "very important." There was uniform agreement on the significance of this item, and it was given the highest rating of any one of the six objectives, based upon the average mean for each of the six objectives.

On the development of skill in active, responsible and effective citizenship, the means for the different groups ranged from 1.39 for leaders in education to 1.67 for craftsmen. The average mean was 1.54, placing the item near the mid-point between "important" and "very important."

On learning effective ways to use leisure time, means for the nine occupational groups ranged from 1.93 for leaders in education to 2.22 for farmers. The average mean for the nine groups was 2.09, indicating an intensity of attitude approximately one-tenth of an interval below "important." The rather low rating given to this item by farmers and most other groups may indicate a preoccupation for work, but it may indicate a lack of concern for what is now, and may be in the future, an increasingly complex problem in American life--a problem which may call for greater planning by communities as well as educational institutions.

TABLE 26. IMPORTANCE OF CERTAIN GOALS OF COLLEGE EDUCATION

Occupational Groups	Goals						
	Understanding and enjoying arts and sciences of man	Acquiring and using skills and habits of critical thinking	Expressing one's thoughts in writing and speaking	Active, responsible and effective citizenship	Learning effective use of leisure time	Preparing for a satisfying home and family life	Mean
Professional workers	1.50	1.30	1.25	1.64	2.20	1.88	1.62
Farmers	1.66	1.42	1.27	1.52	2.22	1.76	1.64
Managers	1.60	1.37	1.23	1.57	2.05	1.73	1.59
Clerical workers	1.64	1.48	1.29	1.50	2.09	1.75	1.63
Sales workers	1.63	1.37	1.20	1.54	2.03	1.68	1.58
Craftsmen	1.74	1.46	1.37	1.67	2.06	1.73	1.67
Agriculture	1.40	1.25	1.22	1.56	2.06	1.65	1.52
Business and industry	1.57	1.26	1.12	1.45	2.16	1.64	1.53
Education	1.37	1.09	1.16	1.39	1.93	1.66	1.43
Mean	1.57	1.33	1.23	1.54	2.09	1.72	1.58

On the significance of preparing for satisfying home and family life, means for the nine occupational groups ranged from 1.64 for leaders in business and industry to 1.88 for professional workers. The average mean for this item was 1.72, giving the item a value approximately .25 of an interval above "important."

Differences between the means assigned to these goals were significant at the .01 level of confidence. The range was from 1.30 for writing and speaking one's language to 2.09 for leisure time. Differences between occupational groups in the values which they placed upon these objectives of college education were significant at the .01 level of confidence. The highest value was placed upon these items by leaders in education. The lowest value was accorded by craftsmen.

Education for work. Table 27 presents mean responses of the nine occupational groups to questions 21, 22 and 35.

21. How important is it for post high school programs in Iowa to offer students an education to fit their needs and interests? . . . . . 1___ 2___ 3___

22. Is it important that college enrollments be limited primarily to individuals preparing for the professions and for a broad cultural education?. . . . . 1___ 2___ 3___

35. Increasing numbers of Iowa's farm youth are being employed in business and industry. Is it important for education beyond the high school to help farm youth to adjust to this shift in occupation? . . 1___ 2___ 3___

Mean responses of the nine occupational groups on the importance of education beyond the high school to correspond to the needs and interests of students ranged from 1.02 for leaders in agriculture to 1.40 for leaders in business and industry. The average mean for the nine groups was 1.31, indicating an intensity of attitude only .3 of an interval below "very important." Very few items in the entire questionnaire received such a favorable mean as the one accorded to this item by leaders in agriculture.

Mean responses of the nine groups on the importance of education beyond high school to help youth adjust to business and industry ranged from 1.71 for professional workers to 2.63 for leaders in agriculture. The average mean was 2.36, indicating an intensity of attitude .36 of an interval below "important."

Concerning the importance of education beyond the high school to prepare students going into the professions and for cultural education, means ranged from 1.38 for leaders in agriculture to 1.91 for professional workers. The average mean was 1.77 indicating a value one-fourth of an interval above the level of "important." Professional workers seemed to rate these three items higher than any other group, and leaders in business and industry rated the three items lower than did any other group. Differences between the items which ranged from an average mean of 1.31 for the first item to 2.36 for the second item, were significant at the .01 level of confidence.

College education and success in life. Table 28 presents mean responses for the nine occupational groups on questions 23 and 24 from the questionnaire.

TABLE 27. IMPORTANCE OF CERTAIN ASPECTS OF EDUCATION BEYOND THE HIGH SCHOOL

Aspects of education beyond high school	Occupational Groups									
	Professional Worker	Farmer	Manager	Clerical Worker	Sales Worker	Craftsmen	Agriculture	Business and Industry	Education	Mean
Programs fitted to needs and interests of students	1.34	1.37	1.31	1.24	1.34	1.38	1.02	1.40	1.39	1.31
Programs fitted to help farm youth adjust to shift to business and industry	1.71	2.54	2.49	2.37	2.34	2.33	2.63	2.52	2.29	2.36
Programs fitted for students going into the professions and for a broad cultural education	1.91	1.54	1.81	1.84	1.75	1.93	1.38	1.88	1.86	1.77
Mean	1.65	1.82	1.87	1.82	1.81	1.88	1.68	1.93	1.85	1.81

23. How important is education beyond the high school in helping a person to become a success in life? . . 1___ 2___ 3___

24. How important would you regard a college education for your son or daughter regardless of vocational choice? 1___ 2___ 3___

TABLE 28. IMPORTANCE OF COLLEGE EDUCATION FOR CERTAIN REASONS

Reasons	Occupational Groups									
	Professional Workers	Farmers	Managers	Clerical Workers	Sales Workers	Craftsmen	Agriculture	Business & Industry	Education	Mean
Success in life	1.50	1.57	1.48	1.49	1.40	1.51	1.48	1.54	1.67	1.52
Regardless of vocational choice	1.31	1.41	1.25	1.29	1.21	1.37	1.18	1.39	1.38	1.31
Mean	1.41	1.49	1.36	1.39	1.31	1.44	1.33	1.47	1.53	1.41

On the relationship between higher education and success in life, mean responses of the nine groups ranged from 1.40 for sales workers to 1.67 for leaders in education. The average mean was 1.5 indicating a value midway between "important" and "very important." There was very little variation between the groups with the exception of leaders in education who gave the item a lower value than any other group. Success does not mean the same thing to all people.

Concerning the significance of a college education regardless of vocational choice, means for the nine groups ranged from 1.18 for leaders in agriculture to 1.41 for farmers. This difference was significant at the .01 level of confidence. The average mean for this item was 1.31, indicating a value only .3 of an interval below "very important." The typical response from every one of the nine groups to each of the two items in the table was approximately .4 of an interval below very important. On the whole this would indicate that the people of Iowa regard a college education for their sons and daughters as important regardless of vocational choice.

Who should go to college? Table 29 presents mean responses of the nine occupational groups to question number 28 from the questionnaire. The question deals with the importance of education beyond the high school and the extent to which it should be limited.

28. It is estimated that Iowa will have 879,000 non-agricultural workers by 1965. About 10 percent of the workers will be in the professions. Is it important to provide post high school education for:
    a. Only the professions (law, medicine, engineering, teaching, clergy) . . . . . 1___ 2___ 3___
    b. 25 percent of all workers . . . . . 1___ 2___ 3___
    c. 50 percent of all workers . . . . . 1___ 2___ 3___

On the question of whether or not education beyond the high school should be limited to the professions, including law, medicine, engineering, teaching and the clergy, mean responses of the nine occupational groups ranged from 1.78 for professional workers to 2.18 for leaders in agriculture. The average mean for the nine groups was 2.01. This indicates that the typical answer to the question regarded it as important to limit higher education to the professions. On the item suggesting that higher education be available to .25 of all workers, the means for the different groups ranged from 1.75 for leaders in agriculture to 1.92 for craftsmen. The average mean was 1.86, or slightly above "important."

On the advisability of limiting college education to 50 per cent of all workers, means ranged from 1.72 for leaders in agriculture to 2.04 for leaders in business and industry. The average mean was 1.85 giving this item a value of .15 of an interval above "important." Therefore, the most typical response to this question was that higher education should be available to approximately 50 per cent of all workers. The mean for this item, representing the most liberal view with respect to the availability of higher education, was significantly different from the first item in the table at the .01 level of confidence. This means that the respondents favored the third part of the question to either of the first two parts of the question, and that the preference was significant.

Importance of higher education to different occupations. Table number 30 presents mean responses of the nine occupational groups to question number 33 in the questionnaire. This is an extremely interesting question, because in this case the nine occupational groups are evaluating the significance of education beyond the high school for five of the six basic occupational groups used throughout the study. The only one of the six groups not included in question 33 was the professional group, because higher education is a requirement for entrance into the professions.

