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VARIABLES AND SITUATIONAL FACTORS ASSOCIATED WITH HIGH SCHOOL VOCATIONAL EDUCATION PROGRAMS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

Max Lee Amberson, B.Sc., M.A.

* * * * * *

The Ohio State University
1968

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CHAPTER I

THE PROBLEM AND ITS SETTING

The American dream dating back to Jefferson is that this is a land where one can fulfill one's potentialities; we all "dream of a land in which life should be better and richer and fuller for every man with opportunity for each."¹ This is the central purpose to which the school must be oriented if it is to accomplish either its traditional task or those newly accentuated by recent changes in the world.

Equally fundamental is the aim of education to provide some uniformity of understanding, some common denominators of knowledge and skill, which will adequately prepare the young student for both further education and the world of work.

More than ever before, and for an ever-increasing proportion of the population, vocational competence requires developed reasoning capacities. Recent developments in technology have required working people to upgrade and to change their occupations several times during their working lives. Although it is necessary to specialize in order to obtain employment on relatively higher levels, the change of jobs in a lifetime that are forced on workers emphasizes the need for a broad foundation in vocational education. It is because of this and similar

phenomena that our schools have on increasing responsibility to provide relevant vocational and technical education. Yet, due to a multiplicity of reasons many schools have not answered society's challenge of providing adequate vocational programs for all students. Good vocational-technical education in small schools has, until recently, received little practical, positively oriented attention.²

The need for attention to vocational-technical education at all levels is not new, as is suggested in the following quote, dated 1914:

There is a great and crying need of providing vocational education—for every part of the United States—to conserve and develop our resources; to promote a more productive and prosperous agriculture; to prevent the waste of human labor; to supplement apprenticeship; to increase the wage-earning power of workers; to offset the increased cost of living. Vocational education is therefore needed as a wise business investment for this Nation, because our national prosperity and happiness are at stake and our position in the markets of the world cannot otherwise be maintained.³

Though significant changes have been made since that time, Venn, in 1964, wrote, "The nation's task is to make certain that the human promise of America is not lost to the economic promise of technology."⁴ But, as we look at our country's educational performance in this broader light, there are areas for concern.

Current estimates suggest that of every ten students now enrolled in the elementary grades, three will probably not attain high

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school graduation. How will these three earn a living in the world of the 1970's without a high school diploma? Of the other seven boys and girls who will finish high school in this decade, three will not go on to college. What will these three high school graduates do for a living? How well will their high school education prepare them to earn a living, in the case of many of the girls, to perform the duties of housewife and mother? Of the remaining four students who will enter college, only two will receive baccalaureate degrees. What are the employment prospects of the two who do not complete four years of college? How will high school and post-high school study help them earn a living? From these questions one can deduce that about 80 percent of the youngsters now in the elementary schools will have a need for vocational education, preparing them for entry and subsequent advancement in the world of work. These young people will enter the labor force in this decade and will account for nearly 90 percent of the growth in the labor force during the 1970's. Will these young workers be suitably prepared for the world of work? Will their interests, skills, and knowledge match the changing requirements of the economy?  

Although the percentages of youth graduating from high school and colleges are increasing, the number who have developed marketable skills is far short of the number who should have benefitted from

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occupational training through vocational education while in high school. Vocational education has not been accessible to many high school youth in urban centers and only a few kinds of vocational education have been available to youth in rural areas.

Major Purpose of the Study

This study is intended to contribute to a clearer understanding of the variables and situational factors which relate to the availability and quality of vocational education in various sized high schools.

Specific Objectives

1. To identify those variables which are important indicators of vocational education program outcomes.

2. To determine the relationship of selected qualitative factors and the availability of vocational education in various sized high schools.

Limitations of the Study

In planning and implementing the study, the writer was cognizant of certain limitations which are inherent in conducting a study of this type. The writer believes the following factors affect the study to some degree:

1. Because it was necessary to first identify the potential variables which were associated with vocational education program outcomes, it was not practical to predict outcomes through a series of hypotheses.
2. Since most of the information relating to the variables was believed to be more readily available through the school administrative office, it was deemed advisable to solicit data from school administrators only and not to include teachers or students.

3. It was not intended, nor was an attempt made, to evaluate the programs of general education or vocational education in any particular school or state, but only to collect information from high schools in the several states as a basis for determining their current status. The data could, however, serve as a basis for comparison should a school or state wish to do so.

4. The identified variables which related to vocational education program outcomes in the high schools may not have been administratively possible to carry out because of certain restrictions which were unknown to the researcher. No attempt was made to analyze the specific administrative setting of each state in the study.

5. The study was limited in that the researcher could not visit the high school vocational education programs for personal study and interviews; therefore, the entire strength of the study rests on information reported through mail questionnaires.

6. Additional limitations which follow were recognized as inherent in the use of a survey instrument.

a. The instrument may have failed to produce accurate data due to differences in interpretation by the various respondents even though the instrument was pre-tested by six former Montana high school superintendents who
wore employed by the Montana Department of Public Instruction.

b. The degree to which the respondents accurately evaluated procedures, degrees of emphasis, and other characteristics of the questionnaire.

c. The degree to which they were able or took the time to obtain specific statistical and fiscal information relative to certain categories asked for in the study.

d. Failure to obtain a response from all the sampled schools identified by State Directors of Vocational Education in each state.

e. Due to changes in school administrators, newly appointed superintendents may have answered the questionnaire even though they had little first-hand information about the school system from the previous school year.

Definition of Terms

In order to minimize the possibility of misunderstanding, certain terms used in this study are defined as follows:

Accreditation.—Recognition of a high school by one of the five regional registered associations of colleges and secondary schools which establish standards or requirements that must be complied with in order to secure approval and listing on their accredited list of schools.

Area vocational-technical school.—A school or program involving a large geographical territory, usually including more than one
local basic administrative unit. It offers specialized training to high school students who are preparing to enter the labor market. It also provides vocational or technical education to persons who have completed or left high school and are available for full-time study. These schools are sponsored and operated by local communities or by the state.

Certified teacher.—A person who possesses a license issued by a constituted authority stating that the holder is qualified to teach in a public school within the jurisdiction of the licensing authority, usually with certain reservations as to the grade level and/or subjects in which the holder is qualified.

Comprehensive high school.—A high school which includes curriculum both in general education courses and specialized fields of study such as academic, commercial, trade, and technical subjects.

Consolidation of schools.—An abandonment of one or more school attendance units and the bringing together of their students into a larger single administration attendance unit for the sole purpose of providing better school facilities and educational opportunities.

Curriculum.—A body of prescribed educational experiences under school supervision designed to provide an individual with the best


possible training and experience to fit him for the society for which he is a part or to qualify him for a trade or profession.®

Dependent variables.—Items in this study which are commonly cited in the literature and validated by a jury as influencing the quality of vocational education in the high school.

Full-time equivalent counselor.—A counselor who spends one-half or more of his school day in assigned counseling duties.

Full-time equivalent teacher.—A teacher who spends one-half or more of the school day in teaching and/or supervision of vocational education students in one of the seven program areas of vocational education.

High school.—Any public school which has as its enrollment grades 9 through 12 or grades 10 through 12.

Independent variables.—Items in this study which are commonly cited in the literature and validated by a jury as influencing the availability of vocational education in the high school.

Influence.—An apparent particular relationship or association based on the analysis of data, or according to statistical tests.

Large high school.—Any public high school with an enrollment of over 1500 students in grades 9 through 12 or grades 10 through 12.

Small high school.—Any public high school with an enrollment of under 200 students in grades 9 through 12® or grades 10 through 12 and which is generally found in small towns and/or rural areas.

® Ibid., p. 113.

Vocational education.—"Vocational education" shall be limited to those programs operated in the public schools for the primary purpose of preparing persons for entrance into any specific field of work or occupational area.

Vocational education course.—Organized subject matter in which instruction is offered within a given period of time, and for which credit toward graduation is usually given and which is designed to prepare students for entrance into an occupational area.

Vocational education program.—Any body of knowledge which is designed to fulfill occupational education objectives and is conducted under one of the six areas of: Agriculture, business and office education, distributive education, health occupations, home economics, and trades and industrial education.

A Rationale for the Study

The magnitude of the task facing society, and the secondary schools specifically, was suggested by former United States Commissioner of Education Keppel when he estimated that seven million young people would enter the labor force in the ten years 1965-1975 without benefit of high school graduation unless steps were taken to provide programs designed to meet their needs, interests, and motivations. Some major considerations which were said to need immediate attention included:

1. The preparation of young people for careers in business, technical occupations, skilled trades, the health occupations, the service trades, distributive occupations, and agriculture . . . by cutting across the traditional limits of such areas.
2. Vocational homemaking must be used in preparing young people for occupations which require the skills and content commonly associated with home economics.

3. A liberal segment of general education is an essential part of total job preparation . . . since a combination of these elements is required for ultimate success on the job.

4. The concept of comprehensiveness in education . . . where this idea has prevailed, . . . general education and the vocational guidance objectives of the high school may be achieved. Furthermore, students understand the common learnings associated with general education better when they see the applications of these learnings and concepts in the business, home economics, and industrial arts laboratories. 10

The task of providing both general and vocational education for millions of young people is inevitable since, according to Burkett,

Vocational and technical education are essential to the social and economic welfare of a nation. It must and will develop. Where and how it develops will be determined largely by the leadership that educators give to the direction of the program in our schools. 11

Norden, in studying the vocational preparatory needs of high school youth, further suggests several philosophical generalizations which, if instituted, should produce intelligent young citizens and workers.

1. High school personnel must organize their resources and ideas to accommodate the clearly indicated phenomenon that more students in the public schools must be prepared for the world of work than for college.

2. Teachers and supervisors in the secondary schools must recognize all of the manifestations which clearly indicate the potential dropout or early leaver, the malcontent, and the potential delinquent, for whom school curriculums do not adequately reflect student needs, interests, and motivations. Curriculums . . . must become more flexible.


3. Vocational education for the world of work should be provided at all levels of education but particularly in the secondary schools where the bulk of the dropouts occur. This vocational education must be provided in response to the indicated needs of students.

4. A major and continuing effort must be made to examine with much more care—and certainly with a great deal more caution—the trend toward the "comprehensive secondary school." Most of the major quality programs in vocational education during the past fifty years have been provided in separate area or special schools. By contrast and during the same period of time (almost without exception) where vocational programs have been a part of comprehensive secondary school, the vocational offerings have suffered in regard to status and respect, operating funds, and even administrative and supervisory offerings are part of the "comprehensive" secondary school program, they may be found in Quonset huts, in the rear of the school, in separate buildings on the far end of the school site, in the basement, or at best, in a wing of the school quite apart from all other educational, social, and student activities. "Separateness" is intended, yet "comprehensiveness" is claimed.

5. Secondary schools must be organized so as to provide a full range of opportunities for all students . . . to explore and experiment with major clusters of occupations.12

Congress and the people of the United States, recognizing the need for an expanded program of vocational education for all people in all parts of the United States, passed the Vocational Educational Act of 1953. Congress passed this legislation on the basis of a few basic principles, two of which hold special significance to the leadership of our schools.

1. Vocational education programs must be adjusted to the labor market. Programs must be flexible so that students may have available the very latest occupational information, technical knowledge, auxiliary knowledge, and skills required for employment.

2. The secondary schools, whether comprehensive high schools or separate vocational schools, must be concerned with all of the non-college bound students. As the secondary school gears up for its vocational mission, it must seriously consider the provision of training and education for (a) those who are least able intellectually to acquire vocational training to (b) those of the very highest level of technical ability.13

The Challenge to Vocational Educators

The problem in brief, ... involves looking ahead five, ten, twenty years to see what are likely to be the occupational and social needs and attitudes of these future periods; planning the intellectual and social evaluation of each age group in the numbers needed, motivating young people to seek ... certain types of jobs and to adopt the desirable and necessary attitudes; providing enough suitable teachers; being able to alter all of these as the actualities in society and technology indicate. ... If we do not find the answers to these questions soon, we will have a population in the next ten to twenty years more and more out of touch with ... realities, ever more the victims of insecurity on the one hand and ennui on the other, and more and more mismatched to the occupational needs of the day. If we fail to find the answers, we can bumble along, very probably heading into disaster.14

Society's increasing demands for excellence in education have aroused much concern about the adequacy of educational opportunities for rural youth. Russell, former Secretary of the Educational Policies Commission (1963), contends that limited educational opportunities in rural America accounted in a large part for the numbers of unskilled rural youth who, upon migrating to urban communities, cause social problems.15 This same point is reported by Zeisel.

13Donald W. Michall, Cybertation: The Silent Conquest (Santa
14Donald W. Michall, Cybertation: The Silent Conquest (Santa
15James E. Russell, Changes and Challenge in American Edu-
The problems for the rural youngster entering the labor force are even greater than for his urban counterpart, generally involving, in addition to other difficulties, migration to another community and environment. There has been some growth of employment opportunities in rural areas . . . but the occupations involved are not those for which farm and rural reared youth who have migrated to urban areas have been generally less successful occupationally than urban-reared persons; farm-reared workers generally change jobs more frequently, have lower incomes, and are more often found in unskilled and semi-skilled jobs.

. . . rural youth are facing a continuing disadvantaged position in the urban labor market unless a major improvement is forthcoming in the quality and quantity of their education, vocational guidance and vocational training.16

Vocational education should serve all people.

There are jobs for all levels of intelligence, all racial groups, and all social classifications; and vocational programs should be organized for all who can profit by them to the extent of placement and job success in the labor market.17

Byram and Wenrich defined the purpose of vocational education as "specialized education designed to prepare the future worker for initial employment, or to enable workers to improve and progress in their vocations."18 The authors also believed that vocational education served many purposes in the education of all youth. They further reinforce this with the principle that selection of vocational students should not be based on finding the best student for any program, but finding the best program for any student.


Byram and Wenrich earlier recognized the "drop-out" as a problem in which vocational education has some responsibility. They cite some early studies which were not conclusive on the holding power of vocational programs for these youths. These authors expressed the opinion that vocational education was attractive to drop-outs because it helped pave the way for early employment, but also believed that improvement of vocational offerings might help reduce the drop-out rate. However, the authors did not propose any other solutions or offer suggestions for aiding the less able student through vocational education.\(^{19}\)

By the late 1950's many leaders across the nation had become concerned about increasing school enrollments and the growing number of drop-outs. Conant was among the first to direct attention to these problems with the report for the Carnegie Corporation which became the basis for a popular book. One of his general recommendations was that "in an urbanized and industrialized society the educational experiences of youth should fit their subsequent employment, and conversely when opportunities for employment no longer exist, the training program in that field should be dropped."\(^{20}\) He further believed that the schools should be charged with the responsibility for vocational guidance of youth until they reach 21 years of age.

\(^{19}\)Ibid., p. 197.

A synopsis of Conant's book on the American high school suggests four main points relative to vocational education. First, vocational courses should not replace courses which are essential parts of the required academic program for graduation. Second, vocational courses should be provided in grades 11 and 12 and not require more than half the student's time in these years; however, for slow learners and prospective dropouts these courses ought to begin earlier. Third, the significance of the vocational courses is that those enrolled are keenly interested in the work; they realize the relevance of what they are learning to their future careers, and this sense of purpose is carried over to the academic courses which they are studying at the same time. Fourth, the type of vocational training programs should be related to the employment opportunities in the general locality. 21

In the fall of 1961 a Panel of Consultants on Vocational Education was appointed to study vocational education in the United States. This panel compiled a very comprehensive report which not only surveyed the total field of vocational education, but provided criticisms and suggestions which were subsequently acted upon by Congress. As a first step they criticized vocational education for not having met the total needs of all the people. The panel stated in its report to the President that "financial support by the Federal Government, States, and local communities has not kept pace with the increasing need for a trained work force. The Federal expenditure for vocational

21 Ibid., pp. 22, 51-55, 123.
education is indeed meager in relation to the number of people to be served and the resulting individual and national benefits.\footnote{22}

The panel defined vocational education as

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\ldots \text{all formal instruction for both youth and adults, at the high school, post high school, and out-of-school levels, which prepares individuals for initial entrance into and advancement within an occupation or group of related occupations. From time to time reference will be made in the report to "technical education," which is considered to be a part of the natural continuum of vocational education. References to technical education are used to focus attention upon a phase of vocational education having certain unique characteristics, usually requiring more rigorous science and mathematics background and more exacting skills.}\footnote{23}
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One of the major recommendations for change as identified by the panel was that "vocational education must be made available to all people who have the need, the desire, and the ability to benefit from such instruction."\footnote{24}

\textbf{Vocational Education and School Size}

Though there are a multiplicity of reasons why schools in general have not answered society's challenge of providing adequate programs of education and vocational education, specifically, school size is commonly cited as being the primary deterrent.

Conant, after an extensive study of the American high school, suggested: "From what I observe in the schools having graduating classes of less than one hundred, and in much smaller schools I


\footnote{23\text{Ibid., p. 5.}}

\footnote{24\text{Ibid., p. 222.}}
visited, I am convinced small high schools can be satisfactory only at exhorbitant expenses."^{25}

Some rather tangible evidence points to the smaller school in the predominantly small town and generally rural setting as being slighted in its pursuit of excellence in education and in vocational and practical arts education when compared with high schools in larger cities which are generally located adjacent to business and industrial centers. Sturgess suggested this reality in his description of education in the small rural school.

The characteristic most frequently associated with rural education is smallness—small administration districts, small school systems, small enrollment, small instructional staffs, and small classes. These factors have been the inevitable result of the traditional American philosophy which demands that educational opportunities be provided for all youth regardless of the fact that many portions of the country are sparsely populated.

Population trends indicate there will continue to be a movement from rural to urban centers. Educators in rural areas, therefore, must adequately prepare students who will search for jobs in urban areas. At the same time those who do not migrate must be prepared for living in rural communities. This dual type of preparation is difficult for the staff of smaller schools to accomplish.^{26}

The vastness of the problem is best portrayed by the fact that today approximately 15 million children 18 years and under are educated in rural public schools. These generally small schools are quite often very isolated from population centers and, contrary to

^{25}James B. Conant, op. cit., p. 37.

assumptions, the problem of inadequate rural education is not diminishing. 27

Most authorities seem to agree that all districts that can should reorganize as a first step in improving instruction. In many areas of the country, however, there frequently is resistance to removing a school from a small town. Local residents feel that the loss of the school represents a loss in school autonomy and the beginning of the end of purely local school activities. School district reorganization and school consolidation provides one avenue to solve the problem of educational malnutrition found in the small school. Because of sparsely populated areas, there will continue to be a need for small schools—that is, schools that exist to serve isolated areas. 28 Although longer bus lines, express bus routes, or boarding schools may offer some possibilities, they too fail to provide the total answer. Though small schools are fairly evenly distributed throughout the United States, the Great Plains and Western States which include Montana have large numbers of small isolated schools due to their variable geography and sparse population. This kind of small school will remain for well into the foreseeable future, even with the reorganization of some unnecessarily small schools that are close together. 29


School size terminology

Not the least important aspect of the problem of small schools is the seemingly simple matter of classifying schools on the basis of size. What constitutes a small high school? From Conant's point of view, a school would be small if it enrolled less than enough students to insure a graduating class of 100 seniors. The Research Division of the National Education Association in a study of small high schools defines the "small" high school as enrolling fewer than 300 students.

Ford, reviewing a U.S. Office of Education bulletin, stated:

"There is general consensus among the experts that any high school, regardless of its organization, which enrolls fewer than 200 pupils is 'small.' It would usually enroll fewer than 40 in the senior class."

Carleton, in reviewing the Western States Small Schools Project, noted that "a small high school is one that enrolls fewer than 200 students in the upper four grades."

The Montana State Department of Public Instruction in 1964-65 listed the median size high school in the state as enrolling 116

30 James B. Conant, op. cit., p. 38.


students. This suggests that the "small" school in Montana enrolls fewer than 100 students.

In 1952 a graduate study at the University of Montana developed a pattern of categories for classifying high school enrollment. They placed high schools in the following categories: (1) over 1500; (2) 1500-351; (3) 350-151; (4) 150-76; (5) 75-41; (6) 40 and under. From that time other research studies in Montana have consistently used this pattern. Since this study relates to Montana and several other Western states, the U.S. Office of Education and the Western States Small Schools Project definition of "small" will be used.

Carleton in his study of small schools suggested that "there appears to be no clear-cut demarcation between the 'small' high school and the 'middle sized' or 'larger' high school that seems to be acceptable in any but local or state terminology." Swanson, in compiling the report of the President's Panel of Consultants for Vocational Education, suggested that youth in the small towns have relatively little opportunity to get preparatory training for industrial occupations, and where they do have some opportunity their choices are greatly restricted. The rural high schools have paid little attention

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36 Linus J. Carleton, op. cit., p. 97.
to training for the larger number of youth who must migrate to urban areas to obtain employment and have concentrated their efforts on agricultural and home economics programs.\(^{37}\)

Bohrson pointed out that in the typical small high school there seem to be

... two types of curricula maladjustment which stand in the way of reasonable comprehensiveness:

1. An over-blown curricular emphasis on college preparation, which is out of proportion to the number of college-bound students.

2. Lack of a balanced vocational program (too few courses available to help all students select a realistic occupational goal).

The percent of schools offering one or more subjects in industrial arts or trade and industrial education were small. The subjects offered in small high schools tended to be academic, yet only one-third of the students went to college.\(^{38}\)

Student success and school size

A 1963 follow-up study of Montana's 1958 high school graduates revealed that 60 percent of Montana's high school graduates started college. Of the group starting college, only 15 percent of the girls and 16 percent of the boys, after a four-year period, finished college.\(^{39}\) This study revealed no significant differences between success in college and the size of high school from which the student graduated.


\(^{39}\)Dolph Jennings, unpublished study (Helena, Montana: Department of Public Instruction, 1961-62).
Additional studies in primarily rural areas tend to support this research in part and, according to Sewell: "The estimated percentage of college-bound students in small high schools ranged from 35-55 percent, depending upon the method of classifying students (by residence, by sex, by ability, etc.). Even those boys planning to manage or own farms or ranches are less likely to attend colleges than would be the average expectancy for all youth."\(^4\)

While many critics of education in small schools are alarmed at the lack of vocational opportunity, they are equally critical of an over-emphasis or direction by existing vocational education programs. For boys in small rural high schools, courses in general or vocational agriculture constitute the chief offering. In 1961, according to a National Education Association Monograph, "one or more courses (in agriculture) were offered in 40.7 percent of the smallest (1-99 pupils) and in 70.6 percent of the largest (200-299) of the small high schools."\(^4\) One recent follow-up study of vocational agriculture students in Connecticut did, however, reveal that of the students graduating from high school agriculture classes, only 2 percent were


\(^4^1\) Lee G. Burchinal, "Differences in Educational and Occupational Aspirations of Farm, Small Town and City Boys," Rural Sociology, 26:2, June, 1961, p. 120.

unemployed, while unemployment for this same age group of the general population during this same general time era ranged between 16 and 25 percent.

Swanson suggested that a series of studies revealed that approximately 40 percent of the youngsters who took vocational agriculture in high schools between 1918 and 1960 were at the time of the studies in agriculture or in agriculturally related occupations. This study did not indicate whether those not employed in agriculture, or a related area to agriculture, were employed in other occupations.

From these very isolated examples one might hypothesize that the contribution of a vocational course in the student's high school curriculum was valuable in securing employment, regardless of the subject area in which it was offered.

Women's employment

"The whole area of women's participation in paid employment importantly increases the nation's labor force. One worker in three is a woman and the forecast is for 30 million in 1970." Altmiller,


45 C. J. Swanson, op. cit., pp. 92-93.

in studying the schools in the Western States Small Schools Project, suggested:

For girls the small high school curriculum appears more desirable according to a 1963 study done for the Western States Small School Project. Courses in homemaking and business education were found to be common in small schools, and their content is more suitable to the girls' needs. 47

In this same publication Bohrson cited that, "little difference seems to be made in business education between courses which train for office occupations and those designed to develop skills for personal use." 48

School organization

Each school has different kinds of organizational concerns, but basically they share a concern for comprehensiveness in an effort to attain three main objectives. Conant cited these objectives of the comprehensive schools as:

First, to provide a general education for all the future citizens; second, to provide good elective programs for those who wish to use acquired skills immediately on graduation; third, to provide satisfactory progress for those whose vocations will depend on their subsequent education in a college or university. 49

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49 James E. Conant, op. cit., p. 17.
Oliver, of the Middle States Association of Colleges and Secondary Schools, lists certain strengths along with weaknesses that he notes among member and non-member schools:

Some strengths of smaller secondary schools:
1. Greater opportunities for individual attention.
2. Chances for close school-community relationships.
3. Opportunities for faculty to know each other, to know pupils, to know the community, and to work together as a unit.
4. Relative freedom from the red tape and rigidity so often associated with large-scale organizations.
5. Opportunity for cooperative leadership in curriculum improvement.

Some weaknesses of smaller secondary schools:
1. By itself, unable to provide special services such as trained librarians, psychologists, counselors, reading specialists.
2. Limited offerings so that few electives available and often only one section in a required class, i.e., English.
3. Often too many different preparations for teachers and cannot concentrate in a major field.
4. Lack of time, initiative, and know-how (teachers and principals often relatively inexperienced) to carry on an effective curriculum improvement program.
5. Trying to do too many things with a limited staff and with limited learning resources (a reflection of financial limitations).

Small school curriculum researchers generally agree that small schools need to capitalize on certain inherent advantages of their size and stop imitating large high schools.

They need to strike out boldly in areas of school design appropriate to their size, such as flexible school plant, multiple classes, small group techniques, teacher assistants, and shared services. By adopting new ideas and new procedures to their schools they can move toward better education for their students.

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Due to curriculum maladjustments and inadequacies in our schools, Congress, in passing the Vocational Education Act of 1963, recommended that the federal government authorize federal grants to states to assist them to maintain, extend, and improve existing programs of vocational education, to develop new programs of vocational education, and to provide part-time employment for youths who need the earnings from such employment to continue their vocational training on a full-time basis, so that persons of all ages in all communities who are continuing their formal education and are preparing to enter the labor market, those who have already entered the labor market but need to upgrade their skills or learn new ones, and those with special educational handicaps will have ready access to vocational training or retraining which is of high quality, which is realistic in the light of actual or anticipated opportunities for gainful employment, and which is suited to their needs, interest, and ability to benefit from such training.\textsuperscript{52}

Bohrson, in citing Iwamoto's study, suggests that in the non-industrialized rural areas isolation, tradition, out-migration and declining employment opportunities all seem to conspire against the limited resources available to the small high school. Here change has not taken place even slowly. In fact, in the majority of small rural schools the curriculum lags farther than ever behind the needs of students.\textsuperscript{53}

\textsuperscript{52}Chester J. Swanson, \textit{op. cit.}, pp. 206-211.

\textsuperscript{53}Ralph G. Bohrson, \textit{op. cit.}, p. 60.
Ralph Bohrson, in reporting on the Rocky Mountain Small Schools Study Program, stated that:

All aspects considered, the facts show clearly that vocational education inadequacies are more extensive in the rural communities which support small schools. The more remote the community and the smaller the school, the more poorly prepared is the youngster for the urbanizing vocational world. Recognizing that there are undoubtedly regional extremes which distort the national picture and acknowledge the dangers of broad generalizations from diverse research data, the probability is still high that the small high school offers at best a poor preparation for career selection.

Despite the pronouncements of a wide selection of experts, it is generally conceded by those close to the problem that small high schools will continue to exist in many parts of rural America. This will be true even if we exclude those small schools which are inappropriately preserved because of (a) poor administration organization, (b) selfish and limited community goals, (c) human meanness, (d) lack of adequate leadership. If all these were eliminated there would still remain many areas where extremes of terrain, distance, climate or population sparsity mandate smallness. In these areas other than conventional solutions must be sought if we are able to provide a balanced, general, college-prep and vocational program.

If one accepts the definition of a balanced program as that which is "tailored to the requirements of communities and defined areas, yet does not lose sight of the patterns emerging in the state and national labor market," then the problem is not an easy one. The balance must extend throughout the total school program. Otherwise the presently academic overemphasis might be replaced by an equally undesirable vocational emphasis. A program for rural schools in isolated communities must, to the degree possible, include a compatible blend among general, college preparation and vocational education experiences. This includes preparation for post-high school vocational schools as well. The small high school should also provide special preparation to extend the vision of those whose heritage may have been confined and insular.54

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54 Ibid., p. 63.
their unique educational needs. It was concluded in the Coleman report that "whatever may be the combination of nonschool factors—poverty, community attitudes, low educational level of parents—which put minority children at a disadvantage in verbal and nonverbal skills when they enter the first grade, the fact is the schools have not overcome it."55

The big challenge facing the educational system is to develop the capacity of schools to cope with differences among students from varying social and economic backgrounds. This idea is embodied in a statement included in the Report of the President's Commission on National Goals: "Education serves all of our purposes—liberty, justice, and all other aims—but the one it serves most directly is equality of opportunity."56

Education must be recognized as an investment in human capital—an investment that pays great dividends to the individual and society. Schultz estimated that the return in the form of higher earnings to individuals on investments in education in the late 1950's was about 40 percent for elementary schooling, 12 percent for four years of high school, and 11 percent for four years of college.57


The high returns to society for investments in education are indicated in a study by Denison. This study attributes 23 percent of the growth in real national income in the United States between 1929 and 1957 to increased education of the labor force and 20 percent to the general advance in knowledge. 58

Education is certainly vital to youth in small towns and rural communities regardless of their economic status. By its very nature, the typical small town or rural community offers few options in terms of either employment or social activities. The paucity of alternatives therefore limits what people can plan, think, and do. Studies have concluded that a low level of occupational aspirations among rural youth is associated with the dearth of impressions and lack of visible alternatives in the rural community. 59 The educational system must help make up for these environmental deficiencies.

Attention must also be given to those youths and adults who for some reason dropped out of the school system before getting sufficient knowledge and skills to function in the type of rural environment that now exists. They must be reclaimed and brought back into the system or provided with informal education that will allow them to make adjustments to their particular situation.


There were more than 700,000 adults in rural America in 1960 who had never enrolled in school. About 3.1 million had less than five years of schooling and are classified as functional illiterates. More than 19 million had not completed high school.60

This pool of adults with low levels of educational achievement is being fed by a stream of rural youth. More than 2.3 million rural youth aged 16 through 24 dropped out of school before graduating in 1960. About 8.7 percent of them—some 197,000—completed less than five years of schooling.61

The extent to which rural people have been denied equality of educational opportunity is evident from both the products of the educational system and the resources that go into the system. On both counts the quality of rural education ranks low.

Low levels of educational achievement of rural adults give some indication of the poor quality of education in the recent and distant past. In 1960, the average years of schooling for the urban population 25 years of age and over in the United States was 11.1. This compares with 9.5 years for rural nonfarm and 8.8 years for rural farm people. Only 11 percent of the rural adult population had any college education compared with 19 percent of the urban population.62 This


general lack of appreciation for education on the part of rural parents may influence educational aspirations of rural youth.

While rural youth are getting a better education than their parents, the level of educational achievement is still lower than for urban youth. Twenty-eight percent of rural nonfarm youth and 23 percent of rural farm youth aged 14 to 24 in 1960 dropped out of school before graduating. This compares with 21 percent for urban youth.63

Not only do rural students drop out sooner, but the percentage of those who go to college after completing high school is much lower than for urban youth. In 1960, about twice as high a proportion of urban as rural youth were enrolled in college.64

Those who enroll in college have a hard time competing with students from urban schools. A study of students entering Iowa State University, for example, from urban and rural backgrounds showed that rural students scored lower on entrance examinations and more often had deficiencies in preparation that had to be made up.65

These facts show that vocational education programs must become more generally available in schools serving rural areas.