33. Do you think education beyond the high school is important for success in the following occupations?
    a. Farm owners and farm managers . . . . . 1___ 2___ 3___
    b. Managers, buyers and proprietors. . . . . 1___ 2___ 3___
    c. Secretaries, cashiers, bookkeepers, bank tellers. 1___ 2___ 3___
    d. Sales workers, advertisers, brokers, realtors . 1___ 2___ 3___
    e. Craftsmen, foremen, electrician, jeweler, machinist, watchmaker, mechanic, radio and television repairman . . . . . 1___ 2___ 3___

On the significance of education beyond the high school for farm owners and farm managers, means for the nine groups ranged from 1.57 for leaders in agriculture to 1.94 for clerical workers. The average mean was 1.81, indicating a value .2 of an interval above "important." It is significant that leaders in agriculture believe that education beyond the high school is significant for farmers and farm managers. Farmers and farm managers gave the item a mean of 1.61.

TABLE 29. IMPORTANCE OF POST HIGH SCHOOL EDUCATION FOR CERTAIN LEVELS OF WORKERS

Level of Workers	Occupational Groups									
	Professional Workers	Farmers	Managers	Clerical Workers	Sales Workers	Craftsmen	Agriculture	Business & Industry	Education	Mean
Only the professions (law, medicine, engineering, teaching, clergy)	1.78	2.16	2.04	1.90	2.05	1.97	2.18	2.08	1.92	2.01
25 percent of all workers	1.87	1.83	1.85	1.90	1.87	1.92	1.75	1.83	1.89	1.86
50 percent of all workers	1.98	1.91	1.73	1.73	1.83	1.77	1.72	2.04	1.91	1.85
Mean	1.88	1.97	1.87	1.84	1.92	1.89	1.88	1.98	1.91	1.90

TABLE 30. IMPORTANCE OF EDUCATION BEYOND HIGH SCHOOL FOR SUCCESS IN CERTAIN OCCUPATIONS

Specific Occupations	Occupational Groups									
	Profes-sional Workers	Farmers	Managers	Clerical Workers	Sales Workers	Craftsmen	Agri-culture	Business and Industry	Education	Mean
Farmers	1.88	1.61	1.81	1.94	1.80	1.92	1.57	1.86	1.92	1.81
Managers	1.67	1.57	1.51	1.56	1.49	1.62	1.51	1.67	1.79	1.60
Clerical	2.06	1.87	1.98	1.96	1.96	1.91	1.98	2.16	2.11	2.00
Sales workers	1.71	1.85	1.86	1.81	1.65	1.83	1.82	1.93	1.96	1.82
Craftsmen	2.05	1.81	1.99	1.86	1.62	1.78	1.82	2.09	2.13	1.91
Mean	1.87	1.74	1.84	1.83	1.70	1.81	1.74	1.94	1.98	1.84

TABLE 31. IMPORTANCE OF CERTAIN IOWA EDUCATION AND TRAINING PROGRAMS IN MEETING PROBLEMS OF YOUTH

Education and Training Programs	Occupational Groups									
	Professional Workers	Farmers	Managers	Clerical Workers	Sales Workers	Craftsmen	Agriculture	Business and Industry	Education	Mean
Journeymen and apprenticeship	1.70	1.93	1.82	1.71	1.86	1.57	1.78	1.93	1.85	1.79
On-the-job training	1.68	1.67	1.68	1.56	1.63	1.50	1.59	1.84	1.73	1.65
High school education	1.25	1.21	1.31	1.20	1.23	1.26	1.24	1.23	1.28	1.25
Junior colleges	1.61	1.62	1.67	1.58	1.20	1.71	1.55	1.61	1.70	1.58
Four-year colleges	1.48	1.68	1.58	1.59	1.51	1.70	1.42	1.54	1.63	1.57
Universities	1.56	1.77	1.63	1.69	1.56	1.76	1.48	1.57	1.69	1.63
Mean	1.55	1.65	1.62	1.56	1.50	1.58	1.51	1.62	1.65	1.58

Concerning the significance of high school education, mean responses ranged from 1.20 for clerical workers to 1.31 for managers. The average mean was 1.25 indicating a very strong preference which was only one-fourth of an interval below the level of "very important."

On the value of junior colleges in meeting the problems of youth in Iowa, the nine groups were represented by means ranging from 1.20 for sales workers to 1.71 for craftsmen. The average mean was 1.58, indicating a value approximately .4 of an interval above "important." On the significance of four-year colleges, mean responses of the nine groups ranged from 1.42 for leaders in agriculture to 1.70 for craftsmen. The average mean was 1.57, indicating strength for this item midway between "important" and "very important."

On the significance of universities in helping youth to meet their problems, the means for the nine groups ranged from 1.48 for leaders in agriculture to 1.77 for farmers. Leaders in education gave this item a value of 1.69, and the average mean was 1.63, or .4 of an interval above "important."

Educators rated these six items on the whole lower than any other group rated them with the exception of farmers. Sales workers placed the highest value on the six types of training programs giving them a mean of 1.50. The average mean of 1.58 for all of these training programs indicates that the respondents are reasonably well satisfied with the contributions being made by these organizations. Apprenticeship training was regarded as least important among the respondents and high school education was regarded as most important. These differences were significant at the .01 level of confidence.

What should Iowa colleges emphasize? Table 32 presents mean responses of the nine occupational groups to question number 37 in the questionnaire. These questions deal with the respondents' evaluation of suggested emphases in higher education.

37. Is it important for Iowa's colleges and universities to emphasize:
    a. High quality education for a limited enrollment not to exceed one-third of the high school graduates . . . . . 1___ 2___ 3___
    b. Liberal arts and professional courses instead of preparation for various kinds of work . . . 1___ 2___ 3___
    c. A combination of courses leading to effective citizenship and satisfactory work . . . . 1___ 2___ 3___

On the importance of having Iowa's colleges and universities emphasize high quality education for only one-third of the high school graduates, mean responses of the nine occupational groups ranged from 2.00 for leaders in education to 2.37 for leaders in agriculture. The average mean was 2.18, indicating a value approximately .20 of an interval below "important."

On the advisability of placing the major emphasis upon liberal arts and professional courses instead of preparation for various kinds of work, means of the nine groups ranged from 1.68 for leaders in education to 2.28 for craftsmen. The average mean was 2.04, giving the item a rating of "important."

On the importance of the combination of courses leading to effective citizenship and satisfactory work, mean responses of the nine groups ranged from 1.41 for farmers to 1.84 for leaders in agriculture.

TABLE 32. IMPORTANT EMPHASES FOR IOWA COLLEGES AND UNIVERSITIES

Emphases	Occupational Groups									
	Professional Workers	Farmers	Managers	Clerical Workers	Sales Workers	Craftsmen	Agriculture	Business and Industry	Education	Mean
High quality education for enrollments not to exceed one-third of the high school graduates	2.11	2.20	2.14	2.20	2.21	2.23	2.37	2.19	2.00	2.18
Liberal arts and professional courses instead of preparation for various kinds of work	2.00	2.11	2.13	2.13	1.94	2.28	2.15	1.98	1.68	2.04
A combination of courses leading to effective citizenship and satisfactory work	1.67	1.41	1.53	1.51	1.54	1.60	1.84	1.54	1.55	1.58
Mean	1.93	1.91	1.93	1.95	1.90	2.04	2.12	1.90	1.74	1.93

It is significant that while leaders in education were strongest in their inclinations to limit higher education in the first two categories, they gave the third category a mean of 1.55 which was lower than the average mean--the average mean being 1.58, or .42 of an interval above "important."

All nine occupational groups which included leaders in agriculture, business and industry, and education gave the highest rating to a combination of college courses leading to effective citizenship and satisfactory work. The mean for this combination of courses was significantly higher or represented a significantly stronger attitude than either of the other means at the .01 level of confidence. These responses indicate that the citizens of Iowa representing different occupational groups tend to reject the traditional liberal arts emphasis when this preference is compared with the preference for a combination of liberal and functional courses leading to satisfactory work and citizenship. Intelligent balance between liberal education and education for work seems to be preferred.

Technical education. Table 33 presents mean responses of the nine occupational groups concerning the importance of technical education as requested in question 27 from the questionnaire.

27. Iowa's farm youth have expressed great interest in preparing for work as technicians.
    a. Is it important to offer education in these areas at the post high school level? . . . . . 1___ 2___ 3___
    b. Is it important to offer more technical training at the high school level? . . . . . 1___ 2___ 3___

TABLE 33. IMPORTANCE OF TECHNICAL TRAINING AT POST HIGH SCHOOL OR AT HIGH SCHOOL LEVEL

Level of Training	Occupational Groups									
	Professional Workers	Farmers	Managers	Clerical Workers	Sales Workers	Craftsmen	Agriculture	Business and Industry	Education	Mean
Technical in college	1.76	1.61	1.69	1.64	1.76	1.80	1.39	1.77	1.77	1.69
Technical in high school	1.73	1.66	1.69	1.58	1.63	1.64	1.72	1.82	2.08	1.73
Mean	1.75	1.64	1.69	1.61	1.70	1.72	1.56	1.79	1.98	1.71

On the significance of offering Iowa's farm youth the opportunity to prepare themselves as technicians at the post high school level, mean responses of the nine occupational groups ranged from 1.39 for leaders in agriculture to 1.80 for craftsmen. The average mean was 1.69, giving this item an intensity of attitude approximately one-third of an interval above "important," and the greatest preference for this item was expressed by leaders in agriculture and by farmers and farm managers. It is interesting that craftsmen rated the item lower than did any other group.