63 Jones D. Coshig, op. cit.


65 John K. Folger, Good Schools for Small Communities (Raleigh, North Carolina: N. C. State University, October, 1965).
A recent study, sponsored by the Office of Education in response to the Civil Rights Act of 1964, and referred to as the Coleman report, indicated that not only vocational but general education facilities were lacking, that fewer rural schools have science and language laboratories. The report showed discrepancies in many other physical facilities generally associated with a good school by today's standards.66

Teachers in small schools

A general overhaul of the rural educational establishment with respect to teachers is long overdue. First, teacher salaries must be increased to attract more talent to rural areas. There is also need to improve the training of teachers and to provide equipment and facilities for them to be effective. Particularly in rural areas the attitude of many teachers is provincial since they return to teach in their home community. They are victims of traditional attitudes which adversely affect the teaching of children from deprived socio-economic backgrounds.67

Patten stated:

Lack of incentive is perhaps the graver problem because it affects not only the recruitment but the retention of teachers. We cannot, and should not, count on "dedication" to motivate young people to enter and remain in teaching. If there is

66James S. Coleman, et al., op. cit.

little to attract young people into the teaching profession in the nation as a whole, there is less to attract them to rural areas.68

In contradiction to the above statement, a high school business education teacher from Wyoming wrote:

Let us consider some of the ways in which a small school helps you become a better teacher. Perhaps the greatest opportunity for professional growth is afforded through the numerous avenues leading to improved teaching... better teaching results when the teacher has the same students each day and many times in two or three different classes, works with them in allied activities, supervises them in the halls and during assemblies, eats with them in the school lunchroom, chaperones them on out-of-town school trips and observes their behavior at social functions. Active participation in the community's civic and social affairs brings the teacher into close contact with parents.

Possibilities for creative teaching and developing initiative are unlimited in a small school. Since there are not rigid department requirements to meet... small school teachers are free to change methods of techniques to suit the needs of students. There are fewer students to work with; more time can be devoted to each student; the teacher, being closer to each student, is probably better equipped to discover the sources of the difficulty and to understand the problem; and closer student-teacher relationships serve to motivate the student.

Rank and departmental lives do not stand in the way of giving and receiving help—lines of communication are short and direct, results are accomplished sooner and without so much red tape.

Perhaps the greatest untapped opportunity afforded the small school is that of investigating the curriculum to see whether it is meeting the needs of the students and the community, and if not, then actually doing something about it... Teachers share this responsibility but in the small school the teacher is in a better position to suggest a decided change with the likelihood that it will be met with little or no dissension.69

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A National Education Association study in 1961 showed that most teachers in small high schools consider their strong points to be
(a) the ability to lead and control the class, (b) knowledge of subject matter, and (c) the ability to work successfully with students on student activities. Most teachers considered themselves least adequate with regard to (a) the ability to handle the situation when slow learners are in class with those of average or low ability and (c) the ability to arouse the interest of the bright but uninterested or uncooperative students.70

Guidance and counseling

A basic problem of the small high school is the lack of continuity in the learning process. Major gaps exist between the home and the school and between the school and society. There are also major breaks within the school system.

Many students drop out of school where these breaks in the flow occur—between grades, at the end of the legal age of compulsory school attendance, between high school and post-high school institutions.

Means must be developed to close the learning gaps in hope of reducing the number of students who drop out of school. A good guidance and counseling system in elementary and secondary schools may help.

The need for effective guidance and counseling is particularly important in rural schools because the gap between high school and job or college is so wide. Most rural youth must leave the local area either to get additional schooling or to get a job. They must have professional help in making this transition.

Vocational guidance as we know it today is a

Process of helping an individual to understand accurately both himself and the world of work—in particular, the specific educational and job requirements of occupations in which he may be interested and for which he may be qualified. Finally, help is given at the point of entrance into further training or actual placement in the vocational field most appropriate for him. This dynamic and ongoing process of vocational guidance is based on the assumption that an individual actually reaches his ultimate vocational choice, not at any single moment in time, but through a series of experiences and resultant decisions over a period of years.71

Peters suggests that one of the major responsibilities of the vocational counselor is to interpret the results of psychological tests and inventories to students. Test interpretation in vocational counseling has two main problems. One, how may the counselor present the test results and their predictive possibilities so that the counselee understands them? And two, what methods can be used with the counselee to facilitate his use of such information?72

The task of orienting students to the world of work has been woefully neglected by counselors in the public schools. In the words


of one researcher: "Apparently the professionalization and spread of school counseling has begun to take on a case-work, clinical character; such terminology as 'sibling rivalry,' 'overly dependent,' . . . 'girl crazy,' is substituted for the much tougher task of orienting the child to the world of work." 73

A good guidance and counseling program in a rural school should, as a minimum: (1) Establish and maintain rapport with every student in the school system beginning when the child first enters school, (2) provide intensive personal consulting services to students in all grades, (3) assist all students to make rational choices regarding future educational and occupational alternatives, (4) provide an effective liaison between the school, students, family, and community, (5) provide consultations for classroom teachers and school programs, and (6) administer a student work-study experience and financial aid program.

An effective counseling service could make a significant contribution to the rural school system. Too many students are being prepared for jobs that do not exist and more for jobs that represent a dead-end street. Many of the students who graduate from high school are not finding jobs because of an inadequate school program or because they are not directed to the jobs that are available. 74

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Again quoting the Coleman report:

Counselors might consider giving more attention to keeping parents informed about school programs as they relate to their children. In the final analysis, it is the parents that have the greatest influence on the child. If the parents feel that education is important and that the programs in the school are relevant to occupational opportunities, they will support the school and encourage their children to get a good education.75

Involving parents and students in a meaningful way in the planning of school programs will demonstrate to the entire family that they do have some control over their own destiny. The counselors and teachers can develop a better relationship between the school, the student, and the parents. However, only those responsible for the basic school programming can involve them adequately.

Carleton reported that in some Montana schools there has been a pooling of resources to employ top-flight, full-time guidance counselors and that these programs show promise.76

Northrup further commented: "For country boys and girls it is often a question of shared services or none."77

Kelley suggested utilizing more fully the strengths that exist in the guidance programs in the small school.


76Limus J. Carleton, op. cit., p. 105.

Because the small school enrolls less students, the teachers have the opportunity of knowing the students. Pupils too know their teachers. Because teachers in a small school are in an excellent position to observe and know students, they can challenge the contribution of such a guidance service as testing and be able to verify or not test results in the ultimate understanding of pupils.78

The Situation in Review

A great deal of uncertainty continues as to what does constitute appropriate general or vocational education programs in either a large or a small high school. Questions continue to be raised about the quality of such programs in urban as well as rural schools as evidenced in the Havighurst report:

The curriculum in each high school needs greater adaptation and adjustment to the needs of the pupil population it serves. Course offerings among most of the high schools show striking similarity regardless of levels of pupil ability, and future educational and vocational plans.79

It seems clear to the writer that the small high school must seek new approaches to broadening educational opportunities for youth served by these schools.

Ross, in studying administrative reaction to educational change, commented: "The quality of education of small school districts is probably poorer than it should be, considering cost and environmental factors, if it has fewer than 500 pupils in grades 7 to 12."80


All aspects considered, the facts show clearly that vocational education inadequacies are extensive in the rural communities which support small high schools. The more remote the community, the smaller the high school, the more poorly prepared is the youngster for the urbanizing vocational world.\textsuperscript{81}

Despite the pronouncements of a wide selection of experts, it is generally conceded by those close to the problem that small high schools will continue to exist in many parts of rural America. In these areas other than conventional solutions must be sought if we are to provide a balanced, general, college preparatory and vocational program.

If one accepts the definition of a balanced program as that which is "tailored to the requirements of communities and defined areas, yet does not lose sight of the patterns emerging in the state and national labor market,"\textsuperscript{82} then the problem is not an easy one. The balance must be made to extend throughout the total school program; otherwise, the present over-stress might be replaced by an equally undesirable vocational emphasis. Ideally, a program for youth in rural and urban areas would include general, college preparatory and vocational education experiences.

\textsuperscript{81} Ralph G. Borson, \textit{op. cit.}, p. 63.

Of equal importance is the need of preparing students for post-high school vocational schools since this kind of school may offer the rural student an opportunity to get the needed education to compete in the job world.

It is doubtful that the small high school will, of itself, become a comprehensive institution. However, by researching educationally significant differences that currently exist between programs of vocational education in varying size high schools, testing and weighing new ideas, using new resources, new technology, and better organization, this theoretical idea may someday be reached.

In reviewing the various factors that seemingly influence curricula, and which characterize a school's quest for comprehensiveness, the following major problems or needs appear:

1. The greatest single deterrent to the growth of vocational education in the typical American high school has been the fact that it is too small to do the job effectively and economically.

2. Two types of curriculum maladjustments stand in the way of small high schools in their becoming reasonably comprehensive:
   a. An overblown curriculum emphasis on college preparation which is out of proportion to the number of college-bound students.
   b. Lack of a balanced vocational program available to help all students select a realistic occupational goal.

3. The more remote the community and the smaller the school, the more poorly prepared is the youngster for the urbanized technological world.
4. The geography in the United States, and particularly in the West and Great Plains areas, suggests that small schools will continue to exist for the following reasons:

a. Great distances to population centers and from other schools.

b. Weather conditions during a part of each school year are extreme.

c. Population is scattered and sparse.

d. Isolation tends to narrow the perceptions held by parents regarding the role of the school.

5. Small school education is very expensive on a per-pupil basis as compared to schools of larger size.

6. The recruitment and retention of teachers in the small high school is a critical problem.

7. Small high schools generally perceive their role basically as one of providing primarily for students preparing to enter college. Rarely do they seek lay advice or counsel from business, commerce, or agriculture about how to make local high school programs more comprehensive.

8. Teachers in small high schools tend to have heavier teaching loads.

9. Though there is some controversy about the compared ability level of rural vs. urban students, there appears to be the same range of pupil talent in the small high school as for all high schools. In the small high school insufficient numbers in each group make ability grouping impractical.
10. Studies show that only 50 percent of the high schools of less than 250 in grades 9-12 offer vocational education and then that their offerings are generally vocational agriculture and vocational home economics; 98 percent offer some form of business education (both vocational and personal), and less than 10 percent offer trades and industry and distributive education.

11. There is great mobility of youth to centers of greater population from rural areas and small towns served by small high schools.

12. Inadequate education of rural and small town youth is being cited as causing social problems in large city cultures.

13. Efforts to change vocational education programs in the small high school have in most instances been through the teacher rather than the administrators or school boards, resulting in limited change.

14. Currently in the nation there are about 9000 small high schools with enrollments of less than 300 students—accounting for approximately 20 percent of all high school students.

15. Small high school personnel generally feel that available equipment and facilities necessary for offering realistic programs of vocational education are inadequate.

16. Administrators of small high schools find it difficult to hire fully certificated teachers since many teachers prefer to live in more populated centers where salaries are higher.
17. There is critical need for more and better student guidance services with emphasis on occupational orientation for both students and parents.

18. There is some indication that parents in areas served by small schools have lower economic status, lower aspirations, and place a low value on additional education beyond the high school level.

Methodology Used

The writer became interested in possible solutions to the question of what might be done in vocational education for youth in our country's small high schools while teaching vocational agriculture in a small rural high school (enrollment of 110) in southwestern Montana. While teaching at Whitehall High School, Whitehall, Montana, it became apparent that the students were not adequately equipped to enter the world of work that confronted them upon graduation or upon dropping out of school. In a search for solutions to this problem, Superintendent of Schools William C. Green and the writer investigated books and journal articles searching for possible solutions. A pilot effort resulted which at the time seemed to partially meet a local need.

Upon searching for assistance in the literature, it became evident to the writer that a predominance of major problems rather than workable solutions existed. Currently, as Teacher Trainer in Agricultural Education at Montana State University, the writer witnesses the continuous futility of the small, and primarily rural, high school in its attempt toward comprehensiveness. These personal frustrations and the full realization of those cited earlier in the "Need for the
Study" encouraged the writer to plan his dissertation research in the area of vocational education in the small high school.

Planning for the study was initiated by the writer during the fall of 1965 during a course with Dr. Ralph J. Woodin in the Department of Agricultural Education, with Dr. Robert H. Reese, Chairman-Academic Faculty for Vocational-Technical Education, and later with Dr. Robert E. Taylor, Director of The Center for Research and Leadership Development in Vocational and Technical Education at The Ohio State University. A research proposal was developed by the writer and reviewed by both the Agricultural Education Department and members of the Center staff.

Selection of Study Population

Since the researcher wished to generalize the results of the study to more than the State of Montana, it seemed desirable to study vocational education in the high schools in several states. The common base for the selection of additional states was generally population per square mile.

Table 1 shows the number of square miles, total population, and population per square mile in the fifty United States.

The states selected for study were Colorado, Idaho, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming, and Montana. Two states, Oregon and Washington, ranked higher on a population per square mile basis than did the four states of Alaska, New Mexico, Arizona, and Nebraska. However, Alaska was not considered for the study due to its geographic separation and atypical educational system. Oregon and Washington rather than Arizona, New Mexico, and
Nebraska were included in the study because of the researcher's personal interests in the educational programs of these states.

TABLE 1

SQUARE MILES, TOTAL POPULATION AND POPULATION PER SQUARE MILE BY STATES IN THE UNITED STATES

<table>
<thead>
<tr>
<th>State</th>
<th>Total Square Miles</th>
<th>1954 Population</th>
<th>Population Per Square Mile</th>
<th>Rank Order</th>
<th>State</th>
<th>Total Square Miles</th>
<th>1954 Population</th>
<th>Population Per Square Mile</th>
<th>Rank Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>51,609</td>
<td>3,392,000</td>
<td>66.0</td>
<td>1</td>
<td>Alaska</td>
<td>586,000</td>
<td>2,555,000</td>
<td>0.4</td>
<td>10</td>
</tr>
<tr>
<td>Arizona</td>
<td>113,909</td>
<td>1,699,000</td>
<td>14.0</td>
<td>16</td>
<td>Arkansas</td>
<td>53,104</td>
<td>1,825,000</td>
<td>34.0</td>
<td>16</td>
</tr>
<tr>
<td>California</td>
<td>158,693</td>
<td>17,776,000</td>
<td>112.0</td>
<td>10</td>
<td>Colorado</td>
<td>104,257</td>
<td>1,955,000</td>
<td>19.0</td>
<td>10</td>
</tr>
<tr>
<td>Connecticut</td>
<td>5,009</td>
<td>2,672,000</td>
<td>53.1</td>
<td>12</td>
<td>Delaware</td>
<td>2,057</td>
<td>485,000</td>
<td>235.0</td>
<td>12</td>
</tr>
<tr>
<td>Florida</td>
<td>58,560</td>
<td>5,810,000</td>
<td>99.0</td>
<td>12</td>
<td>Georgia</td>
<td>58,878</td>
<td>8,174,000</td>
<td>71.0</td>
<td>12</td>
</tr>
<tr>
<td>Hawaii</td>
<td>6,424</td>
<td>715,000</td>
<td>111.0</td>
<td>5</td>
<td>Idaho</td>
<td>83,557</td>
<td>713,000</td>
<td>8.5</td>
<td>5</td>
</tr>
<tr>
<td>Illinois</td>
<td>56,480</td>
<td>10,331,000</td>
<td>183.0</td>
<td>14</td>
<td>Indiana</td>
<td>36,291</td>
<td>4,809,000</td>
<td>133.0</td>
<td>14</td>
</tr>
<tr>
<td>Iowa</td>
<td>56,290</td>
<td>2,797,000</td>
<td>50.0</td>
<td>15</td>
<td>Kansas</td>
<td>82,284</td>
<td>2,251,000</td>
<td>27.0</td>
<td>15</td>
</tr>
<tr>
<td>Kentucky</td>
<td>40,325</td>
<td>3,091,000</td>
<td>77.0</td>
<td>16</td>
<td>Louisiana</td>
<td>48,523</td>
<td>3,413,000</td>
<td>70.0</td>
<td>16</td>
</tr>
<tr>
<td>Maine</td>
<td>33,215</td>
<td>1,008,000</td>
<td>30.0</td>
<td>17</td>
<td>Maryland</td>
<td>10,577</td>
<td>3,292,000</td>
<td>311.0</td>
<td>17</td>
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<tr>
<td>Massachusetts</td>
<td>8,287</td>
<td>5,209,000</td>
<td>631.0</td>
<td>18</td>
<td>Michigan</td>
<td>58,216</td>
<td>8,160,000</td>
<td>140.0</td>
<td>18</td>
</tr>
<tr>
<td>Minnesota</td>
<td>84,058</td>
<td>3,538,000</td>
<td>42.0</td>
<td>19</td>
<td>Mississippi</td>
<td>47,716</td>
<td>2,251,000</td>
<td>47.0</td>
<td>19</td>
</tr>
<tr>
<td>Missouri</td>
<td>69,686</td>
<td>4,394,000</td>
<td>63.0</td>
<td>20</td>
<td>Montana</td>
<td>147,133</td>
<td>720,000</td>
<td>4.9</td>
<td>20</td>
</tr>
<tr>
<td>Nebraska</td>
<td>72,227</td>
<td>1,502,000</td>
<td>19.0</td>
<td>21</td>
<td>Nevada</td>
<td>110,540</td>
<td>375,000</td>
<td>3.2</td>
<td>21</td>
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<tr>
<td>New Hampshire</td>
<td>9,304</td>
<td>643,000</td>
<td>70.0</td>
<td>22</td>
<td>New Jersey</td>
<td>7,835</td>
<td>6,428,000</td>
<td>820.0</td>
<td>22</td>
</tr>
<tr>
<td>New Mexico</td>
<td>121,666</td>
<td>1,064,000</td>
<td>8.7</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>State</td>
<td>Total Square Miles</td>
<td>1964 Population</td>
<td>Population Per Square Mile</td>
<td>Rank Order of States</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>---------------</td>
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<td>---------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>49,476</td>
<td>17,735,000</td>
<td>358.0</td>
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<td></td>
<td></td>
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<tr>
<td>North Carolina</td>
<td>52,712</td>
<td>4,807,000</td>
<td>91.0</td>
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<td></td>
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<tr>
<td>North Dakota</td>
<td>70,655</td>
<td>6,441,000</td>
<td>91.0</td>
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<td>Ohio</td>
<td>41,222</td>
<td>10,358,000</td>
<td>251.0</td>
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<td></td>
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<tr>
<td>Oklahoma</td>
<td>69,919</td>
<td>2,481,000</td>
<td>35.0</td>
<td>17</td>
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<tr>
<td>Oregon</td>
<td>96,981</td>
<td>1,502,000</td>
<td>20.0</td>
<td>13</td>
<td></td>
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<tr>
<td>Pennsylvania</td>
<td>55,333</td>
<td>11,958,000</td>
<td>253.0</td>
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<tr>
<td>Rhode Island</td>
<td>1,214</td>
<td>324,000</td>
<td>720.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Carolina</td>
<td>31,055</td>
<td>2,458,000</td>
<td>79.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>South Dakota</td>
<td>77,04?</td>
<td>730,000</td>
<td>9.5</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Tennessee</td>
<td>42,215</td>
<td>3,674,000</td>
<td>87.0</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Texas</td>
<td>26,339</td>
<td>10,374,000</td>
<td>39.0</td>
<td>18</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Utah</td>
<td>84,916</td>
<td>1,007,000</td>
<td>12.0</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Vermont</td>
<td>9,609</td>
<td>391,000</td>
<td>41.0</td>
<td>19</td>
<td></td>
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<tr>
<td>Virginia</td>
<td>40,815</td>
<td>1,257,000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Washington</td>
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<td>3,073,000</td>
<td>45.0</td>
<td>21</td>
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<tr>
<td>West Virginia</td>
<td>24,181</td>
<td>1,731,000</td>
<td>72.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin</td>
<td>55,154</td>
<td>4,161,000</td>
<td>74.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wyoming</td>
<td>97,514</td>
<td>374,000</td>
<td>3.8</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Design of Survey Instrument