On the significance of technical training at the secondary level, mean responses of the nine groups ranged from 1.58 for clerical workers to 2.08 for leaders in education. The average mean for the nine occupational groups was 1.73, giving the item an intensity of attitude approximately .3 of an interval above "important."

There was no significant difference between the average means for the two items in this question, and there was no significant difference between the means of the nine groups rating the items. The conclusions with respect to these two items support trends established in Table 32 to the effect that the sample of the population represented in this study favors emphasis on functional as well as cultural education at both the secondary and college levels.

Education and manpower demands. Table 34 presents the responses of the nine groups regarding the significance of changing college curricula to meet the demands of a technological society. This table reports responses on questions 29 to 32 from the questionnaire.

29. Education beyond the high school enhances employment opportunities and earning power of individuals in industry, business and government. Is it important for the colleges to prepare people for all of these areas? 1___ 2___ 3___

30. By 1970, according to the U. S. Department of Labor, 45% of all jobs may be in the white collar category. Is it important to change college programs to meet the demand for white collar jobs? . . . . . 1___ 2___ 3___

31. Since 1957, the number of technicians in the labor force has almost equaled the number of engineers. Is it important to develop post high school education programs for these technicians? . . . . . 1___ 2___ 3___

32. It is estimated that there will be a 60% increase in professional, technical and related occupations between 1957 and 1970. Is it important for college curricula to change to meet these demands? . . . 1___ 2___ 3___

Concerning the significance of preparing individuals at the college level to work in industry, business and government, mean responses of the nine occupational groups ranged from 1.35 for clerical groups to 1.62 for leaders in education. The average mean was 1.45, placing the value upon this item midway between "important" and "very important."

TABLE 34. IMPORTANCE OF CHANGING COLLEGE CURRICULA TO MEET DEMANDS OF TECHNOLOGICAL SOCIETY

Changes	Occupational Groups									
	Professional Workers	Farmers	Managers	Clerical Workers	Sales Workers	Craftsmen	Agriculture	Business & Industry	Education	Mean
To prepare individuals for work in industry, business and government	1.48	1.49	1.39	1.35	1.38	1.44	1.43	1.44	1.62	1.45
To prepare individuals for technicians' work assisting engineers	1.62	1.65	1.59	1.60	1.61	1.55	1.46	1.65	1.73	1.61
To accelerate individuals preparation for professions	1.45	1.55	1.43	1.09	1.44	1.48	1.40	1.52	1.66	1.45
To prepare more individuals for white collar positions	1.87	1.73	1.55	1.47	1.55	1.59	1.53	1.61	1.78	1.61
Mean	1.60	1.60	1.49	1.38	1.49	1.51	1.45	1.55	1.69	1.53

On the importance of post high school education to prepare technicians, mean responses of the nine groups ranged from 1.46 for leaders in agriculture to 1.73 for leaders in education. The average mean for this item was 1.61, giving it a value of .4 of an interval above the level of "important."

On the importance of changing college curricula to meet the increasing demand for workers in the professional, technical and related occupations, mean responses of the nine groups ranged from 1.09 for clerical workers to 1.66 for leaders in education. The average mean was 1.45, giving the item an intensity of preference midway between "important" and "very important."

On the importance of changing college curricula to meet the demands for the increasing number of white-collar workers, mean responses of the nine groups ranged from 1.53 for leaders in agriculture to 1.87 for professional workers. The average mean was 1.61, giving the item a value .4 of an interval above the level of "important."

There was no significant difference between the means which different groups assigned to the four items in Table 34, but the difference in the average means was significant at the .01 level of confidence. This indicates that the nine groups are more interested in placing an emphasis upon college preparation for work in industry, business, government and the professions than in the preparation of individuals at the college level to work as technicians and as white-collar workers, although intensity of attitude for the last two items was .4 of an interval above "important."

Adult education. Table 35 presents mean responses dealing with question number 34 from the questionnaire. Question number 34 assesses the responses of the nine occupational groups on the significance of education beyond the high school for adult workers.

34. Is it important for Iowa to provide post high school opportunities for adult workers to study in these areas?

a. Technical subjects related to their work . .	1___	2___	3___
b. Cultural courses for personal growth . . .	1___	2___	3___
c. Communication skills (reading, speaking, writing)	1___	2___	3___

Concerning the importance of technical subjects related to the work of adults, mean responses of the nine occupational groups ranged from 1.38 for sales workers to 1.85 for leaders in business and industry. The average mean was 1.69, giving the item an intensity of attitude about .3 of an interval above "important."

Concerning the significance of cultural courses for personal growth, mean responses ranged from 1.74 for leaders in education to 2.11 for farmers. The average mean was 1.95, placing a value upon this item of approximately the same as "important."

On the significance of providing adult workers with the opportunities to become more proficient in communication skills of reading, speaking and writing, mean responses ranged from 1.65 for leaders in education to 1.84 for craftsmen. The average mean was 1.73, giving the item a value one-fourth of an interval above "important." The nine groups definitely placed a higher value on technical subjects related to the work of adult workers, and the difference was significant at the .01 level of confidence. There was no significant difference between the responses of the nine groups with respect to the three items.

TABLE 35. IMPORTANCE OF PROVIDING POST HIGH SCHOOL OPPORTUNITIES FOR ADULTS IN CERTAIN SUBJECT AREAS

Subject Areas	Occupational Groups									
	Professional Workers	Farmers	Managers	Clerical Workers	Sales Workers	Craftsmen	Agriculture	Business & Industry	Education	Mean
Technical subjects related to their work	1.72	1.78	1.72	1.67	1.38	1.64	1.65	1.85	1.84	1.69
Cultural courses for personal growth	1.94	2.11	2.01	1.97	1.95	2.05	1.79	2.00	1.74	1.95
Communication skills (speaking, reading, writing)	1.69	1.77	1.78	1.71	1.68	1.84	1.73	1.68	1.65	1.73
Mean	1.78	1.89	1.84	1.78	1.67	1.88	1.72	1.84	1.74	1.79

Two final questions which were included for their attitude value dealt with two aspects of higher education: (1) the role of the state in providing some free education beyond high school; and (2) the importance of providing some specialized programs in higher education designed for women.

25. Do you think it is important for the state to provide some free education beyond the high school for the capable and interested youth in Iowa? . . . . 1___ 2___ 3___

26. One out of three workers in the U. S. is a woman and one-third of all women work. Is it important to provide additional specialized post high school education for women in Iowa? . . . . . 1___ 2___ 3___

Mean responses to these questions revealed that both were important, according to the nine occupational groupings. The range of mean responses was from 1.60 for sales workers, to 2.03 for farmers in answer to question 25 about state provision of some free education. The average mean response was 1.78.

Range of mean responses for question 26, about additional specialized higher education programs for women was from 1.73 for agricultural leaders, to 2.12 for craftsmen. The average mean response was 1.97.

Problems Related to Higher Education

Question number 38 invited free responses in order to reveal what problems in higher education the respondents regarded as important.

The responses to this question were analyzed and classified into ten categories. These categories were cross-judged by six students of higher education and an 80.0 per cent agreement was found between their judgments. On the basis of these categories, 3225 responses in the form of stated problems were categorized as reported in Table 36.

Three problems reported were (1) finance, (2) facilities, and (3) curriculum. These three problems were listed by 57.0 per cent of the total respondents. The problems inherent in (4) philosophy for higher education, and (5) faculties were considered as important by a considerable number of respondents.

Breakdowns of each of these major problem areas and examples quoted from the individuals in the sampling illustrate and elaborate the seriousness and the relevance of the respondents' ideas.

Finances. Among the suggested problems in regard to finance were (a) general need for more funds for higher education in Iowa, (b) high costs to the individual student, (c) low status of salaries for staff and faculty, and (d) the problem of source of revenue for future needs. Much serious thought was reflected at all occupational levels in regard to the problem of how to get support for higher education.

The following quotations illustrate the kinds of responses individuals gave to this question:

"The cost of a college education is prohibitive to most young people. Tuition is being raised by many schools for next year." (Secretary)

"Talented youths are not going to college because of financial problems at home. For the good of the nation, these young people should be given the opportunity to further their education. Screening for talent should be developed in high schools to find these high intellectual individuals who deserve this break. They can't do it because they are priced out of the field." (Optometrist)

"Not enough students can afford to go to college." (Store Manager)

"Cost of tuition, etc., so that many young men and women feel that the burden is too heavy for them to further their education." (County Official)

"The taxpayers of Iowa cannot be expected to supply all the additional facilities and personnel that will be required during the next twenty years; therefore, I propose it will be necessary to make our educational institutions more efficient. It will be necessary, therefore, to have the students pay a larger share of these increased needs." (Federal Official)

"Lack of any form of state financial aid to the small private colleges--which absorb a fairly high percentage of enrollees, which if the small colleges were not available would shift a tremendous load to your state colleges, which

TABLE 36. PROBLEMS RELATED TO HIGHER EDUCATION

Higher Education Problems	Occupational Groups										
	Professional Workers	Farmers	Managers	Clerical Workers	Sales Workers	Craftsmen	Agriculture	Business & Industry	Education	Total	Percent
Finance	95	48	138	119	74	98	51	40	106	769	24.0
Facilities	101	26	99	90	65	69	32	26	53	561	17.0
Curriculum	92	30•	84•	35	38	75•	45•	44•	70	513	16.0
Philosophy	56	25	47	36	27	40	44	31	51	357	11.0
Faculty	79	10	64	40	36	18	21	11	44	323	10.0
High School	40••	21	44••	24	25	30	47••	20	38	289	9.0
Standards	26	12	37	12	18	16	4	16	38	179	6.0
Social & Recreational	12	9	21	17	4	15	8	6	5	97	3.0
Student Life	17	5	21	6	6	8	8	3	6	80	2.0
Miscellaneous	17	3	13	3	3	6	2	6	4	57	2.0
Total	535	189	568	382	296	375	262	203	415	3225	

•Reflection of desire for increased higher education opportunities for those planning for business, agriculture, craft work, etc.