Considering time and available resources, it was determined in the preliminary stages of this study that to contact schools in a ten-state area it would be necessary to use a mail questionnaire. Before a survey questionnaire could be developed it was first necessary to determine the variables and situational factors which were believed to be important in determining the availability and quality of vocational-technical education programs in the high schools.

A review of the research and literature revealed that no such list of variables existed, nor was the writer able to locate any comprehensive instrument to use in either identifying or quantifying such variables. The researcher felt it necessary to first identify the variables which were believed to relate to vocational-technical education in high schools and then use these variables as a basis for structuring and organizing individual survey questions.

At this stage of development the researcher drew heavily on his personal experiences as a vocational teacher, state supervisor, and state director of vocational-technical education, from the literature and from research. A tentative list of variables was developed which were believed to relate to the availability and quality of vocational-technical education programs in the high school.

The tentative list of variables was submitted for reactions to several members of the researcher's graduate committee. As a further check on the comprehensiveness of these variables, the Agricultural Education staff members at the University of California, Davis, California, and the graduate research seminar class conducted by Dr. Ralph J. Woodin at The Ohio State University reviewed the tentative variables.

The several suggestions and comments of these individuals were incorporated into a tentative list of variables. Accompanying each variable was the suggested data base. The data base was to be used to quantify the variables at the time of structuring individual survey questions.
It was believed that these variables would later possess greater validity if they were reviewed and criticized by a jury made up of nationally recognized experts.

Selection of the Jury

In selecting the twenty-member jury, attention was given to securing knowledgeable persons from both vocational and general education who had a wide range of experience and represented several academic levels and geographical areas. The jurors fell into four broad categories: (1) small school curriculum researchers, (2) state directors of vocational education, (3) small school administrators, and (4) vocational teacher educators.

Table 2 lists the names and areas of interest of the jurors. A more complete list is also included in Appendix A, pages 184-185.

TABLE 2

<table>
<thead>
<tr>
<th>NAME OF PERSONS SELECTED TO SERVE AS A JURY OF EXPERTS</th>
<th>N = 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Jurors</td>
<td>School Curriculum Researchers</td>
</tr>
<tr>
<td>Dr. Alvin Stargess</td>
<td>x</td>
</tr>
<tr>
<td>Dr. John Vilecox</td>
<td>x</td>
</tr>
<tr>
<td>Mr. Charles Bitters</td>
<td>x</td>
</tr>
<tr>
<td>Mr. Rowan Stutz</td>
<td>x</td>
</tr>
<tr>
<td>Dr. Frank Cyr</td>
<td>x</td>
</tr>
<tr>
<td>Dr. Louis Trubulin</td>
<td>x</td>
</tr>
<tr>
<td>Mr. Ernest Kramer</td>
<td>x</td>
</tr>
<tr>
<td>Dr. M. L. Linson</td>
<td>x</td>
</tr>
<tr>
<td>Mr. LeRoy Swanson</td>
<td>x</td>
</tr>
</tbody>
</table>
TABLE 2—Continued

<table>
<thead>
<tr>
<th>Name of Jurors</th>
<th>School</th>
<th>State Directors</th>
<th>Vocational</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Curriculum of Vocational Researchers</td>
<td>Administrators</td>
<td>Teacher Educators</td>
</tr>
<tr>
<td>Mr. A. G. Ballard</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mr. Cecil Stanley</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mr. Mark Nichols</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mr. Robert King</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Mr. Blaine W. Allen</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Mr. Hugh G. Simmons</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Mr. Harland Saljack</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Dr. Melvin Parlow</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Dr. Gordon Swanson</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Mr. Sidney S. Sutherland</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Dr. Marshall Hanna</td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

TOTALS 6 6 4 4
Percent of Total 30\% 30\% 20\% 20\%

Preliminary Jury Reaction to Tentative List of Variables

Each member of the jury was asked to react to the tentative list of variables on three bases: First, the extent to which they believed the variable was important in relating to the availability of vocational-technical education offered in the high school, second to the quality of vocational-technical education, and third to the data base to be used in quantifying the variables. A scale was included on which the jurors recorded their reactions to each variable and on which they reacted to the data base to be used. A copy of this instrument is included in Appendix A, pages 183-192.
Jurors also were asked to indicate if they believed a variable should be listed as a dependent variable rather than an independent variable in accordance with the definitions of the study. The instructions encouraged each juror to modify the wording of the variables or to add additional other variables which they believed would add insight to the study. They also were encouraged to suggest modifications in the data base.

Table 3 shows the preliminary reaction by the jury of experts to the tentative list of variables and the accompanying data base.

Table 3 further points out that there was general agreement on the variables submitted for evaluation. This was indicated by the fact that only six changes were suggested. This did not hold true when the jury considered the data base to be used to quantify the variables; here twenty changes were suggested.

A very helpful part of the first evaluation came from jurors listing eleven separate other independent variables for study. These additional suggestions were either incorporated into existing variables or were listed separately for final rating.

Since all of the tentative variables were to be resubmitted to the jury, no analysis of scores for central tendency were used to rate, rank, or eliminate variables.

Table 4 indicates that eight of the twenty jurors suggested seven of the tentative variables to be studied. This indicated to the researcher that there was general agreement regarding the variables included for study. The suggested changes by jurors were incorporated into the list of variables for final ranking.
### TABLE 3

**JURORS' PRELIMINARY EVALUATION OF VARIABLES AND THE DATA BASE PRESENTED TO AFFECT THE AVAILABILITY OF VOCATIONAL EDUCATION IN THE HIGH SCHOOL**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Jury's First Evaluation of Variables and Data Base</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change Variable</td>
</tr>
<tr>
<td>N</td>
<td>Percent</td>
</tr>
<tr>
<td>1. Attitude of local school administrator toward vocational education</td>
<td>12</td>
</tr>
<tr>
<td>2. Total special (state and federal) vocational funds received per pupil per year by school district</td>
<td>12</td>
</tr>
<tr>
<td>3. Average per pupil high school district assessed evaluation</td>
<td>1</td>
</tr>
<tr>
<td>4. Total average cost per high school pupil</td>
<td>12</td>
</tr>
<tr>
<td>5. Total population of high school district</td>
<td>1</td>
</tr>
<tr>
<td>6. Number of businesses in town where high school is located that employ some part or full-time help</td>
<td>12</td>
</tr>
</tbody>
</table>

51
<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Jury's First Evaluation of Variables and Data Base</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change Variable</td>
</tr>
<tr>
<td></td>
<td>N   Percent</td>
</tr>
<tr>
<td>7. Isolation from population centers of 2,500 or more</td>
<td>12  100.0</td>
</tr>
<tr>
<td>8. Total funds expended on vocational education during last fiscal year</td>
<td>1  8.3</td>
</tr>
<tr>
<td>9. Number of square miles in high school district</td>
<td>12  100.0</td>
</tr>
<tr>
<td>10. High school size</td>
<td>12  100.0</td>
</tr>
<tr>
<td>11. Adequacy of vocational education facilities (as rated by local school administrator)</td>
<td>1  8.3</td>
</tr>
<tr>
<td>12. Average salary of vocational teachers by school</td>
<td>12  100.0</td>
</tr>
<tr>
<td>13. Average number of years of college or equivalent training of vocational teachers in the high school</td>
<td>1  8.3</td>
</tr>
<tr>
<td>Additional separate independent variables suggested for study by the jury</td>
<td>11</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Jury's First Evaluation of Variables and Data Base</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change Variable</td>
</tr>
<tr>
<td></td>
<td>N  Percent</td>
</tr>
<tr>
<td>1. Percentage of high school student body enrolled in some vocational education course</td>
<td>12  100.0</td>
</tr>
<tr>
<td>2. Number of hours per week vocational teacher actually teaches vocational subjects</td>
<td>1  8.3</td>
</tr>
<tr>
<td>3. Number of vocational education courses available per 100 students</td>
<td>1  8.3</td>
</tr>
<tr>
<td>4. Vocational student-vocational teacher ratio</td>
<td>12  100.0</td>
</tr>
<tr>
<td>5. Vocational educational exploratory courses offered (pre-vocational or industrial arts courses)</td>
<td>1  8.3</td>
</tr>
<tr>
<td>Dependent Variables</td>
<td>Jury's First Evaluation of Variables and Data Base</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Change Variable</td>
</tr>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>6. Vocational education courses dropped last five years</td>
<td>12</td>
</tr>
<tr>
<td>7. New vocational courses added last five years</td>
<td>12</td>
</tr>
<tr>
<td>8. Number of major vocational curriculum changes over past three years within existing vocational programs</td>
<td>12</td>
</tr>
<tr>
<td>9. Student-counselor ratio</td>
<td>12</td>
</tr>
<tr>
<td>10. Number of different vocational course preparations made by vocational teachers per day, per week</td>
<td>12</td>
</tr>
<tr>
<td>11. Students who were enrolled in vocational education in high school who are employed in jobs for which they were trained one year after graduation</td>
<td>1</td>
</tr>
</tbody>
</table>
TABLE 4—Continued

Jury's First Evaluation of Variables and Data Base

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Change Variable</th>
<th>Do Not Change Variable</th>
<th>Change Data Base</th>
<th>Do Not Change Data Base</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Percent</td>
<td>N</td>
<td>Percent</td>
</tr>
<tr>
<td>12. Number of vocational education programs offered per 100 high school students</td>
<td>1</td>
<td>3.3</td>
<td>11</td>
<td>91.7</td>
</tr>
<tr>
<td>13. Do schools use advisory committees for vocational education?</td>
<td>12</td>
<td>100.0</td>
<td>5</td>
<td>41.7</td>
</tr>
<tr>
<td>14. Percentage of those students who were enrolled in vocational education that are employed one year after graduation from high school</td>
<td>2</td>
<td>16.7</td>
<td>10</td>
<td>83.7</td>
</tr>
<tr>
<td>15. Percentage of vocational teachers on extended employment</td>
<td>12</td>
<td>100.0</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>16. Number of hours per day, per week vocational teacher teaches non-vocational subjects</td>
<td>12</td>
<td>100.0</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>17. School's ability to hire full qualified (certified) vocational teachers</td>
<td>12</td>
<td>100.0</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td>Dependent Variables</td>
<td>Jury's First Evaluation of Variables and Data Base</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Number of occupational needs studies school cooperated in within the past 3 years</td>
<td>Change Variable: 1 8.3 11 91.7 3 25.0 9 75.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Presence of specific school board policy relating to vocational education</td>
<td>Do Not Change Variable: 12 100.0 1 8.3 11 91.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Additional other dependent variables suggested for the jury for study</td>
<td>Change Data Base: 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Do Not Change Data Base: 5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
There were 53 changes suggested by the jurors concerning the improvement of the data base. These changes were generally minor, pointing out clarifications rather than complete data base changes. When more than three jurors suggested similar changes, the researcher accepted the recommendation and made the change.

Five additional dependent variables were suggested for the list of tentative variables for study, and were added or combined into the final list of variables for ranking.

Final Jury Reaction to Tentative List of Variables

The list of variables were resubmitted to the national jury named on pages 48 and 49 of this chapter for final review and rating. The jury was instructed to react to each individual variable on its importance in relating to the availability and quality of vocational-technical education offered at the high school level.

The five-point scale (page 58) was provided to the jury for recording their responses to the individual variables. It was relatively assumed by the researcher that there was equal distance between the five points on the scale used to secure the jury's reactions. This decision was not without justification, for "in 1932 Likert found that scores for scales based upon the relatively simple assignment of integral weights correlated .99 with the more complicated normal deviate system of weights."\(^{87}\)

IMPORTANCE SCALE

<table>
<thead>
<tr>
<th>OF EXTREME IMPORTANCE</th>
<th>OF CONSIDERABLE IMPORTANCE</th>
<th>OF SOME IMPORTANCE</th>
<th>OF LIMITED IMPORTANCE</th>
<th>OF NO IMPORTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

4 - OF EXTREME IMPORTANCE - Those items that in your opinion are essential or crucial to the proper operation of the program, or in other words, absolutely necessary.

3 - OF CONSIDERABLE IMPORTANCE - Those items which have much importance but cannot be classified as absolutely necessary.

2 - OF SOME IMPORTANCE - Those items which can be classified as important, but would only be performed if the time and effort needed for their completion would not hinder the completion of items classified as extremely important or of much importance.

1 - OF LIMITED IMPORTANCE - Those items which have some value but would have little effect upon the success of the over-all program.

0 - OF NO IMPORTANCE - Those items which you feel should not be undertaken because they may have an undesirable effect.

Table 5 presents the jury's mean rating and rank order for each of the independent variables.