••Many comments pertain to lack of guidance at high-school level.

in turn would increase the general operating expenses, plus additional expense in building and an overall expansion of present facilities." (Business Leader)

"Financing--to keep good teachers and yet to keep costs within reach of every young man and woman earnestly interested in higher education and the ability to carry through." (Buyer)

Facilities. The second problem of concern to the respondents was that of facilities. It was reported that (a) there was a general shortage of facilities and (b) there was question concerning the efficient use of present facilities. Examples from the questionnaires also will serve to enlarge on this problem:

"It seems to me we need to make more intensive use of the facilities we have. Perhaps year round classes with more instructors so that classrooms and labs would be in full use year-round." (Nurse)

"There are definitely not enough four-year colleges with state aid to enable qualified but not wealthy students to obtain a good education in any chosen field. This situation is more acute in Iowa than in many other states." (Accountant)

"Lack of adequate housing facilities at State University." (Buyer)

"I am of the opinion that at the present time our colleges and universities are pretty much crowded. Until such time that our educational program is more adequate to handle the growing population, youth entering colleges should be more screened. Only the ones showing the ability for higher learning plus good grades in high school should be allowed to go to college." (Railroad Conductor)

"Providing sufficient education facilities to meet the demand for higher education in the immediate future. Concern should be not only for the upper one-fourth or one-third of high school graduates but for those who might rank lower but still have the ability to provide business and the community with excellent leadership." (Business Leader)

"Expand present facilities to insure sufficient graduates to keep pace with population and economic growth." (Federal Official)

Curriculum. Though curriculum was third on the basis of number of individuals listing the problem, perhaps the most revealing data came from these commentaries. The following sub-categories were found when all statements about curriculum were analyzed:

(a) Kind and variety of programs
(b) Need for technical curricula
(c) An emerging role for the junior college
(d) Emphasis on general education
(e) Acceleration of programs
(f) Recommendations with curricular implications.

Philosophy and curriculum in higher education are closely related, each reflecting significant aspects of the other. Due to the vast number of responses in both of these categories, it was necessary to separate them for reporting; however, it will become obvious that these categorical delineations were arbitrary

and artificial, and that some of the quoted statements under curriculum could as well have been philosophical and vice-versa. A few statements having curricular emphases follow:

"We need at least two years of education beyond the high school level free to any student who can meet average qualifications. It is becoming consistently harder for parents to provide and pay for their children's further education. Some could pay for two years but would find it very difficult to pay for four years. We need many junior colleges that are state schools, strategically located over the state, so that the student can remain at home and commute to get two more years of education after high school." (Chamber of Commerce Officer)

"In my opinion, one of the two most serious problems related to higher education today is the need for more technical schools created in part by the changing farm picture which is causing more unemployment on Iowa farms and forcing young men to seek employment elsewhere." (Bank Teller)

"We have a great need for trade schools in Iowa. Many students would favor some technical training in specific areas of occupation to qualify for employment as against a 'formal education'." (Bookkeeper)

"Trend is to produce well-trained technicians. Let's have more people who can <u>think</u>." (Wholesale Manager)

"Lack of training opportunities for professions which could be done in less than four-year college courses. Cost of four-year college is too great for many talented youth. Two-three year schools with cheaper tuition would help." (Agricultural Leader)

"No 'medium ground' between high school diploma or college degree. Need good junior college to train and educate, to higher level, a greater percentage of population." (Business Leader)

"The first two years of higher education should be offered in community colleges. This would enable the universities and state colleges to devote their facilities and skills to the last two years and graduate work. By locating the junior colleges throughout the state within commuting distance, a greater number would attend college.

"Junior colleges are the ideal place to offer all types of training programs for post high school. By offering job training programs at this level, adequately skilled personnel can be used as instructors. By being within commuting distance, more people would be able to use the training program. By enlarging the community colleges, it would reduce the cost of higher education to the state and the individuals." (County Extension Director)

"Public underestimation of the ability of Iowa junior colleges to provide good adequate training for the anticipated larger number of youth seeking such higher education." (Farm Manager)

"There is not enough emphasis upon free, public junior colleges to give <u>everybody</u> an opportunity for a broad liberal education beyond high school." (Farm Owner)

Philosophy and objectives. The area of philosophy and objectives of colleges and universities accounted for several of the responses. Many of these suggestions were classified into sub-categories. For example, (a) the purposes of higher education, and (b) the question of who should go to college were inherent in the responses. Also, (c) the planning, development and public understanding of higher education, (d) education for better citizenship, (e) Iowa's transitional culture and her loss of graduates to other states were included. Several well-directed opinions were given and some of them follow:

"Unwarranted conviction that education is related to and basically a consideration of 'earning power'. This is most insidious because it is rooted in materialistic rather than cultural and spiritual values. We must have a balance of skill and talent related to capability in a well-organized and successful society." (Architect)

"It seems to me that we might be educating our students better than ever in science and the professions, but we are falling down on stressing the importance of a good education for the 'helpers' in these fields--the technicians, clerical and secretarial help, the people adept in communication skills, etc. Well-trained 'helpers' are invaluable in consolidating and executing the ideas and processes developed by scientists and the professionally trained." (Secretary)

"The lack of opportunity for the average student who is not an exceptional athlete or of very high intelligence or who comes from a higher income bracket family than average to get the chance to complete college training. I think more people should get the chance for more education than they can afford at this time." (Foreman)

"Too much emphasis on educating the genius at the expense of the average student. This smacks of the caste system and will not create a well-balanced society. 'Too many chiefs and not enough Indians'." (Machinist)

"One fear I have is the tendency or trend toward restricting higher education to only those who are in the higher capability brackets. Each person has his place in our society. Our public school system, by being available to everyone, has definitely made us strong and certainly has been one of the contributing factors in our high standard of living. Higher education (post high school) should never be restricted; in fact, as man progresses in all fields, technological, political, etc., it may become desirable if not necessary to provide higher education on an availability basis equal with our present public high school system." (Farm Manager)

"Lack of public interest in higher education and lack of public action to see better higher education. I would consider these the two most serious problems related to higher education in the state of Iowa, for with the solution to these, all the other problems would be overcome. With public interest and action, the state would be able to give more support to higher education and to see that bigger and better schools are built in the state. It would take continued public support to keep these schools staffed with adequately-trained personnel. If the general public in Iowa were more interested in seeing their children receive higher education, I feel certain that our children would have a more sincere interest in receiving higher education." (Draftsman)

"Convincing young people of the importance to them of higher education, and, especially in the case of these from low income families, providing adequate facilities and at least partial financial assistance toward the realization of a better education.

"Relating the individual's educational growth to the cultural, physical and economic progress of the state of Iowa." (Typist)

"Iowa is losing many well-qualified professional and technically trained persons because students must look to other states for specialized courses of study and consequently do not return to Iowa to pursue their chosen professions. More incentive should be given to Iowa residents to complete their education in Iowa and remain as active Iowa citizens." (Cashier)

"Getting our young people qualified to meet a changing society and being able to move within this society to make a livelihood for their family. Strengthen our people mentally to cope with a faster change, along with more technical training." (County Extension Director)

"Iowa has a large percentage of farm youth. Rural parents don't seem to give the emphasis and encouragement to higher education. This may be because the opportunity for work on the home farm is so readily available--or at least has been in the past. These parents are not sufficiently oriented to the fact that the future need for farm laborers and operators is decreasing rapidly.

"Iowa people are proud of their literacy rate, but do not emphasize higher education. Perhaps there are not as many work opportunities requiring college training." (Home Demonstration Agent)

"We need to create a desire to continue on beyond high school. Here in the rural areas, too many parents have the idea that since they completed only the 8th grade, that's good enough for their children. Without 'push' from their parents, too many children with plenty of ability think of schooling as a joke and can't wait to finish high school so they'll be free of going to school. Parents should have just the opposite attitude--one of encouraging their children to study in high school with the idea that they are going on to college or post high school technical training." (Advertising Agent)

"Lack of opportunities in 'big' business in Iowa curbs the desire of young people to acquire a higher education. Too many parents today feel that since they did not attend a college or university, there is no reason why they should finance a higher education for their children.