Because of the space limitation of the number of variables which could be analyzed on the computer available to the researcher, it was necessary to limit the number of variables in the regression equation. It was decided by the researcher that the elimination would be made on the basis of the jurors' reactions to the variables on the importance scale. Thus it was decided to program and analyze five independent and twenty dependent variables.
<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Mean</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Attitude of local school administrator toward offering vocational education in the high school</td>
<td>3.8</td>
<td>1</td>
</tr>
<tr>
<td>2. School's ability to hire fully qualified (vocationally certified) teachers</td>
<td>3.5</td>
<td>2</td>
</tr>
<tr>
<td>3. Amount of special (state and/or federal) funds received per vocational student per year by local school district</td>
<td>3.2</td>
<td>3</td>
</tr>
<tr>
<td>4. Adequacy of vocational education facilities as rated by local school administrator</td>
<td>3.0</td>
<td>4</td>
</tr>
<tr>
<td>5. Size of high school student body</td>
<td>2.9</td>
<td>5</td>
</tr>
<tr>
<td>6. Student's knowledge and understanding of vocational-technical education</td>
<td>2.9</td>
<td>5</td>
</tr>
<tr>
<td>7. Professional consultative assistance provided by State Department of Education vocational education staff members</td>
<td>2.9</td>
<td>5</td>
</tr>
<tr>
<td>8. Average assessed valuation per student in high school district</td>
<td>2.8</td>
<td>8</td>
</tr>
<tr>
<td>9. Total population of high school district</td>
<td>2.7</td>
<td>9</td>
</tr>
<tr>
<td>10. Number of businesses in town where high school is located that employ some part- or full-time persons</td>
<td>2.7</td>
<td>9</td>
</tr>
<tr>
<td>11. Total funds expended on vocational education during last fiscal year</td>
<td>2.7</td>
<td>9</td>
</tr>
</tbody>
</table>
TABLE 5—Continued

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Rating of Jury</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Funds expended on local high school administrative personnel responsible for vocational education</td>
<td>2.7 9</td>
</tr>
<tr>
<td>13. Total average cost per high school student</td>
<td>2.6 13</td>
</tr>
<tr>
<td>14. Isolation from centers of population</td>
<td>2.5 14</td>
</tr>
<tr>
<td>15. Proximity of high school to an area vocational school or community college which offers vocational education courses</td>
<td>2.3 15</td>
</tr>
<tr>
<td>16. Mean educational level of county</td>
<td>2.2 16</td>
</tr>
<tr>
<td>17. Number of square miles in high school district</td>
<td>1.5 17</td>
</tr>
</tbody>
</table>

Since only five independent variables could be retained and since three variables ranked in the fifth position on the basis of their mean rating, it was necessary for the researcher to eliminate two variables with similar mean scores. Variables No. 6 and No. 7 were arbitrarily eliminated by the researcher.

Table 6 gives the jury's final ratings of the tentative dependent variables.

Since the research design called for analysis of all twenty dependent variables, it was not essential to rank the variables according to the mean rating. However, it was interesting to the researcher to note the final order of the variables as ranked by their mean scores. It was noteworthy that none of the dependent variables ranked below 2.1 (of some importance) on the importance scale.
<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Rating of Jury</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Knowledge and understanding of vocational education on the part of school</td>
<td>3.8</td>
</tr>
<tr>
<td>administrators</td>
<td>Rank 1</td>
</tr>
<tr>
<td>2. Stability of vocational education teaching staff</td>
<td>3.6</td>
</tr>
<tr>
<td>3. Presence of specific school board policy relating to vocational education</td>
<td>3.6</td>
</tr>
<tr>
<td>4. Number of major vocational education curriculum changes over past 3 years</td>
<td>3.3</td>
</tr>
<tr>
<td>(since July 1, 1963) within existing vocational education programs</td>
<td>Rank 4</td>
</tr>
<tr>
<td>5. Exploratory vocational education courses offered (occupational information or</td>
<td>3.2</td>
</tr>
<tr>
<td>industrial arts courses)</td>
<td>Rank 5</td>
</tr>
<tr>
<td>6. Use of advisory committees for vocational education</td>
<td>3.12</td>
</tr>
<tr>
<td>7. Vocational student-vocational teacher ratio</td>
<td>3.0</td>
</tr>
<tr>
<td>8. Number of occupational need surveys school cooperated in within past 3 years</td>
<td>2.87</td>
</tr>
<tr>
<td>9. Percentage of those students who were enrolled in vocational education that are</td>
<td>2.86</td>
</tr>
<tr>
<td>employed one year after graduation from high school</td>
<td>Rank 9</td>
</tr>
<tr>
<td>10. Students who were enrolled in vocational education in high school who are</td>
<td>2.8</td>
</tr>
<tr>
<td>employed in jobs for which they were trained one year after graduation</td>
<td>Rank 10</td>
</tr>
<tr>
<td>11. Student-counselor ratio</td>
<td>2.8</td>
</tr>
</tbody>
</table>
### TABLE 6—Continued

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Rating of Jury</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Percentage of vocational teachers on extended employment (more than nine months)</td>
<td>2.73 12</td>
</tr>
<tr>
<td>13. Vocational education courses added last 5 years (since July 1, 1961)</td>
<td>2.7 13</td>
</tr>
<tr>
<td>14. Number of vocational education courses available</td>
<td>2.7 13</td>
</tr>
<tr>
<td>15. Number of hours per day the vocational teacher teaches non-vocational education subjects</td>
<td>2.66 15</td>
</tr>
<tr>
<td>16. Percentage of high school student body enrolled in non-vocational education courses</td>
<td>2.6 16</td>
</tr>
<tr>
<td>17. Number of different vocational course preparations by vocational teachers per day</td>
<td>2.53 17</td>
</tr>
<tr>
<td>18. Number of hours per week each vocational education teacher actually teaches vocational education subjects</td>
<td>2.4 18</td>
</tr>
<tr>
<td>19. Number of vocational education programs offered</td>
<td>2.4 18</td>
</tr>
<tr>
<td>20. Vocational education courses dropped last 5 years (since July 1, 1961)</td>
<td>2.1 20</td>
</tr>
</tbody>
</table>

---

**Development of the Survey Instrument to Quantify the Variables to be Used for Final Study**

In developing the survey questionnaire only data on the twenty dependent and five independent variables were to be collected.

Although the survey questionnaire method undoubtedly has its limitations, it nevertheless possesses some advantages that were
applicable to the conduct of this study, for as Fleishman and others point out: "Questionnaires administered in a normal social setting are useful in obtaining a large quantity of information in a reasonably short time." 85

In developing the questionnaire, the data base upon which each variable was to be quantified was criticized by the national jury of experts; thus it was simply a matter of arranging the pre-prepared questions in a logical sequence.

It was intended that the cover letter and instrument should jointly provide the understanding and information needed by the respondents to adequately provide the data called for in the questionnaire. Information on the purpose of the questionnaire and specific instructions concerning its use were formulated. The questionnaire instrument and cover letter were then tested with staff members of the Montana State Department of Public Instruction. The suggestions were incorporated into a final questionnaire.

Because of the desire to reduce the length of the instrument, it was deemed desirable to have it printed, reducing the number of pages and giving the instrument a professional appearance. A copy of the instrument and cover letter are included in Appendix A, pages 208-211.

Selection of Sample

States included in the study were Colorado, Idaho, North Dakota, South Dakota, Utah, Wyoming, Nevada, Oregon and Montana. There was a total of 1705 public schools in the ten states. A relatively large sample was drawn so that sub-samples and cells within the larger sample would be of sufficient size for statistical treatment. A 50 percent sample was drawn by listing the names of the high schools in each state alphabetically. By the flip of a coin it was determined that each odd-number school on the list would be included as a sample school.

Eight hundred and fifty public high schools from the ten states made up the total sample.

Distribution and Follow-up Of
the Survey Instrument

Prior to preparing the questionnaire cover letter, the researcher contacted each state's State Director of Vocational Education. The reason for the contact was to solicit their permission to use their names on the cover letter. The researcher believed that the personal support of a person the respondents knew would increase the number of questionnaires returned. The directors were asked to react to one of three alternatives on contacting administrators in their own state. These alternatives were:

1. To have each director write a cover letter endorsing the study objectives and the questionnaire. This letter would be sent with each questionnaire that went to schools in his state.
2. To permit the researcher in his letter to refer to the fact that the State Director of Vocational Education had given permission to circulate questionnaires in that state and, in fact, endorsed the study as proposed.

3. To permit the researcher to send a letter with an accompanying questionnaire, yet make no reference to the state's Director of Vocational Education.

Table 7 indicates the method that State Directors wished the researcher to use in contacting their high school administrators.

TABLE 7

METHOD OF SURVEY PREFERRED BY STATE DIRECTORS OF VOCATIONAL EDUCATION IN CONTACTING LOCAL HIGH SCHOOLS IN EACH OF THEIR RESPECTIVE STATES

<table>
<thead>
<tr>
<th>State</th>
<th>Alternative I</th>
<th>Alternative II</th>
<th>Alternative III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Idaho</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Montana</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Nevada</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>North Dakota</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Oregon</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>South Dakota</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Utah</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Washington</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wyoming</td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

Seven of the ten State Directors desired Alternative II. Since such a large percentage of the directors desired this method of contact, the researcher followed this approach in each state except Montana and Wyoming. In Montana the researcher used a form letter
headed with his own name, since at that time he was serving as the State Director of Vocational Education. In Wyoming a form letter addressed to Wyoming State Administrators was used which made no reference to the State Director of Vocational Education.

In each instance the Director of Vocational Education provided the researcher with the 1965-66 high school directory.

A duplicated cover letter was prepared for the recipients in each of the ten sample states (Appendix A, page 205). A stamped, self-addressed envelope was included for the respondent's convenience.

Eight hundred and fifty questionnaires were mailed on July 8, 1967 to school administrators in the ten selected states. On August 9, 1967 less than 50 percent of the questionnaires had been received, and a follow-up letter was sent to those who had not responded (Appendix A, page 212). Because of the tremendous personal cost involved, a second follow-up letter was not sent after the response exceeded 50 percent.

Table 8 provides an analysis of the questionnaire returns. Four hundred ninety-five of 850 questionnaires were returned. The highest number of returns (68, or 99 percent) came from Montana. Returns were low in Washington (35 percent) and North Dakota (46 percent).

Each questionnaire was analyzed by the researcher for accuracy and completeness. Based on this criteria, 36 questionnaires were eliminated from machine analysis, leaving 459 usable questionnaires. Where data were hand-sorted and analyzed, 487 questionnaires were usable.
**TABLE 8**

NUMBER AND PERCENT OF HIGH SCHOOLS, SCHOOLS SAMPLIED, AND QUESTIONNAIRES RECEIVED FROM TEN STATES

<table>
<thead>
<tr>
<th>State</th>
<th>Number of Schools</th>
<th>Number of Schools Sampled</th>
<th>Total Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado</td>
<td>233</td>
<td>116</td>
<td>66</td>
</tr>
<tr>
<td>Idaho</td>
<td>106</td>
<td>53</td>
<td>41</td>
</tr>
<tr>
<td>Montana</td>
<td>170</td>
<td>85</td>
<td>84</td>
</tr>
<tr>
<td>Nevada</td>
<td>40</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>North Dakota</td>
<td>283</td>
<td>144</td>
<td>66</td>
</tr>
<tr>
<td>Oregon</td>
<td>223</td>
<td>111</td>
<td>59</td>
</tr>
<tr>
<td>South Dakota</td>
<td>215</td>
<td>107</td>
<td>67</td>
</tr>
<tr>
<td>Utah</td>
<td>82</td>
<td>41</td>
<td>23</td>
</tr>
<tr>
<td>Washington</td>
<td>275</td>
<td>137</td>
<td>49</td>
</tr>
<tr>
<td>Wyoming</td>
<td>78</td>
<td>39</td>
<td>23</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1705</strong></td>
<td><strong>850</strong></td>
<td><strong>495</strong></td>
</tr>
</tbody>
</table>

Chapter II will describe in detail the data gathered to quantify the identified variables for study. A comparison of these data will be presented in both tabular and narrative form by school size.
CHAPTER II

THE CHARACTERISTICS OF THE SETTING IN WHICH
VOCATIONAL EDUCATION PROGRAMS ARE LOCATED

To gain a greater appreciation of the setting in which educational programs were available to students in the ten states sampled, local school administrators were asked to provide certain data from which the setting could be deduced.

High School Size

Of initial concern in the data collection process was to ascertain data relating to the number of high schools and their respective size. Table 9 shows this breakdown by three high school sizes.

It should be noted that 231 or about 50 percent of the high schools fell into the 0-199 (small) high school size; 191 or 42 percent in the medium size and that only 32 or 7 percent were classified as large size high schools. Data contained within the tables were rounded to the nearest whole number.

School Enrollments

School administrators were asked to describe the size of their school by the actual number of full-time high school students enrolled. By definition these enrollments were put into three high school size groups.
TABLE 9

NUMBER AND PERCENT OF HIGH SCHOOLS SURVEYED BY THREE
HIGH SCHOOL SIZE CATEGORIES

N = 4,59

<table>
<thead>
<tr>
<th>High School Size</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 199</td>
<td>231</td>
<td>50</td>
</tr>
<tr>
<td>200 - 1499</td>
<td>194</td>
<td>42</td>
</tr>
<tr>
<td>1500 and over</td>
<td>32</td>
<td>7</td>
</tr>
<tr>
<td>No report</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>4,59</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 10 summarizes the total enrollment by high school size. The majority of the high school students, 109,431 or 55 percent, were enrolled in the medium high school size; 66,483 or 33 percent were enrolled in the largest size; and 23,583 or 12 percent of the high school students were enrolled in schools classified in the small size high schools. While the number of students enrolled in small high schools is smaller in number, they nevertheless are of sufficient number and importance to justify this and other studies on the problems of providing them with adequate vocational education programs.

Student Enrollment in Vocational Education

Slightly over one-third (33 percent) of the 199,512 students reported in Table 10 were enrolled in vocational education courses.
### Table 10

**Number and Percent of Full-Time High School Students Enrolled in Three High School Size Categories**

\(N = 459\)

<table>
<thead>
<tr>
<th>High School Size</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 199</td>
<td>23,593</td>
<td>12</td>
</tr>
<tr>
<td>200 - 1499</td>
<td>109,431</td>
<td>55</td>
</tr>
<tr>
<td>1500 and over</td>
<td>66,488</td>
<td>33</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>199,512</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 11 shows total enrollment of full-time high school students in vocational education courses was 67,627. In schools having a total enrollment varying between 0-199 40 percent or 27,410 of their students were enrolled in vocational education courses. In the medium size high schools 37,502, 35 percent, of their students were enrolled in vocational education courses. The large high schools accounted for 18,315 of their total students enrolled in vocational education courses.

**Area Vocational-Technical Schools**

An area vocational school usually involves a large geographical territory including more than one local basic administrative unit. It offers specialized training to high school students who are preparing to enter the labor market. It should be pointed out here that area
TABLE 11
NUMBER AND PERCENT OF FULL-TIME HIGH SCHOOL STUDENTS ENROLLED IN ONE OR MORE VOCATIONAL EDUCATION COURSES BY HIGH SCHOOL SIZE

<table>
<thead>
<tr>
<th>High School Size</th>
<th>Number</th>
<th>Enrollment Vocational Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 199</td>
<td>23,583</td>
<td>9,410</td>
</tr>
<tr>
<td>200 - 1999</td>
<td>109,431</td>
<td>39,902</td>
</tr>
<tr>
<td>1500 and over</td>
<td>66,453</td>
<td>18,315</td>
</tr>
<tr>
<td>Total</td>
<td>199,512</td>
<td>67,627</td>
</tr>
</tbody>
</table>

vocational-technical schools also offer training to persons who have completed or left high school and who are available for full-time study. These schools are sponsored and operated by local communities or by the state.¹

The area vocational-technical schools have been suggested as one of the promising solutions to providing realistic high quality vocational-technical education to high school students who for many reasons are unable to enroll in local level programs of vocational education that coincide with their interests and abilities.

¹Definitions of terms in "Vocational-Technical and Practical Arts Education," American Vocational Association, Inc., 1510 H St., Washington, D.C.
Table 12 points up that students enrolling in vocational-technical education at area schools occurred most frequently in the medium size high school, accounting for 660 (63 percent) of the total number of students enrolled in area vocational schools. The small size high schools indicated they had a total of 90 students enrolled in area vocational schools. Two hundred ninety-seven (28 percent) of the students who were reported enrolled in area vocational-technical education schools were in the large size schools.

**TABLE 12**

<table>
<thead>
<tr>
<th>High School Size</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 199</td>
<td>90</td>
<td>9</td>
</tr>
<tr>
<td>200 - 1499</td>
<td>660</td>
<td>63</td>
</tr>
<tr>
<td>1500 and over</td>
<td>297</td>
<td>28</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1047</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 12 reveals that contrary to popular opinion, area schools are not meeting the needs of small schools. These data give added
emphasis to the need of providing vocational education to students attending small, predominantly rural high schools.