"An additional problem applicable to Iowa as well as many other states is discrimination against women in business as far as advancement is concerned. A woman is seldom paid on equal scale with a man. A woman is seldom given a supervisory position. A woman is seldom given an opportunity to voice opinions in the conduct of business. A woman is never considered capable of handling a top bracket civic job--such as postmistress, bank president, superintendent of schools, etc." (Secretary)

Faculties. Faculty problems were reported especially in regard to (a) shortages that exist, (b) qualifications and desirable standards, (3) salary problems and losses of faculty to business and industry. Examples of the

statements made by several members of various occupational groups illustrate the manner in which these problems were presented.

"Inadequate support of our institutions of higher learning over a long period of time. The growing difficulty of keeping our best faculty members as we compete against business, industrial, governmental opportunities, and, of course, as implied in first statement--higher salaries." (Educator)

"Teachers and educational administrators are poorly prepared to do an effective job in communicating knowledge, creating desire or stimulating interest. All should be required to have two years of apprenticeship working with the public. Teachers should pass the most rigid exams of any profession, including psychological tests and oral reviews given by a board consisting of educators, business and other professional men or women. Starting salary for a teacher qualifying should be $20,000.00 irrespective male or female. The best of the best should be placed in the lower grades." (Jeweler)

"Shortages of highly-skilled teachers who, upon graduation from colleges and universities, intend to make teaching a lifetime avocation. In other words, a shortage of those people who are absolutely dedicated to teaching." (Advertising Agent)

"Lack of 'highly qualified' instructors, professors, with outstanding personalities who have the gift of passing on their knowledge." (Sales Clerk)

"Shortage of qualified teachers and instructors. Loss of well-qualified and trained individuals to other states." (State Official)

"Good and conscientious instructors must be retained or hired at any cost so proper guidance can be given all students. They should also discourage and eliminate from these institution those students that either cannot or will not progress so their place can be taken by those who will." (Store Manager)

High Schools. Problems centered about the high school were reported by nine per cent of the total respondents. Some of these problems were classifiable into sub-problems such as (a) curricular needs and deficiencies, (b) faculty problems, (c) need for more guidance and counseling, and (d) the ever-present problem of maintaining high standards. Illustrative of these problems are quotations which follow.

"Most school systems have insufficient, inadequate and unsatisfactory guidance, counseling and testing programs. Many high school graduates fail to continue their education because they don't realize the value of a college education and an unawareness of many job opportunities. Entirely too much emphasis in high schools on athletics (this is true of most colleges and universities, too)." (County Extension Director)

"As I understand it the State University is obligated to accept any graduate of an accredited Iowa high school and as a result the drop-out and flunk rate for freshmen is large. I feel certain minimum requirements should be met for enrollment. Secondly, I think higher education in Iowa suffers somewhat because of the smaller high schools, some of which are incapable of providing the necessary education for successful college pursuits." (Credit Manager)

"I am not familiar with vocational guidance in high school; however, when I attended, I feel that it was not stressed enough. Most students graduated from high school with no idea of the vocation they would follow throughout life, and stumbled into their life-time jobs rather than picking them. Unless a student is wealthy, it is most impractical for him to attend college to find out what kind of work he wishes to do. I feel that more vocational guidance should be given in high school. I also feel that any student who wishes to further his education should be helped in every manner possible and it should be brought to his attention where scholarships and other financial help may be secured, whether it be specializing in medicine or training to be a TV repairman." (City Official, Female)

"The high schools of necessity must inaugurate an attractive and learned medium of craft education for those students who, because of lack of finances or aptitude, are unable to proceed forward into higher education. This medium has been recognized and accomplished for the female student who desires to enter into the secretarial field." (City Official, Male)

"Not enough technical training for young people not going on to college. Lack of qualified teachers at junior high school and high school level." (Farm Manager)

"The lack of adequate high-school preparation for higher education. This is due to two things: (a) the small size and budgets of many Iowa high schools prevent their providing adequate instructional facilities and their hiring adequately-trained teachers, (b) the overemphasis of methods at the expense of subject matter in the training of teachers in Iowa." (Educator)

Problems of standards. Of lesser report and therefore one could assume of lesser importance were the problems of standards, social and recreational overemphasis, campus student life and the miscellaneous suggestions received. However, in order to present a well-rounded picture of the findings, quotations also were included from these categories.

"Children with only average abilities need more than a high school education but at present have little chance of being accepted at the state schools." (Agricultural Leader)

"There seems to be a problem of getting our young people to realize the full importance and seriousness of going on to college and making their grades so as to be able to continue. This applies to those who have the financial means to go on and have been accepted at college but drop out in the first year because they do not make their grades or just plain don't care and do not apply themselves but are actually capable. There must be some way of stressing this importance of higher education and what it will mean to their future." (Secretary)

"Teaching at the higher education level must be maintained at high standards during the increases in enrollment." (Chemist)

"The admittance of people who should not be in college because they do not have the ability or the inclination to do good work and their presence in the college is a distracting influence to other students." (Educator, College)

"Failure of colleges to set standards of qualifications upon which the high school can build its curricula." (Educator, High School)

"It is hard for a student with average grades to qualify for enrollment in a good school for higher education." (Jeweler)

Recreational problems. In areas of social and recreational problems the predominant responses dealt with overemphasis on sports and social life. The following quotations give the flavor of these comments.

"Overemphasis on sports and not enough on basic education." (Architect)

"Lack of proper teaching of fundamentals. Too much emphasis on athletics. Too many snap courses--too much extra-curricular activity." (Dietician)

"Overemphasis on the social or athletic benefits of college or university life, rather than the improvement of each individual for his role in society." (Optician)

"Too many students attending college who are not working to capacity--going primarily for social reasons." (Mechanic)

Student life. Student life and the problems from college students themselves accounted for a very small number of responses, yet these were ones that had some substance for thought. Guidance in its many aspects was mentioned by many respondents. For example, comments by a school official, an accountant, an optometrist, an educator, and a dietitian were selected.

"To provide an academic, vocational and rehabilitation counseling program at the professional level, that can measure and evaluate the capacity of a student to continue in a planned program of 'higher education'." (Federal Official)

"Counseling students on their future occupations at the beginning of their higher education so that they will not concentrate three years on one course and suddenly shift to what they really want to do in life in their last year." (Accountant)

"One problem in Iowa and any schools is that of students who are just going through the motions of going to school, the non-achievers. I believe that more emphasis should be put on counseling and guidance. Any student at any level who does not achieve at the level of his normal capabilities should be re-evaluated to see if he should stay in school, switch his major field of study, or if some outside factor is responsible for his non-achievement. If the non-achievers are culled or rehabilitated, I believe that a more effective use of time, talent, money and manpower will be realized." (Optometrist)

"Lack of sufficient guidance and counseling functions." (Educator)

"A more selective recruitment program for college students and proper guidance of these individuals into fields in which they will be most qualified." (Dietitian)

Those responses were numerous that could not be classified into any category for one reason or another. Some were merely statements of fact, some were explosive gripes about things in general, and still others were serious attempts at stating general problems the respondents saw in Iowa, some of which have a bearing on higher education. In order to give fair representation to the several sincere and well-directed comments, a few were included here.

"Selling the people and the press on our educational system. We are advanced as much as any other state or country, and we do have adequate facilities for the people who want to go to school and will apply themselves." (Store Manager)

"One of the most serious problems facing our higher educational facilities is that our state-supported universities and colleges are crowded with out-of-state students whose tuition will not apparently 'pay the way' and at the same time we are telling our own resident students that there may not be room for them here in Iowa. Our out-of-state students do not, as a rule, retain residence in Iowa after graduation--neither do many of our own." (State Official)

"The building costs on educational buidings are too high and it appears that architects and engineers should give careful consideration to design of buildings that are functional and that can be built at a minimum cost." (Federal Official)

"Secure greater cooperation from business and industry--financially--and also through provision for training and experience before graduation." (Cashier)

The images cast by institutions and programs in higher education were revealed in both the reported comments and the vast number of comments which were not specifically reported here. Those people most concerned about their own education, their family's education, and that of the people of Iowa as a whole, the general public, responded conscientiously and intelligently to the free-response question. The respondents gave added support to the assumption that, when asked, the people of communities of a state, and of the nation, can make helpful suggestions, critical commentaries, and offer thoughtful new ideas for future directions. If the people in a democratic society have the necessary information, their decisions are generally valid and intelligent decisions.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The problem of this study was to examine manpower problems and present programs of higher education in Iowa, in order to determine the extent of their relatedness. Once relationships were found, the purpose of the study was to analyze them and to project their consequences for higher education in Iowa during the next 10 years.

Major objectives of the study were as follows:

1. To analyze manpower demands in Iowa by a study of shifting personnel requirements of agriculture, business, industry, and the professions.

2. To analyze qualitatively and quantitatively the future educational preparation believed to be necessary by workers, employers, and leaders in agriculture, business and industry, and education

3. To examine manpower demands in light of present objectives and curricula in colleges and universities with a view to their potential alliance

4. To relate higher education and manpower in Iowa as they are being related nation-wide

5. To draw conclusions from manpower demands and expressed needs of Iowa people for higher education, setting up alternative policies whereby college programs can be brought into harmony with the demands and needs.