Vocational Education Program

As a method of determining the types of vocational education programs available to students, data were collected by each of the vocational education program areas (Table 12). The vocational education programs most frequently reported in high schools in this study were home economics, office and agricultural education, and in that order. Three hundred eighty-seven, or 29 percent of the total programs were home economics; 329 or 25 percent were office education, and 223 or 17 percent of the programs reported were in agriculture.

The distribution of these data agree in most respects with those cited in other national reports.2

The combined total of distributive, health, technical and trade and industrial education programs account for 367 or 29 percent of all the vocational education programs offered.

Further, the data show that when considering all high schools, 81 percent offer home economics, followed by office education, 72 percent and agricultural education, 49 percent. Distributive education was offered in 26 percent of the schools surveyed, with 18 percent offering technical education and 34 percent offering trade and industrial education.

---

### Table 13

**TOTAL NUMBER AND PERCENT OF VOCATIONAL EDUCATION PROGRAMS AVAILABLE TO STUDENTS IN THEIR LOCAL HIGH SCHOOLS BY VOCATIONAL PROGRAM AREA**

n = 459

<table>
<thead>
<tr>
<th>Vocational Education Program Areas</th>
<th>Vocational Education Programs Available</th>
<th>Percent of Schools Reporting Vocational Education Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>223</td>
<td>17</td>
</tr>
<tr>
<td>Distributive</td>
<td>118</td>
<td>9</td>
</tr>
<tr>
<td>Health Occupations</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>Home Economics</td>
<td>389</td>
<td>29</td>
</tr>
<tr>
<td>Office Education</td>
<td>329</td>
<td>25</td>
</tr>
<tr>
<td>Technical Education</td>
<td>83</td>
<td>6</td>
</tr>
<tr>
<td>Trade and Industrial</td>
<td>157</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1208</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 13 was prepared to show the distribution of vocational education programs by three high school sizes. The median size schools reported 681 (52 percent) of the total vocational education programs. The remaining 627 programs were distributed between the small and the large size high schools. The small size high schools had the largest number, 475 (36 percent) of the programs, yet accounted for only 12 percent of the total enrollment. Schools with over 1500
enrolled reported 153 (12 percent) programs and at the same time had 33 percent of the total enrollment of all schools.

### Table 14

**NUMBER AND PERCENT OF VOCATIONAL EDUCATION PROGRAMS AVAILABLE TO STUDENTS BY THREE HIGH SCHOOL SIZES**

<table>
<thead>
<tr>
<th>High School Size</th>
<th>Vocational Education Programs Available</th>
<th>Total Student Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>0 - 199</td>
<td>474</td>
<td>35</td>
</tr>
<tr>
<td>200 - 1499</td>
<td>681</td>
<td>52</td>
</tr>
<tr>
<td>1500 and over</td>
<td>153</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1308</td>
<td>100</td>
</tr>
</tbody>
</table>

**Vocational, Pre-vocational and Industrial Arts Courses Offered**

A course, for purposes of this study, was defined as a body of knowledge which includes an outline of the objectives, experiences, skills, projects, demonstrations and related information involved in teaching a school subject and which covers a specified period of time. The respondents were asked to describe the actual number of vocational, pre-vocational, and industrial arts courses taught in their schools. Table 15 shows the majority of all high schools, 317 (69 percent) offered between 0 and 9 vocational education courses; 117 (26 percent)
TABLE 15
NUMBER AND PERCENT OF HIGH SCHOOLS OFFERING VOCATIONAL EDUCATION, PRE-VOCATIONAL EDUCATION AND INDUSTRIAL ARTS COURSES AVAILABLE TO HIGH SCHOOL STUDENTS

N = 459

<table>
<thead>
<tr>
<th>Number of Vocational Education Courses</th>
<th>Number of Schools</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 9</td>
<td>317</td>
<td>69.0</td>
</tr>
<tr>
<td>10 - 19</td>
<td>117</td>
<td>25.0</td>
</tr>
<tr>
<td>20 and over</td>
<td>25</td>
<td>5.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Pre-Vocational Education Courses</th>
<th>Number of Schools</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 9</td>
<td>423</td>
<td>95.0</td>
</tr>
<tr>
<td>10 - 19</td>
<td>21</td>
<td>5.0</td>
</tr>
<tr>
<td>20 and over</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Industrial Arts Courses</th>
<th>Number of Schools</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 9</td>
<td>440</td>
<td>95.0</td>
</tr>
<tr>
<td>10 - 19</td>
<td>16</td>
<td>3.5</td>
</tr>
<tr>
<td>20 and over</td>
<td>3</td>
<td>0.5</td>
</tr>
</tbody>
</table>
of the schools offered between 10 and 19 courses. Only 25 (5 percent) of all the schools reporting offered 20 or more vocational education courses. Almost all, 433 (95 percent) of the high schools offered between 0 and 9 pre-vocational education courses; while 21 (5 percent) offered between 10 and 19 pre-vocational education courses. No schools offered more than 20 pre-vocational education courses.

Industrial arts courses were offered in 440 (96 percent) of all high schools, and each of these high schools offered between 0 and 9 industrial arts courses. Sixteen (3.5 percent) of the schools offered between 10 and 19 courses; only 3 (.5 percent) offered more than 20 industrial arts courses.

Table 16 points out the number of vocational education courses available by high school size. It is interesting to note that schools with an enrollment of between 0 - 199 reported 266 (45 percent) of the vocational education courses available to their students. They also reported having between 0 and 5 pre-vocational education and industrial arts courses available.

The responses from the medium size schools suggest that the number of vocational education courses most frequently ranged between 0 and 9 and between 0 and 5 for the pre-vocational education and industrial arts courses.

The large, like the small and medium size high schools, most frequently reported offering between 0 and 5 pre-vocational and industrial arts courses per school. When asked about the number of vocational education courses offered, 317 (69 percent) of the large schools reported having between 0 and 9 courses.
TABLE 16

NUMBER AND PERCENT OF HIGH SCHOOLS OFFERING VOCATIONAL EDUCATION,
PRE-VOCATIONAL AND INDUSTRIAL ARTS COURSES
BY HIGH SCHOOL SIZE

\( N = 459 \)

<table>
<thead>
<tr>
<th>School Size</th>
<th>Number of Courses</th>
<th>0-199</th>
<th>Percent</th>
<th>200-1499</th>
<th>Percent</th>
<th>1500-Over</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vocational</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0-9</td>
<td>205</td>
<td>45</td>
<td>101</td>
<td>22</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>10-19</td>
<td>27</td>
<td>6</td>
<td>76</td>
<td>16</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>20 and up</td>
<td>0</td>
<td>0</td>
<td>17</td>
<td>4</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Pre-vocational</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0-5</td>
<td>220</td>
<td>48</td>
<td>165</td>
<td>36</td>
<td>24</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6-10</td>
<td>12</td>
<td>3</td>
<td>23</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>11 and up</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Industrial</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0-5</td>
<td>225</td>
<td>49</td>
<td>145</td>
<td>31</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>6-10</td>
<td>8</td>
<td>2</td>
<td>41</td>
<td>9</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>11 and up</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>2</td>
<td>8</td>
<td>2</td>
</tr>
</tbody>
</table>

In the interpretation of these data one should note that there were three general breakdowns within the data and that schools with no programs were not reported separately but within the 0-5 or 0-9 classifications.
Vocational Education Courses Dropped

To help determine what vocational education course changes high schools had made over a five-year period, the respondents were asked to provide the researcher with data in this area. A compilation of this appears in Table 17. It should be noted that only 60 (12 percent) of the schools reporting dropped vocational education courses. These schools dropped a total of 72 courses. Courses in vocational agriculture were dropped by 21 (47 percent) of the schools reporting.

Following agriculture the most frequently dropped courses were home economics, office and trade and industrial education. The actual number of courses dropped was 12 (17 percent) in home economics, 11 (15 percent) in office education, and 17 (23 percent) in trade and industrial education. Five schools dropped five distributive education courses, while no high schools reported dropping courses in health occupations.

The reason most administrators gave for dropping vocational courses was that courses no longer met the needs of their students. Lack of enrollment and inability of schools to hire qualified teachers were also mentioned, but to a lesser degree.

When the researcher compared the number of courses dropped by school size, 38 (53 percent) of the courses dropped were in the small school size as contrasted with 29 (40 percent) in the medium school size. The large size schools dropped five (7 percent) of the total courses reported being dropped.
### TABLE 17

NUMBER AND PERCENT OF SCHOOLS REPORTING VOCATIONAL EDUCATION COURSES DROPPED, AND COURSES DROPPED LAST FIVE YEARS (SINCE JULY 1, 1961) BY SCHOOL SIZE AND VOCATIONAL PROGRAM AREA

N = 487

<table>
<thead>
<tr>
<th>Vocational Program Area</th>
<th>Schools Reporting Courses Dropped</th>
<th>0-199</th>
<th>Per-cent</th>
<th>200-999</th>
<th>Per-cent</th>
<th>1500 &amp; over</th>
<th>Per-cent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td></td>
<td>21</td>
<td>11</td>
<td>28</td>
<td>11</td>
<td>33</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>Distributive</td>
<td></td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>10.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Health Occupations</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Home Economics</td>
<td></td>
<td>12</td>
<td>9</td>
<td>23</td>
<td>3</td>
<td>10.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Office Occupations</td>
<td></td>
<td>7</td>
<td>6</td>
<td>16</td>
<td>5</td>
<td>17</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Technical</td>
<td></td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Trade and Industrial</td>
<td></td>
<td>12</td>
<td>9</td>
<td>23</td>
<td>5</td>
<td>17</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>60</td>
<td>23</td>
<td>29</td>
<td>5</td>
<td>72</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Percent of Total Courses Dropped by Size

|                  | 53 | 40 | 7 |

8
Table 18 shows the number of schools responding that added vocational education courses. Schools added courses most frequently in office and trade and industrial education. One hundred nineteen schools (24 percent) added 206 office education courses, and this accounted for 34 percent of all courses added during the specified five-year period. Trade and industrial courses were also frequently added with 107 (22 percent) schools adding 198 courses or 32 percent of all courses added. Schools also added vocational education courses in distributive education, health occupations, home economics and technical education which collectively accounted for 23 percent of the total courses added.

It was interesting to note the pattern of courses dropped in Table 17 as contrasted to courses added in Table 18. There were more courses added (607) than courses dropped (72).

A majority, 307 (51 percent) of the courses added were by the medium size high school; 215 (35 percent) in the small size school and 85 (14 percent) in the large size high school.

Courses most frequently added in the medium size high school were office education and trade and industrial. These two areas constituted 71 percent of the vocational courses added in the medium size high school. In the small high school office education and trade and industrial courses were also the most popular additions, accounting for 65 percent of the courses added. Distributive education, office and home economics were the most frequent course additions in the large
### TABLE 18

Number and Percent of Schools Reporting Vocational Education Courses
Added and Courses Added Last Five Years (Since July 1, 1961) by Vocational Program Area and School Size

**N = 587**

<table>
<thead>
<tr>
<th>Vocational Program Area</th>
<th>Schools Adding Courses</th>
<th>0-250</th>
<th>251-499</th>
<th>500-1499</th>
<th>1500-2499</th>
<th>2500-3499</th>
<th>3500-4499</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>25</td>
<td>10</td>
<td>9</td>
<td>18</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>38</td>
</tr>
<tr>
<td>Distributive</td>
<td>40</td>
<td>16</td>
<td>7</td>
<td>23</td>
<td>3</td>
<td>21</td>
<td>25</td>
<td>62</td>
</tr>
<tr>
<td>Health Occupations</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Home Economics</td>
<td>37</td>
<td>34</td>
<td>11</td>
<td>27</td>
<td>2</td>
<td>16</td>
<td>19</td>
<td>67</td>
</tr>
<tr>
<td>Office Education</td>
<td>119</td>
<td>79</td>
<td>37</td>
<td>93</td>
<td>32</td>
<td>29</td>
<td>23</td>
<td>206</td>
</tr>
<tr>
<td>Technical</td>
<td>25</td>
<td>13</td>
<td>7</td>
<td>16</td>
<td>5</td>
<td>4</td>
<td>7</td>
<td>37</td>
</tr>
<tr>
<td>Trade and Industrial</td>
<td>107</td>
<td>61</td>
<td>23</td>
<td>121</td>
<td>39</td>
<td>12</td>
<td>14</td>
<td>194</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>215</strong></td>
<td><strong>199</strong></td>
<td><strong>1499</strong></td>
<td><strong>65</strong></td>
<td><strong>607</strong></td>
<td><strong>607</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Percent of Total Courses Added by Size**

<table>
<thead>
<tr>
<th></th>
<th>0-250</th>
<th>251-499</th>
<th>500-1499</th>
<th>1500-2499</th>
<th>2500-3499</th>
<th>3500-4499</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of Total</td>
<td>35</td>
<td>51</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses Added by Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
sise school and which accounted for 78 percent of the courses added. Thus, it appears that the medium and small size schools have added more courses than the large size high school since July 1, 1961.

Curriculum Development

To obtain additional insight into curriculum development, the respondents were asked to note the number of major curriculum changes which had occurred in their schools the past three years (since July 1, 1965). This question was deemed important since it has been the researcher's own experience that it is administratively easier to change an existing program of vocational education than it is to add new courses.

Table 19 indicates there were 162 course changes in office education, accounting for 27 percent of the total course changes reported. The researcher attributes the large number of course changes in this area to the passage of P.L. 88-210. This Act made office education eligible to receive Federal funds. It also provided leadership funds for a state department of education to assist local schools in curriculum development and program changes.

The activity in home economics similarly may have been a result of P.L. 88-210. This Act required that funds be used to train persons for "gainful" rather than "useful" occupations connected with the home. Schools reported making 128 curriculum changes in home economics, or 19 percent of the total course changes reported. Only 14 curriculum changes were reported in health occupations.
## TABLE 19

**MAJOR CURRICULUM CHANGES AS COMPARED WITH THE NUMBER OF VOCATIONAL EDUCATION PROGRAMS AVAILABLE BY SCHOOL SIZE AND VOCATIONAL PROGRAM AREA**

\( n = 487 \)

<table>
<thead>
<tr>
<th>Vocational Program Area</th>
<th>Total Programs Available</th>
<th>0-199</th>
<th>200-1499</th>
<th>1500-1999</th>
<th>2000-2499</th>
<th>2500-2999</th>
<th>3000-3499</th>
<th>Total Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>223</td>
<td>33</td>
<td>17</td>
<td>52</td>
<td>15</td>
<td>7</td>
<td>6</td>
<td>93</td>
</tr>
<tr>
<td>Distributive</td>
<td>118</td>
<td>10</td>
<td>5</td>
<td>42</td>
<td>13</td>
<td>16</td>
<td>16</td>
<td>70</td>
</tr>
<tr>
<td>Health Occupations</td>
<td>20</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Home Economics</td>
<td>373</td>
<td>52</td>
<td>23</td>
<td>54</td>
<td>16</td>
<td>18</td>
<td>15</td>
<td>133</td>
</tr>
<tr>
<td>Office Education</td>
<td>227</td>
<td>63</td>
<td>23</td>
<td>89</td>
<td>27</td>
<td>26</td>
<td>25</td>
<td>132</td>
</tr>
<tr>
<td>Technical</td>
<td>95</td>
<td>6</td>
<td>3</td>
<td>29</td>
<td>9</td>
<td>15</td>
<td>13</td>
<td>50</td>
</tr>
<tr>
<td>Trade and Industrial</td>
<td>157</td>
<td>46</td>
<td>21</td>
<td>57</td>
<td>17</td>
<td>26</td>
<td>22</td>
<td>129</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1538</strong></td>
<td><strong>223</strong></td>
<td><strong>332</strong></td>
<td><strong>116</strong></td>
<td><strong>671</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Percent of Curriculum Changes by School Size | 23 | 50 | 17 |
There was a total of 671 curriculum changes made. This was an average of 1.3 vocational education curriculum changes made per school.

When considering curriculum changes, school size was an important factor. Three hundred thirty-two (50 percent) of the changes occurred in the medium size high school, 223 (33 percent) in the small size school and 116 (17 percent) of the total curriculum changes occurred in the large size school.

It should be pointed out that no attempt was made to define or classify what types of curriculum changes were made. The respondents were asked to report only those curriculum changes which they considered to be major.