This problem was significant for several reasons: (a) scientific and technological advances have vaulted America into an era of rapid change; (b) educators, business and industrial leaders, statesmen and politicians are discussing and writing today on the subject of manpower, and certain clarifications were needed; (c) it is vital to American economy, based as it is in science and technology, to have workers educated to make changes easily; (d) for the best interests and advancement of all, higher education, as never before, must be closely related to the individual, society, and the total economy.

A contribution can be made by this study to that social awakening which seems necessary if higher education in Iowa is going to maintain itself at a high level, and to continue to make those changes essential to the betterment of educational services to the population for the next decade.

Assumptions

In brief, several assumptions were at the base of this inquiry. Some of these were: (a) freedom of the individual to choose his own way of life and work within limits prescribed by a democratic society; (b) formal education and guidance should prepare the people of a nation for work and for effective living; (c) higher education contributes to processes of upgrading of individuals and society; (d) higher education, in its varied and diverse aspects, should be made more readily available to a larger number of people with their needs, and society's, primary in its objectives; (e) tying together the national and world-wide manpower demands with higher education means that there are changes ahead in programs and curricula of existing institutions, and new institutions may need to be projected and developed; (f) general education programs emphasizing the liberal arts and sciences, with courses liberally taught, serve as the framework for all formal education beyond high school; (g) the rate of change must be accelerated in many areas of higher education if it is to assume a logical and natural position as a major service agency to individuals and society; (h) it is possible to learn from the people of Iowa, through a stratified sampling of a large population of workers and leaders, what they think about the education they have received, what education they believe is needed in their present occupations, and what kinds of programs in education beyond high school they envisage for the future.

The Iowa Manpower Situation

Large numbers of youth in Iowa are moving from the farm to the city. Advances in agricultural technology and mechanization have cut back the opportunities for work on the farm, making these moves necessary. Urbanization of Iowa, similar to that process accomplished by several adjacent states, and a result of industrial expansion, has created new opportunities as well as new problems. Education must be planned in view of changing occupational needs, else young people will continue to move where they can find the kind of education and work opportunities which satisfy their desires.

The Iowa Employment Security Division has found the labor force to be older than in previous years. This creates problems of replacement in the future, if too few young people are being educated and trained for work in Iowa. The Iowa Development Commission has made several informative studies and has published several accounts of the needs of Iowa in business, industry and the general economy. The main points of these studies emphasize the following needs:

1. To balance the agricultural economy in order to encourage more industry in Iowa

2. To provide opportunities for employment of Iowa's most priceless resource, her young people

3. To recognize the vital role of attracting industry and manufacturing to Iowa for two major purposes: (a) to increase opportunities for employment, and (b) to increase the "value added" to the state's economy.

Recommendations from the manpower resources surveys of Waterloo and Dubuque gave full support for an alliance of manpower problems and programs of education beyond high school. These reports stated that there was need for more concentrated state-wide effort in relating manpower problems and education beyond high school.

The Iowa Department of Public Instruction has continued to study and evaluate programs and offerings at the elementary and high school levels. Results of these studies and projections indicate the desirability of a closer relationship between educational programs and manpower problems.

National predictions show that higher education will have a vital role in meeting the challenges of manpower needs in the next decade. Indications are that major adjustments nationally, as in Iowa, will need to come from increased employment opportunities in business and industry, both by expanding present facilities, and establishing new ones. This shift in emphasis, from an agricultural economy to a diversified one involving expansion in business, industry and manufacturing will have great implications for education at the high school and college levels.

According to information from the Iowa College Community Research Center, Iowa farmers have a stake in the future industrial development of the state, as Iowa manufacturers have a vital interest in the state's agricultural development. The report states: half of the state's employees in manufacturing are involved in processing of farm products or creating new products for use on farms. Yet, since these industries are slower in employment growth and expansion, more non-agricultural industries must be brought into Iowa if surpluses in farm labor are to be absorbed within the state. This information corresponds directly with national trends as projected by the United States Department of Labor.

Survey of Selected Occupations

In order to determine certain aspects of the Iowa occupational problem, the educational level presently required in certain occupations, the level of education completed by Iowa citizens, and projected needs and desires for education beyond high school, a survey of occupational workers in the top six occupational groups as classified by the United States Census Bureau was conducted. These groups were: (1) professional, technical, and kindred workers; (2) farmers and farm managers; (3) managers, officials, and proprietors; (4) clerical and kindred workers; (5) sales workers; (6) craftsmen, foremen, and kindred workers. These groups were selected because they are the principal ones which make use of education beyond the high school. The study also included representatives, in leadership roles, from agriculture, business and industry, and education.

The instrument used to gather data was titled Questionnaire on Selected Occupations and was formulated, reviewed, and then refined and redrafted several times. Before completion, it was submitted to the survey team and to individuals in Iowa for their perusal and suggestions. It was designed to show interrelationships by statistical analysis within and between the occupational groups

and their responses. Persons completing the questionnaire were asked to indicate reactions to items on a three-point scale: (1) very important, (2) important, and (3) not important. See questionnaire, Appendix A.

Data were gathered on the basis of a five per cent stratified sample of Iowa workers in the first six occupational groups referred to previously, resulting in the selection of a sampling of 4,000 individuals.

Headquarters for the Iowa Higher Education Study were established in the State House, Des Moines, Iowa. Instruments were mailed to various agencies which had been contacted for help in this process, namely, superintendents of schools; county agricultural extension directors; college and university administrators and faculties; chamber of commerce officers; business, industrial, and manufacturing firms; and other Iowa associations and organizations.

Questionnaires were distributed within prescribed patterns and limitations to these agencies, from which they were taken to individuals who were in the occupations designated by a stamped label on the top of each instrument. Geographical and numerical representations were adhered to closely in the distribution of questionnaires, in order to get a good coverage over the state and among all the occupations represented within each major occupational category.

Two forms of the questionnaire were used. Form A, the complete questionnaire, was given to individuals in the occupational groups; and Form B, or Part V, which emphasized problems pertinent to higher education, was filled out by representatives from colleges and universities, public school administrators, business, industry, and agriculture.

The last question of the questionnaire was a free-response item. These answers were analyzed and reported in a separate section of the results. An analysis of the curricular offerings of four-year, degree-granting colleges and universities also was made and data presented.

Interviews and discussions with leaders of various organizations and citizens of Iowa were a vital part of the study, since they enabled better communication of the purposes of the study, solicited cooperation and assistance for it, and enhanced the total results.

Returns from the questionnaires distributed were received from 3652 individuals within the six occupational groups and the leaders in education, business, industry, and agriculture. A total of 44 different basic occupations was involved. The responses from the six occupational groups totaled 2075, and the leaders from other groups numbered 1577.

Data from the questionnaire were punched on I.B.M. cards, treated with the statistical process, and tabulations were made on the basis of two criteria. Weighted mean responses were calculated, and the t test of significance of differences in means was made. Results of these data were interpreted in relation to manpower and higher education needs. An analysis of curricula of colleges and universities was made in order to draw conclusions based upon expressed needs and current practices in higher education.

Iowa has already become a predominately industrial and business economy rather than an agricultural economy, the income from business and industry being more than twice as great as the income from agriculture in 1959.

Summary of questionnaire data. Table 13 reveals that, while high school graduation is the most typical educational requirement for employment in the six occupational groups included in the study, college graduation and graduate work were indicated as requirements by 660 respondents out of 1816. These highest educational requirements were listed by craftsmen as well as other groups.

Table 14 emphasizes the significance of training beyond formal education. Nearly two-thirds of respondents indicated that employers required additional training, craftsmen showing more emphasis on this item.

Of a total of 1944 respondents in six occupational groups checking the amount of formal education completed, 88 checked less than high school, 762 checked high school graduation, and the remainder of 1094 indicated an education level ranging from one year of college to graduate study. On the basis of Table 15, one must conclude that people from all types of occupations are going to college in increasing numbers.

Table 16 indicates that 73 per cent of the respondents completed their education in Iowa, and 27 per cent completed their education outside of Iowa. Farmers had the lowest percentage (12 per cent) completing their education outside of Iowa, and professional, technical, and kindred workers had the highest percentage (39 per cent) completing their education outside of Iowa.

Table 17 indicates that respondents regarded the general course, college preparatory, commercial or business, industrial arts, vocational, and agriculture as the courses having the strongest influence, in the order indicated.

Data in Table 17 indicate the college courses followed by 1115 respondents. Professional, business or commerce, liberal arts, and technical were curricula generally followed, in the order indicated.

Table 19 presents the amount of on-the-job training received by 1713 respondents. Three months of this type of training was the most typical, and all groups indicated that they had participated in on-the-job training programs.

Questionnaire items receiving an average mean of 1.00 to 1.50. Questionnaire items receiving an average mean of 1.00 to 1.50 are regarded as very important, because typical responses to such items were between "very important" and one-half of an interval below "very important." Items receiving this high average mean from all groups were as follows: initial, on-the-job training, ability to work under stress, ability to work with other people, ability to speak and converse with other people, ability to use simple arithmetic, ability to keep accurate records, making intelligent decisions, following written or oral instructions, making and following plans.

Goals of a college education in the "very important" category (1.00 to 1.50) were: acquiring and using skills and habits of critical thinking, and learning to express one's thoughts in writing and speaking.

College programs designed to meet the needs of students received a mean of 1.31, and a college education for one's son or daughter regardless of vocational choice received a mean of 1.31.

Of the various types of education programs, the high school, with a mean of 1.25, was the only one to get into the highest category.

On the importance of changing college curricula to keep pace with the demands of a technological society, preparation of individuals for work in industry, business, and government and preparation for the professions received average means of 1.45.

Questionnaire items receiving an average mean of 1.50 to 2.00. The following items received an average mean between 1.50 and 2.00, indicating an intensity of attitude ranging from one-half of an interval above "important" to "important." Items in this category were abilities to do repetitious tasks, to accept supervision and criticism, to work in isolation, to adjust to variety and change, and to influence opinions and judgment of people; skills in using hands easily, in coordinating eyes, hands, and fingers, in expressing one's self well in writing, reading various kinds of materials, supervising other people, and in operating machines or equipment. Importance of additional education for obtaining a new job, for success in one's occupation, and for advancement or promotion ranged from a mean of 1.77 to 1.94.

All goals of the secondary schools (experiences for effective citizenship, college preparatory, developing personal qualities, and vocational skills) came within the category of means ranging from 1.50 to 2.00.

Understanding and enjoying the arts and sciences of man, developing effective citizenship, higher education for cultural background and for the professions, and preparation for home and family life were college goals receiving average means of 1.50 to 2.00.

Higher education as a basis for success in life received an average mean of 1.52; and on the importance of higher education for 25 per cent and for 50 per cent of all workers, the means were 1.86 and 1.85, respectively.

On the importance of education beyond the high school for farmers, managers, clerical and sales workers, and craftsmen, means ranged from 1.60 to 2.00.

All education and training programs except the high school were in the category of 1.50 to 2.00. A combination of college courses for effective citizenship and satisfactory work received a mean of 1.58.

Technical training at the high school and college levels received means of 1.73 and 1.69, respectively; and college courses for the preparation of technicians and white-collar workers received means of 1.61.

Providing education beyond the high school for adults indicated that all goals listed came within the range of means 1.50 to 2.00. These included technical subjects, cultural courses, and communication skills, which received means of 1.69, 1.95, and 1.73, respectively.

Items above an average mean of 2.00. These items received average means higher than 2.00, indicating an intensity of attitude below "important." They included additional on-the-job training, skills in observing differences in form and shape, skills in coordinating hand and foot, using complex mathematics, using research in solving problems, engaging in research activities, using simple tools, and planning and operating training programs.

Higher education programs to help farm youth adjust to the shift to business and industry received an average mean of 2.36. On limiting higher education to the professions, the average mean was 2.01; and on limiting college enrollments to one-third of the high school graduates and to liberal arts and professional courses instead of preparation for work, the means were 2.18 and 2.04, respectively.

Problems related to higher education. Finances, facilities, curricula, philosophy, recruitment, and retention of good faculties were the problems mentioned by the greatest numbers of respondents. These same problems, particularly faculties, facilities, and finances, were the ones mentioned most frequently by college presidents and other officials interviewed.

Conclusions

From a review of higher education and manpower studies and of related social science literature, an examination of the results of the questionnaire and of college curricula and interviews with college presidents, deans, and citizens, representing various segments of the economy of Iowa, certain conclusions emerge. These have significance for higher education in the state.

1. Iowa has developed a diversified economy based on business, industry, manufacturing, and agriculture; but many educational and political policies cling to an agricultural orientation. The shift of the labor force from farm occupations to industrial ones creates problems which call for new directions in planning and programming education at the high school and college levels to meet the future work force requirements of the state.

2. The nature of work and educational needs of all people will continue to change during the next 10 years, necessitating a closer relationship between the demands of individuals, society, and curricula in higher education. All occupational groups indicated that the colleges should prepare individuals to work in business, industry, and government.

3. Programs of formal on-the-job training are valuable to Iowa workers. It is very important for those who make educational policy to recognize the fact that business, industry, and agriculture have always made significant contributions to the education and training of workers. This trend is certain to continue.

4. Craftsmen and kindred workers regard as very important such skills and abilities as moving and using the hands easily; coordinating eyes, hands, and fingers; observing differences in form and shape; ability to work under stress, to work with people, to make intelligent decisions, to follow written and oral instructions, to use simple tools, to operate machines or equipment,

to express one's ideas in speaking and writing, and to acquire and use habits of critical thinking.

On the basis of the attitudes and data revealed in this study, craftsmen believe that they need a combination of skills and a high level of general education.

5. All occupational groups emphasized the importance of these abilities: making intelligent decisions, keeping accurate records, speaking and conversing with people, making and following plans, using simple arithmetic, following written and oral instructions.

6. All groups regard the high school as the most important education and training program in Iowa, a preference which relates to almost universal experience in attending high school. Preparation for college, for citizenship, and preparation for vocations were stressed as functions of the secondary schools.

7. Higher education to fit the needs of youth, regardless of vocational choice, was given extremely high priority; but all groups gave very high ratings to critical thinking and communication skills as goals of a college education. The liberal arts and citizenship emphases were next in the intensity of favorable attitudes. A combination of general and functional education would be supported by the respondents to the questionnaire.

8. Higher education as a preparation for the professions was emphasized by all groups. Acceleration in this direction during the next decade is urgently needed to meet the demands of society for increased services provided by professional groups.

9. Opportunities for employment and increased educational opportunities, particularly the education of technical personnel, are likely to advance as parallel movements.

10. Higher education is confronted with serious problems of finance, facilities, curricula, and personnel. All groups emphasized these problems, and college administrators expressed the same concerns.

11. All groups regard it as important for the state to provide some free education beyond high school. Moreover, there is a growing sentiment for state scholarships to support capable students who do not have the financial resources for a college education.

12. Most of the colleges in Iowa follow the traditional, liberal arts emphasis. With the exception of programs in the major universities, the colleges of Iowa are not responding to curricular demands of the dynamic society in which present college students will live and work. The liberal arts program is an important aspect of future requirements, but it is not enough, according to the views of the 3,652 citizens who responded to the questionnaire.

13. Research being carried on by the Employment Security Division, the Iowa Development Commission, and by the universities dealing with problems of economic, business, industrial, and agricultural development can contribute significantly to the determination of public policy for higher education.

14. Responses of the 3,652 citizens representing the groups most interested in higher education indicate a need for new programs and curricula which the leaders of the colleges of Iowa seem reluctant to accept. Study number three of this series deals with the implications of these facts for the future development of junior colleges in the state.

Recommendations

These recommendations are based upon the results of the responses to the questionnaire, an analysis of published reports on higher education, and interviews with leaders in education, business, industry, and agriculture.

1. The State Legislature and the governing boards of Iowa's colleges and universities should develop public policies for higher education that are oriented toward the future rather than the past.

2. All groups that are affected by the consequences of broad public policy affecting higher education should have opportunities to be heard in the development of such policies.

This recommendation can be achieved by inviting alumni of the colleges and citizens in general to engage constantly in feeding back to responsible boards of control, college officials, and legislative bodies their suggestions for new directions in higher education.

3. The great liberal arts tradition should be revitalized and become the study of the dynamic arts and sciences of man in an increasingly complex society.

These studies form the foundation for all professional studies and serve as the principal source of general education competencies.

4. The internal planning and administration of programs for colleges and universities should be structured so as to facilitate change rather than to prevent change.

At the level of curricular planning and implementation, this recommendation could be more easily implemented if departmental chairmen were elected by their associates or appointed for terms limited to no more than three years.

5. As larger high schools are developed in Iowa, state and local policy-forming groups should emphasize more diversified curricula with adequate consideration for vocational education.

6. Opportunities for education beyond high school should be developed to meet the unique needs of professional, technical, clerical, sales, and managerial workers, for farm owners and farm managers, and for craftsmen and kindred workers.

7. Universities and colleges engaged in the education of individuals for the professions should study the future manpower demands of the professions as a basis for planning programs and determining enrollments.

8. Faculties, administrators, and boards of control should engage in studies of costs, utilization of facilities, and more effective utilization of academic and administrative personnel to meet the critical problems in these areas.

9. The State Legislature should make appropriations to pay the tuition of needy, capable, and highly motivated high school graduates, regardless of what Iowa college they attend.

10. Higher education in Iowa can and should make significant contributions to the orderly change from an agricultural to a diversified economy, involving industrial, business, and agricultural enterprises in which all young people of Iowa can find satisfying employment opportunities.

This recommendation requires well-organized and adequately-supported research programs, particularly in the universities.

APPENDIX A

To Be Filled Out By_____

IOWA LEGISLATIVE RESEARCH BUREAU

HIGHER EDUCATION STUDY

Questionnaire on Selected Occupations

The Iowa State Legislature, in 1959, appropriated funds to provide for a study of public and private higher education in Iowa. The Legislative Research Bureau was charged with the responsibility of having the study made. The Research Bureau contracted Dr. Raymond C. Gibson, Professor of Higher Education at Indiana University, to direct the study. You are one of 4000 citizens of Iowa who will fill out this questionnaire. The results of this study will be extremely important to the youth of Iowa. Therefore you are urged to answer the questions thoughtfully and carefully.