**Teachers of Vocational Education**

As a measure of the number of vocational education teachers, the respondents were asked to provide the researcher with a compilation of the number of full-time equivalent vocational education teachers. For purposes of this study a full-time equivalent teacher is defined as a teacher who spends one-half or more of the school day in teaching and/or supervision of vocational education students in one of the seven program areas of vocational education. If a school reported two teachers, each spending one-half day teaching and/or supervising vocational education students, this was considered to be one full-time equivalent teacher.

Table 20 shows three hundred thirty schools (68 percent) reported 472 full-time equivalent teachers of home economics education. Home economics teachers accounted for 23 percent of all the vocational
### TABLE 20

NUMBER AND PERCENT OF SCHOOLS REPORTING WHO HAD FULL-TIME TEACHER EQUIVALENTS OF VOCATIONAL-TECHNICAL EDUCATION AND TOTAL NUMBER AND PERCENT OF FULL-TIME TEACHER EQUIVALENTS OF VOCATIONAL-TECHNICAL EDUCATION BY VOCATIONAL PROGRAM AREA

\(N = 487\)

<table>
<thead>
<tr>
<th>Vocational Program Area</th>
<th>Schools Reporting Full-time Teacher Equivalents</th>
<th>0–199</th>
<th>200–1499</th>
<th>1500–over</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>203</td>
<td>95</td>
<td>13</td>
<td>129</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Distributive</td>
<td>92</td>
<td>25</td>
<td>5</td>
<td>65</td>
<td>7</td>
<td>26</td>
</tr>
<tr>
<td>Health Occupations</td>
<td>13</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Home Economics</td>
<td>330</td>
<td>175</td>
<td>33</td>
<td>232</td>
<td>26</td>
<td>65</td>
</tr>
<tr>
<td>Office Education</td>
<td>265</td>
<td>139</td>
<td>23</td>
<td>279</td>
<td>31</td>
<td>117</td>
</tr>
<tr>
<td>Technical</td>
<td>53</td>
<td>28</td>
<td>5</td>
<td>53</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Trade and Industrial</td>
<td>134</td>
<td>64</td>
<td>12</td>
<td>132</td>
<td>15</td>
<td>51</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1095</strong></td>
<td><strong>529</strong></td>
<td><strong>899</strong></td>
<td><strong>292</strong></td>
<td><strong>1720</strong></td>
<td><strong>31</strong></td>
</tr>
</tbody>
</table>

Percent of Full-time Teacher Equivalents by School Size

31 52 17
education teachers reported. Two hundred sixty-five schools (54 percent) reported 535 full-time equivalent teachers of office education. This was 31 percent of the total full-time equivalent vocational teachers reported.

More schools reported having full-time teacher equivalents for agriculture than trade and industrial education. It was interesting to note, however, that the actual total number of full-time equivalent teachers of agriculture and trade and industrial were almost equal, with 66 fewer trade and industrial than agriculture programs available to students.

The medium size schools reported the largest number of full-time teacher equivalents. Small high schools reported 529 (31 percent) of the total full-time equivalent teachers. Like the medium size school, over one-half (59 percent) of their teachers were in office and home economics, with these figures being 16 percent in home economics and 31 percent in office occupations.

Though home economics and office occupations accounted for 59 percent of the full-time teacher equivalents in the large size high schools, there were a smaller percentage of vocational agriculture and home economics teachers and a slightly higher percentage of distributive and trade and industrial teachers in the large school when compared with the small and medium size high schools.
Extended Employment for Vocational Teachers

Extended employment for the vocational education teacher has been encouraged through Federal vocational education acts. The purpose of extended teacher employment was to provide additional time for the vocational teacher to draw upon the several resources in the community, and to supervise vocational education students placed on the job or farm for occupational experience. To ascertain the degree to which this practice was in effect, schools were asked to supply the researcher with certain data in this area.

Schools reported that of the 1075 full-time teacher equivalents to vocational education, 459 (42 percent) provided vocational-technical teachers with extended employment. There were a total of 1720 full-time teacher equivalents of vocational education; of these 554 (32 percent) were employed on extended contracts.

As Table 21 indicates, 200 schools employed 242 vocational agriculture teachers (full-time equivalents), and 222 of these were on extended employment (more than 9 months). This was followed by home economics teachers of whom 126 schools employed 472 full-time equivalents of which 155 (33 percent) were on extended employment. These two areas accounted for a combined total of 68 percent of all the vocational teachers on extended employment.

The percentage of full-time teacher equivalents of vocational-technical education on extended employment was substantially less in distributive, health occupations, technical, office and trade and industrial. Teachers on extended employment in these areas accounted for 32 percent of the total.
TABLE 21

VOCATIONAL-TECHNICAL TEACHERS ON EXTENDED EMPLOYMENT AS COMPARED WITH FULL-TIME TEACHER EQUIVALENTS OF VOCATIONAL-TECHNICAL EDUCATION

N = 457

<table>
<thead>
<tr>
<th>Vocational Program Area</th>
<th>Schools Reporting Full-time Teachers</th>
<th>Schools Reporting Vo-tech Teachers</th>
<th>Percent of Vo-tech Teachers of Full-time Teachers</th>
<th>Vo-tech Teachers on Extended Employment</th>
<th>Percent of Total Teachers on Extended Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>208</td>
<td>200</td>
<td>96</td>
<td>242</td>
<td>222</td>
</tr>
<tr>
<td>Distributive</td>
<td>92</td>
<td>60</td>
<td>65</td>
<td>116</td>
<td>69</td>
</tr>
<tr>
<td>Health Occupations</td>
<td>13</td>
<td>7</td>
<td>52</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Home Economics</td>
<td>220</td>
<td>126</td>
<td>56</td>
<td>472</td>
<td>155</td>
</tr>
<tr>
<td>Office Education</td>
<td>225</td>
<td>81</td>
<td>36</td>
<td>535</td>
<td>43</td>
</tr>
<tr>
<td>Technical</td>
<td>22</td>
<td>5</td>
<td>92</td>
<td>93</td>
<td>7</td>
</tr>
<tr>
<td>Trade and Industrial</td>
<td>12%</td>
<td>25</td>
<td>21</td>
<td>234</td>
<td>47</td>
</tr>
<tr>
<td>Total</td>
<td>1095</td>
<td>459</td>
<td>1720</td>
<td>554</td>
<td>32</td>
</tr>
<tr>
<td>Percent of Total</td>
<td>42 (Schools)</td>
<td>32 (Teachers)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
When considering the number of vocational-technical education teachers on extended employment in relation to school size, Table 22 shows that 57 percent of the vocational teachers were on extended employment in the medium size school, 31 percent in the small, and 12 percent in the large size high schools. Forty percent of the vocational education teachers on extended employment in the medium size high schools were in agriculture, 26 percent were in home economics, and 14 percent were in distributive education. The balance (20 percent) of the teachers on extended employment were in health occupations, office, technical, and trade and industrial education.

Eighty-four percent of the vocational teachers on extended employment in small schools were made up of agriculture and home economics. Five percent of the teachers in distributive, office and trade and industrial education were also on extended employment.

**Classes Taught by Vocational-Technical Education Teachers**

To determine the teaching load of vocational education teachers, schools were asked to provide the researcher with the number of hours per week each vocational education teacher actually taught vocational education subjects. Since compiling the information for a question of this type is very time consuming, the respondents were asked to react on an interval scale devised by the researcher. The scale was arrived at by using the six-hour school day as a basis.

A teacher teaching 35 hours per week was determined to be teaching a full-time load. On this basis, an average of 5 hours was determined to be a quarter teaching load; 15 hours, a half-time teaching load,
<table>
<thead>
<tr>
<th>Vocational Program Area</th>
<th>0-199</th>
<th>Per-cent</th>
<th>200-1499</th>
<th>Per-cent</th>
<th>1500- over</th>
<th>Per-cent</th>
<th>Total</th>
<th>Per-cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>79</td>
<td>67</td>
<td>127</td>
<td>40</td>
<td>16</td>
<td>23</td>
<td>222</td>
<td>40</td>
</tr>
<tr>
<td>Distributive</td>
<td>9</td>
<td>5</td>
<td>63</td>
<td>14</td>
<td>17</td>
<td>24</td>
<td>69</td>
<td>13</td>
</tr>
<tr>
<td>Health Occupations</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>4/</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Home Economics</td>
<td>62</td>
<td>37</td>
<td>33</td>
<td>25</td>
<td>10</td>
<td>15</td>
<td>155</td>
<td>28</td>
</tr>
<tr>
<td>Office Education</td>
<td>9</td>
<td>5</td>
<td>24</td>
<td>3</td>
<td>10</td>
<td>15</td>
<td>43</td>
<td>8</td>
</tr>
<tr>
<td>Technical</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>4/</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Trade and Industrial</td>
<td>9</td>
<td>5</td>
<td>22</td>
<td>9</td>
<td>10</td>
<td>15</td>
<td>47</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>170</td>
<td></td>
<td>315</td>
<td></td>
<td>69</td>
<td></td>
<td>535</td>
<td></td>
</tr>
</tbody>
</table>

Percent of Total Teacher on Extended Employment by School Size

31 57 12
and 25 hours, three-quarters of a teaching load. Table 23 shows that, on this basis, 758 (44 percent) of the 1730 teachers reported, were teaching an average of 25 hours per week which was classified a three-quarters teaching load. Only 298 (17 percent) of the teachers taught an average of 35 hours per week.

Vocational teachers are commonly allowed release time from teaching classes to advise, counsel and supervise occupational experience programs of students. The questionnaire, admittedly, was weak in this area since it only sought classes taught and not other necessary and desirable supplementary activities to effective vocational education teaching.

It was interesting to note the teaching load in the health occupations area. Forty-four percent (8 teachers) taught an average of five hours per week while 59.5 percent (7 teachers) taught an average of 35 hours per week.

As was mentioned, 758 (44 percent) of all teachers teach an average of 25 hours per week, 17 percent of all teachers teach an average of 35 hours per week, and 381 (22 percent) teach an average of 15 hours per week.

Table 24 shows that the teaching load of teachers in the small size high school was less demanding in hours per week than for the average of all schools. Of the 532 vocational education teachers in the small high schools, 35 percent taught an average of 25 hours per week, 12 percent taught an average of 35 hours per week, and 53 percent taught an average of 15 or less hours per week.
TABLE 23

NUMBER AND PERCENT OF VOCATIONAL-TECHNICAL EDUCATION TEACHERS AND THEIR

VOCATIONAL TEACHING LOAD IN HOURS PER WEEK

N = 437

<table>
<thead>
<tr>
<th>Vocational Program Area</th>
<th>Hours 5</th>
<th>Percent 15</th>
<th>Hours 25</th>
<th>Percent .35</th>
<th>Total Teachers</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>21</td>
<td>9</td>
<td>16</td>
<td>167</td>
<td>227</td>
<td>100</td>
</tr>
<tr>
<td>Distributive</td>
<td>23</td>
<td>19</td>
<td>21</td>
<td>40</td>
<td>121</td>
<td>100</td>
</tr>
<tr>
<td>Health Occupations</td>
<td>5</td>
<td>44</td>
<td>1</td>
<td>2</td>
<td>18</td>
<td>100</td>
</tr>
<tr>
<td>Home Economics</td>
<td>82</td>
<td>13</td>
<td>22</td>
<td>44</td>
<td>482</td>
<td>100</td>
</tr>
<tr>
<td>Office Education</td>
<td>96</td>
<td>18</td>
<td>122</td>
<td>43</td>
<td>530</td>
<td>100</td>
</tr>
<tr>
<td>Technical</td>
<td>27</td>
<td>27.5</td>
<td>25</td>
<td>31</td>
<td>93</td>
<td>100</td>
</tr>
<tr>
<td>Trade and Industrial</td>
<td>46</td>
<td>18</td>
<td>50</td>
<td>52</td>
<td>254</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>303</td>
<td>351</td>
<td>758</td>
<td>288</td>
<td>1720</td>
<td></td>
</tr>
<tr>
<td>Percent of Total Teachers</td>
<td>17</td>
<td>22</td>
<td>40</td>
<td>17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Vocational Teachers and Their Vocational Teaching Load in Hours Per Week
### Table 2a

**Number and Percent of Vocational-Technical Education Teachers and Their Teaching Load in Hours Per Week in Three High School Sizes**

N = 457

<table>
<thead>
<tr>
<th>School Size</th>
<th>Hours 5</th>
<th>Percent</th>
<th>Hours 15</th>
<th>Percent</th>
<th>Hours 25</th>
<th>Percent</th>
<th>Hours 35</th>
<th>Percent</th>
<th>Total Teachers</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 1499</td>
<td>159</td>
<td>27</td>
<td>151</td>
<td>25</td>
<td>202</td>
<td>35</td>
<td>63</td>
<td>12</td>
<td>582</td>
<td>100</td>
</tr>
<tr>
<td>200 - 1499</td>
<td>105</td>
<td>12</td>
<td>166</td>
<td>20</td>
<td>406</td>
<td>43</td>
<td>172</td>
<td>20</td>
<td>849</td>
<td>100</td>
</tr>
<tr>
<td>1500 - over</td>
<td>39</td>
<td>13</td>
<td>62</td>
<td>21</td>
<td>143</td>
<td>50</td>
<td>43</td>
<td>16</td>
<td>299</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>303</td>
<td></td>
<td>251</td>
<td></td>
<td>755</td>
<td></td>
<td>288</td>
<td></td>
<td>1720</td>
<td></td>
</tr>
<tr>
<td>Percent of Total Teachers</td>
<td>17</td>
<td></td>
<td>22</td>
<td></td>
<td>44</td>
<td></td>
<td>17</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The medium, like the small-size schools, had more teachers, 406 (48 percent) teaching an average of 25 hours per week. Twenty percent taught an average of 35 hours per week while 32 percent taught an average of 15 or less hours per week.

One-half of the teachers in the larger schools taught an average of 25 hours per week and 16 percent taught 35 hours per week.

In essence, the average teaching load of all vocational teachers, when broken out by school size, shows that the vocational teacher's load is in proportion to the size of the high school system. As the school increases in size, the average teaching load of vocational education teachers increases.

Specialization of Vocational Education Teachers

As a further means of determining the teaching loads of vocational education teachers and to determine if teachers of vocational education were teaching non-vocational education subjects, administrators were asked to provide the researcher with additional information about teachers' non-vocational education teaching loads. Table 25 indicates that of the 1773 teachers reported, 1409 (79 percent) were teaching between 0-2 non-vocational education courses; 263 (15 percent) were teaching between 3-4 non-vocational education courses, and that 101 (6 percent) were teaching between 5-7 non-vocational-education courses.

Of the 244 teachers of vocational agriculture, 207 (85 percent) taught between 0-2 vocational education subjects. Vocational
agriculture, distributive and home economics teachers taught fewer non-vocational education subjects than did teachers of health occupations, office, technical and trade and industrial.

**TABLE 25**

<table>
<thead>
<tr>
<th>Vocational Program Area</th>
<th>0-2 Percent</th>
<th>3-5 Percent</th>
<th>5-7 Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>207</td>
<td>85</td>
<td>15</td>
<td>22</td>
</tr>
<tr>
<td>Distributive</td>
<td>100</td>
<td>82</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>Health Occupations</td>
<td>13</td>
<td>62</td>
<td>7</td>
<td>33</td>
</tr>
<tr>
<td>Home Economics</td>
<td>398</td>
<td>83</td>
<td>60</td>
<td>12</td>
</tr>
<tr>
<td>Office</td>
<td>420</td>
<td>75</td>
<td>109</td>
<td>20</td>
</tr>
<tr>
<td>Technical</td>
<td>67</td>
<td>78</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Trade and Industrial</td>
<td>20</td>
<td>79</td>
<td>41</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1409</strong></td>
<td><strong>263</strong></td>
<td><strong>101</strong></td>
<td><strong>1773</strong></td>
</tr>
</tbody>
</table>

Percent of Total Teachers Teaching Non-Vocational Subjects

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocational</td>
<td>79</td>
<td>15</td>
<td>6</td>
</tr>
</tbody>
</table>

**N = 497**
The point is that schools are requiring their vocational teachers to teach in non-vocational education subject matter areas. The researcher suggests that the major implication is that schools are not convinced that they should use the special training of vocational teachers to the maximum level. Rather, vocational teachers are substituting as general education teachers and teaching in areas in which a school might be in short supply.

Table 25 provides additional insight about the vocational teachers' non-vocational technical education teaching load as it relates to school size.