PART I Personal Data

1. Where do you live? (Check One)
   a. Farm___ b. Non-farm (Rural)___ c. City___

2. Sex (Check One)
   a. Male___ b. Female___

3. Age in years on your last birthday. (Check One)
   a. 17-23___ b. 24-28___ c. 29-34___ d. 35-50___ e. 51-65___ f. Over 65___

4. What is your gross annual income? (Check One)
   a. $1000 to $1999___ d. $5000 to $7499___ g. $15000 to $24999___
   b. $2000 to $2999___ e. $7500 to $9999___ h. $25000 to $50000___
   c. $3000 to $4999___ f. $10000 to $14999___ i. Over $50000 ___

PART II This section deals with education requirements, training, skills, and abilities presently required of persons in your occupation.

5. Check the number of years of schooling which your employer requires for a beginner in your occupation. (1 is first grade, 12 is high school graduate, etc.)
   1___2___3___4___5___6___7___8___9___10___11___12___13___14___
   15___16___B.A. or B.S.___M.A.___

6. In addition to that marked in No. 5, what other training is required for your position? (Check those that apply)
   a. None . . . . . ___ d. Trade school . . ___
   b. Apprenticeship . . . . . ___ e. Business college. . ___
   c. Cooperative training (work and study)___

7. What training on the job did you receive (Check the time)
   a. 0-1 week___ c. 2-3 weeks ___ e. one month___
   b. 3 months___ d. 6 months or more___

Part III This section deals with temperaments, skills and abilities required of persons in your occupation. Place a check mark after the number that indicates the importance of each item. 1 is very important, 2 is important, 3 is not important. (Check 1, 2, or 3 for each item)

8. How important are these temperaments for your occupation?

	Very Important	Important	Not Important
a. Ability to do repetitious tasks	1	2	3
b. Ability to accept supervision and criticism	1	2	3
c. Ability to work in isolation or alone	1	2	3
d. Ability to work under stress	1	2	3
e. Ability to adjust to variety and change	1	2	3
f. Ability to influence the opinions and judgment of other people	1	2	3
g. Ability to work with other people	1	2	3

9. How important are these physical skills and factors for your occupation?

a. Skill in moving and using the hands easily.	1	2	3
b. Skill in coordinating the eyes, hands, and fingers	1	2	3
c. Skill in observing differences in form and shape	1	2	3
d. Skill in coordinating hand and foot	1	2	3

10. How important are these skills and abilities for your occupation?

a. Expressing one's self well in writing	1	2	3
b. Reading various kinds of materials	1	2	3
c. Speaking and conversing with people	1	2	3
d. Using simple arithmetic	1	2	3
e. Using complex mathematics	1	2	3
f. Keeping accurate records	1	2	3
g. Making intelligent decisions	1	2	3
h. Supervising other people	1	2	3
i. Using research in solving problems.	1	2	3
j. Following written or oral instructions.	1	2	3
k. Making plans and following them through	1	2	3
l. Engaging in research activities	1	2	3
m. Using of various simple tools	1	2	3
n. Operating machines or equipment	1	2	3
o. Planning and operating training programs	1	2	3

PART IV This section deals with the amount and type of formal education and on-the-job training you have received.

11. How much formal education have you completed? (Check One) (1 is first grade, 12 is high school graduate, etc.)

1___ 2___ 3___ 4___ 5___ 6___ 7___ 8___ 9___ 10___ 11___ 12___ 13___ 14___
15___ 16___ B.A.___ M.A.___

12. Where did you complete your education? (Check One)

a. In iowa___ b. Outside of Iowa___

13. Which of these high school courses had the strongest influence upon you? (Check One)

a. Never attended high school___
b. General course ___
c. College preparatory ___
d. Agriculture ___
e. Commerical or business ___
f. Distributive education ___
g. Home economics ___
h. Industrial arts or technical ___
i. Vocational (Trade & Industrial) ___

14. What major course of study did you follow in college? (Check one if you attended college)

a. Professional (law, medicine, engineering, teaching, clergy) ____
b. Science, Literature, & Arts ____
c. Business or Commerce ____
d. Technical curriculum ____
e. Other . . . . ____

15. How important would additional education be in achieving the following goals?	Very Important	Important	Not Important
a. In obtaining a new job in which you are interested	1	2	3
b. For the success of anyone going into your occupation	1	2	3
c. For advancement or promotion in your present occupation	1	2	3
16. How important was your formal on-the-job training in your present occupation? (Check if you had any)	1	2	3
17. How important do you think additional on-the-job training would be in your present occupation? .	1	2	3
18. How important was your high school education in meeting the following four objectives?			
a. Providing experiences necessary for developing effective citizenship	1	2	3
b. Preparing you for success in college . . .	1	2	3
c. Developing personal qualities, habits and appreciations necessary for wholesome living . .	1	2	3
d. Developing vocational skills and abilities necessary for success in your work . . .	1	2	3
19. How important was your college education toward success in your present occupation?	1	2	3

PART V This section deals with the problems of higher education in meeting the needs of society and of the individual. You are to check each statement or question for its importance. 1 is very important, 2 is important, 3 is not important. (Check 1, 2, or 3.)

20. Please rate these goals of a college education	Very Important	Important	Not Important
a. Understanding and enjoying the arts and sciences of man	1	2	3
b. Acquiring and using the skills and habits of critical thinking	1	2	3
c. Learning to express one's thoughts effectively in writing and speaking	1	2	3
d. Developing skill in active, responsible and effective citizenship	1	2	3
e. Learning effective ways to use leisure time .	1	2	3
f. Preparing one's self for a satisfying home and family life	1	2	3
21. How important is it for post high school programs in Iowa to offer students an education to fit their needs and interests?	1	2	3

	Very Important	Important	Not Important
22. Is it important that college enrollments be limited primarily to individuals preparing for the professions and for a broad cultural education?	1___	2___	3___
23. How important is education beyond the high school in helping a person to become a success in life?	1___	2___	3___
24. How important would you regard a college education for your son or daughter regardless of vocational choice?	1___	2___	3___
25. Do you think it is important for the state to provide some free education beyond the high school for the capable and interested youth in Iowa?	1___	2___	3___
26. One out of three workers in the U. S. is a woman and one-third of all women work. Is it important to provide additional specialized post high school education for women in Iowa?	1___	2___	3___
27. Iowa's farm youth have expressed great interest in preparing for work as technicians.			
a. Is it important to offer education in these areas at the post high school level?	1___	2___	3___
b. Is it important to offer more technical training at the high school level?	1___	2___	3___
28. It is estimated that Iowa will have 879,000 non-agricultural workers by 1965. About 10 per cent of the workers will be in the professions. Is it important to provide post high school education for:			
a. Only the professions (law, medicine, engineering, teaching, clergy).	1___	2___	3___
b. 25 per cent of all workers	1___	2___	3___
c. 50 per cent of all workers	1___	2___	3___
29. Education beyond the high school enhances employment opportunities and earning power of individuals in industry, business and government. Is it important for the colleges to prepare people for all of these areas?	1___	2___	3___
30. By 1970, according to the U. S. Department of Labor, 45% of all jobs may be in the white-collar category. Is it important to change college programs to meet the demand for white-collar jobs?	1___	2___	3___
31. Since 1957, the number of technicians in the labor force has almost equaled the number of engineers. Is it important to develop post high school education programs for these technicians?	1___	2___	3___
32. It is estimated that there will be a 60% increase in professional, technical and related occupations between 1957 and 1970. Is it important for college curricula to change to meet these demands? . .	1___	2___	3___

	Very Important	Important	Not Important
33. Do you think education beyond the high school is important for success in the following occupations?			
a. Farm owners and farm managers	1___	2___	3___
b. Managers, buyers and proprietors. . . .	1___	2___	3___
c. Secretaries, cashiers, bookkeepers, bank tellers	1___	2___	3___
d. Sales workers, advertisers, brokers, realtors	1___	2___	3___
e. Craftsmen, foremen, electrician, jeweler, machinist, watchmaker, mechanic, radio and television repairman	1___	2___	3___
34. Is it important for Iowa to provide post high school opportunities for adult workers to study in these areas?			
a. Technical subjects related to their work. .	1___	2___	3___
b. Cultural courses for personal growth. . .	1___	2___	3___
c. Communication skills (reading, speaking, writing)	1___	2___	3___
35. Increasing numbers of Iowa's youth are being employed in business and industry. Is it important for education beyond the high school to help farm youth adjust to this shift in occupation?	1___	2___	3___
36. How important are these Iowa education and training programs in meeting the problems of youth going into agriculture, business and industry?			
a. Journeymen and apprenticeship	1___	2___	3___
b. On-the-job training	1___	2___	3___
c. High school education	1___	2___	3___
d. Junior colleges	1___	2___	3___
e. Four-year colleges	1___	2___	3___
f. Universities	1___	2___	3___
37. Is it important for Iowa's colleges and universities to emphasize:			
a. High quality education for a limited enrollment not to exceed one-third of the high school graduates	1___	2___	3___
b. Liberal arts and professional courses instead of preparation for various kinds of work .	1___	2___	3___
c. A combination of courses leading to effective citizenship and satisfactory work . . .	1___	2___	3___

38. List two of the most serious problems of Iowa as related to higher education.

APPENDIX B begins with Part V of the above questionnaire.