Small high schools reported 532 (30 percent) of the total teachers. Of those, 401 (75 percent) taught between 0-2 non-vocational education subjects each day; 99 (19 percent) taught between 3-4 and 22 (6 percent) taught between 5-7 non-vocational subjects each day. By comparison, teachers in the small size school were less specialized and a higher percentage were more apt to be teaching more non-vocational education subjects than were vocational teachers in the medium and large size high schools.

Teachers in the medium size schools appear to be more specialized than teachers in the small size high school since 773 (84 percent) teach between 0-2 non-vocational education subjects each day. This compares with 74 percent of the teachers in the large high school and with 75 percent in the small size high school.

There is general agreement that vocational-technical education is a special subject which requires a specially trained teacher.
### TABLE 26

<table>
<thead>
<tr>
<th>School Size</th>
<th>0-2</th>
<th>3-4</th>
<th>5-7</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 199</td>
<td>401</td>
<td>75</td>
<td>99</td>
<td>32</td>
<td>6</td>
</tr>
<tr>
<td>200 - 1499</td>
<td>778</td>
<td>84</td>
<td>101</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>1500- over</td>
<td>230</td>
<td>72</td>
<td>63</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>1409</td>
<td>263</td>
<td>101</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Percent of Total Teachers: 79 | 15 | 6

To measure the degree to which teachers of vocational education were able to specialize, data were collected about the number of different vocational course preparations made each day by vocational-technical education teachers.

Table 27 shows that 933 (54 percent) of the vocational-technical education teachers reported, made between 0-2 different vocational education course preparations each day, while 724 (42 percent) made between 3-5 different preparations each day. Vocational teachers with the highest degree of specialization were in health occupations, where 26 (84 percent) of the teachers made between 0-2
different preparations each day. This was followed by teachers of distributive education, where 93 (80 percent) reported making between 0-2 different vocational course preparations each day.

**TABLE 27**

**NUMBER AND PERCENT OF VOCATIONAL-TECHNICAL EDUCATION TEACHERS MAKING DIFFERENT VOCATIONAL COURSE PREPARATIONS EACH DAY BY VOCATIONAL PROGRAM AREA.**

\( N = 487 \)

<table>
<thead>
<tr>
<th>Vocational Program Area</th>
<th>0-2 cent</th>
<th>3-5 cent</th>
<th>5-7 cent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>70</td>
<td>29</td>
<td>147</td>
<td>236</td>
</tr>
<tr>
<td>Distributive</td>
<td>93</td>
<td>80</td>
<td>18</td>
<td>116</td>
</tr>
<tr>
<td>Health Occupations</td>
<td>26</td>
<td>64</td>
<td>5</td>
<td>31</td>
</tr>
<tr>
<td>Home Economics</td>
<td>211</td>
<td>40</td>
<td>218</td>
<td>462</td>
</tr>
<tr>
<td>Office Education</td>
<td>229</td>
<td>47</td>
<td>243</td>
<td>487</td>
</tr>
<tr>
<td>Technical</td>
<td>113</td>
<td>74</td>
<td>30</td>
<td>152</td>
</tr>
<tr>
<td>Trade and Industrial</td>
<td>196</td>
<td>76</td>
<td>60</td>
<td>259</td>
</tr>
<tr>
<td>Total</td>
<td>933</td>
<td>724</td>
<td>63</td>
<td>1725</td>
</tr>
</tbody>
</table>

Percent of Total Teachers  

|                  | 54 | 42 | 4  |

Sixty-two percent of the agriculture teachers made between 3-5 different vocational course preparations each day. Teachers most frequently making between 5-7 vocational education course preparations each day were in agriculture and technical education. It was rewarding
to note that of all the teachers reported, only 63 (4 percent) were making between 5-7 different vocational course preparations each day.

If we consider that teachers teaching between 0-2 vocational education courses are more specialized than those teaching between 3-4 or 5-7 vocational education courses, Table 28 shows that teachers in the medium size high schools are less specialized than those in either the small or large size schools. In fact, the large schools, as one might suspect were the more specialized. This is demonstrated by the fact that 2\(\frac{1}{4}\) (79 percent) of the teachers teach between 0-2 vocational education courses, 56 (18 percent) taught between 3-4 courses, while 8 (3 percent) were teaching between 5-7 vocational education courses each day.

Approximately one-half, 264 (51 percent), of the vocational education teachers in the small size high schools taught between 0-2 vocational education courses each day. However, six percent of the teachers in the small size school also taught between 5-7 courses.

Of the 65 teachers in the medium size high schools, 420 (48 percent) taught between 0-2 vocational education courses, 443 (50 percent) taught 3-4 different courses, while 21 (2 percent) taught between 5-7 vocational education courses each day.

**Counselors**

To ascertain the degree to which schools were being served by guidance counselors, the researcher asked each respondent to indicate the number of full-time equivalent counselors per high school.
As Table 29 indicates, 109 (24 percent) of the schools reported no full-time equivalent counselor. These same schools, however, may have had counselors who were counseling less than on a half-time basis. A near majority, 216 (47 percent), of the schools reported on full-time equivalent counselor. There were 134 (29 percent) of the schools who indicated they had two or more full-time equivalent counselors.

It would appear from the analysis of this data that the one-time problem of placing counselors into the school system, except in the
small size school, has been largely accomplished. The remaining challenge is to assure that vocational counseling becomes a viable part of the program.

**TABLE 29**

**NUMBER OF FULL-TIME EQUIVALENT COUNSELORS BY SCHOOL SIZE**

<table>
<thead>
<tr>
<th>School Size</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 199</td>
<td>103</td>
<td>123</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>234</td>
</tr>
<tr>
<td>200 - 1499</td>
<td>6</td>
<td>88</td>
<td>53</td>
<td>20</td>
<td>18</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>193</td>
</tr>
<tr>
<td>1500 - over</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>7</td>
<td>10</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>32</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>109</td>
<td>216</td>
<td>53</td>
<td>25</td>
<td>25</td>
<td>15</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>459</td>
</tr>
</tbody>
</table>

| Percent of Total | 24 | 47 | 13 | 5  | 5  | 3  | 1  | 1  | 5  | 5  | 5   | 100   |

No attempt was made to determine the emphasis given the high school guidance program. The literature, however, suggests that it is primarily academic, rather than vocational.

Perhaps the most revealing and alarming figure in Table 29 is that 103 (44 percent) of the schools in the small school size reported no counselors, 128 (55 percent) reported one counselor, and three schools reported two counselors.
In the medium school size there were 193 schools reporting. Only six (3 percent) had no counselors, 88 (46 percent) had one counselor and the balance, or 99 schools, reported two or more counselors.

All 32 of the large schools reported one or more counselors. More schools in this size category reported 5 or more counselors than 5 or less counselors per school.

It would appear that as the size of school increases, the number of counselors also increases.

Since hiring counselors appears to be difficult in the small school, they may find partial answer by utilizing cooperatively shared counselors between one or more small schools. In Montana this practice is gaining in recognition and acceptance by local school officials, particularly in small and/or isolated high schools.

**Occupational Need Studies**

A lack of involvement in the world of work on the part of vocational educators has been a serious weakness. There has been a recent trend, however, for schools to communicate with employment agencies and with industries hiring trained personnel. Table 30 indicates the degree to which schools have been involved in occupational needs studies.

Occupational needs studies are frequently used to procure data necessary for vocational education program adjustment. The respondents were asked to indicate the number of occupational needs studies in which their school had been involved over a period of three years (July 1, 1963 through June 30, 1966).
As shown in Table 30, 207 (45 percent) of the schools had not been involved in an occupational needs study. The incidence of cooperating in an occupational needs study occurred most frequently in the middle and large school sizes.

It would appear that small schools are not presently seeking information from adjacent cities and towns where their students may migrate for employment. One hundred eighty (78 percent) of the small schools reported cooperating in no occupational needs studies. Thirty-five (15 percent) cooperated in one study.
Administrators of high school systems, regardless of their size, should be alert to the placement of their graduates since this idea offers one means of determining local curricular needs.

The medium size schools commonly conducted or were involved in studies to determine occupational needs. While 22 (11 percent) were involved in no studies, 17 (89 percent) participated in one or more studies.

All but five of the 32 large schools reported having conducted an occupational needs survey in their communities.

It would appear that as the size of the school increases, there is also an increase in the incidence of schools being involved in occupational needs studies.

Characteristics of High School Graduates

An important criteria for evaluation of an educational program is an evaluation of the product produced. To obtain data about the characteristics of students who had graduated from high school, and more specifically, about those who had taken vocational-technical education while in high school, the respondents were asked to provide information to a series of questions about the 1966 high school graduating class.

Unfortunately, only 253 (56 percent) of the schools returning questionnaires responded to this question (Table 31).

First, it should be pointed out that 11,315 (53 percent) of those graduating were not available for full-time employment. Continuing their education as a post-secondary institution were 9,079
TABLE 31

DISTRIBUTION OF SELECTED CHARACTERISTICS OF HIGH SCHOOL GRADUATES BY SCHOOL SIZE

N = 258

Distribution of High School Graduates by Characteristics

<table>
<thead>
<tr>
<th>School Size</th>
<th>Number of Schools</th>
<th>Military Service</th>
<th>Post-High School</th>
<th>2 Yrs. in Voc. Blue</th>
<th>Employed in Job for Which Trained</th>
<th>Employed Regardless of Job</th>
<th>Not Accounted</th>
<th>Percent of Total*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 199</td>
<td>140</td>
<td>300</td>
<td>10</td>
<td>1467</td>
<td>67</td>
<td>1276</td>
<td>41</td>
<td>267</td>
</tr>
<tr>
<td>200 - 1499</td>
<td>102</td>
<td>1340</td>
<td>12</td>
<td>4309</td>
<td>42</td>
<td>3231</td>
<td>23</td>
<td>856</td>
</tr>
<tr>
<td>1500 - over</td>
<td>16</td>
<td>593</td>
<td>9</td>
<td>2303</td>
<td>42</td>
<td>3183</td>
<td>47</td>
<td>1324</td>
</tr>
<tr>
<td>Total*</td>
<td>258</td>
<td>2236</td>
<td>90</td>
<td>5079</td>
<td>7700</td>
<td>2337</td>
<td>3928</td>
<td>1363</td>
</tr>
<tr>
<td>Percent of Total*</td>
<td>10</td>
<td>43</td>
<td>26</td>
<td>12</td>
<td>18</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Graduates appear in more than one column, thus the reason for the sub-column totals and percentages not being equal to the total graduates.
(43 percent) of the graduates and an additional 2,236 (10 percent) entered the military service. Thirty-six percent (7,700) of the graduates completed two or more years of a vocational-technical education subject while in high school. Of those finishing two years of vocational education, 2,537 (23 percent) were employed in jobs for which they received vocational education. Of the 21,463 graduating seniors, 3,928 (18 percent) were reported employed, regardless of the type of job. In essence, of those available for jobs, 10,468 (49 percent), discounting students unaccounted for, 6,465 (65 percent) were employed.

In trying to rationalize the low percentage figure of those who were employed, the researcher, in reviewing the questionnaires noticed several comments made by school administrators regarding this question. A comment frequently made by the administrators was that the guidance counselors who keep student follow-up records were not available; thus, the information provided may have been pure conjecture on the part of the school administrator. This resulted frequently enough to question conclusions that might be drawn on the basis of these data.

When looking at the graduate characteristics as they related to school size, the major findings reveal that there is little difference in the percentage of graduates going to the armed services or attending post-high school institutions.

The small and large school have over 40 percent of their graduates completing two years of vocational education while in high school, as compared with 28 percent for the medium size schools. The large
and small schools reported a higher percentage of students employed in jobs for which they received vocational education while in high school.

The degree of vocational education program specialization, more effective guidance and the industrial setting of the large school are all factors which undoubtedly play heavily on the increased placement.

Comparable percentages of graduates were employed without regard to type of job in the three high school sizes. This was also true as it related to the graduates unaccounted for.

Involvement of Outside Agencies

Since the inception of vocational education, vocational educators have adhered to a firm conviction that programs they administered were destined to obsolescence unless program goals were continuously altered to keep pace with the changes occurring in the World of Work. Although convictions may have been slight relative to keeping pace with change, many vocational educators have not been able, or have not desired, to transform their beliefs into functional relationships with the business and industrial complex.

It is now obvious that vocational education programs must have direct lines of communication with the industrial-business complex if they are really going to serve the manpower needs of an affluent America. Today, in education, business, industry and labor must work as a team and share the responsibility for training a skilled, competent labor force.3

To determine the involvement of outside agencies or groups in vocational education programs for high school students, the respondents were asked to indicate if their school was using a vocational

---

education advisory council. School administrators indicated that only 145 (31 percent) of their schools were currently using advisory councils. This should not preclude the idea that school administrators or individual vocational education teachers do not informally consult, exchange ideas or learn from individuals and agencies who were not formally organized into advisory or consultative groups.

Table 32 shows seventy-five (17 percent) of the schools reported were using one advisory council. Thirty-three (7 percent) reported using two advisory councils and 37 (7 percent) of the schools had three or more vocational education advisory councils.

Although the area of administration of vocational-technical education programs continues to remain the responsibility of the school system, other agencies can and should be extensively involved. Several respondents mentioned that schools traditionally have not sought the cooperation of informed people and groups from the community that is desirable to evolve adequate vocational-technical curricula.

It was not obvious that the use of vocational education advisory councils was dependent upon school size. As the size of the school increased, the incidence of schools using an advisory council did not increase except in the large schools. The difference between the small and medium size schools on the basis of this variable was not evident.
TABLE 32

NUMBER AND PERCENTAGE OF VOCATIONAL EDUCATION ADVISORY COUNCILS IN USE BY HIGH SCHOOLS BY SCHOOL SIZE

N = 459

<table>
<thead>
<tr>
<th>School Size</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 199</td>
<td>153</td>
<td>49</td>
<td>19</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>231</td>
</tr>
<tr>
<td>200 - 499</td>
<td>140</td>
<td>20</td>
<td>14</td>
<td>0</td>
<td>10</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>196</td>
</tr>
<tr>
<td>1500 - over</td>
<td>21</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>314</td>
<td>75</td>
<td>33</td>
<td>11</td>
<td>10</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>459</td>
</tr>
<tr>
<td>Percent of Total</td>
<td>69</td>
<td>17</td>
<td>7</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
</tbody>
</table>

Specific Administrative Policy

"The broad involvement given vocational education programs with agencies and people outside the school system suggests a need for the development of specific administrative policies covering this program."

To get an indication of the degree to which such policies have been developed, respondents were asked to indicate if separate and specific vocational education policy was being used.

As shown in Table 33, three hundred four (66 percent) of the respondents indicated their school had no separate and specific policy for administering vocational education programs, while 155 (34 percent) have separate administrative policy for vocational education. It is assumed by the researcher that this policy is in addition to regular school policy. Based on these reports, regular school policy should be made sufficiently comprehensive to include vocational-technical education or special emphasis should be given by state vocational education staffs to get schools to adopt a separate vocational education policy.

There is an observed difference in the number of schools reporting a specific vocational education policy. A higher percentage of schools in the small and medium size schools reported no specific policies than did the large schools. Twenty-eight percent of the small schools reported having a vocational education policy as compared with 65 percent in the largest schools.

**Administrator's Knowledge of Vocational Education**

It has been generally agreed that the school administrator is the most effective change agent in the school system. Presumably, one of the important ingredients for effective change is the awareness or possession of certain knowledge relating to the area in question. To ascertain the degree to which school administrators understand vocational education, three separate measurements were used.
Table 33 indicates how administrators rated their own knowledge about vocational-technical education. The majority of the school administrators, 259 (59 percent), rated themselves as having a "fair" knowledge of vocational education. Sixty-nine (15 percent) of the school administrators suggested that they had a "good" knowledge of vocational-technical education.
TABLE 34

ADMINISTRATOR'S RATING OF HIS OWN KNOWLEDGE ABOUT VocaTIOANAL EDUCATION

N = 459

<table>
<thead>
<tr>
<th>School Size</th>
<th>Good</th>
<th>Percent</th>
<th>Fair</th>
<th>Percent</th>
<th>Poor</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 199</td>
<td>49</td>
<td>21</td>
<td>129</td>
<td>55</td>
<td>53</td>
<td>23</td>
<td>231</td>
</tr>
<tr>
<td>200 - 1499</td>
<td>15</td>
<td>8</td>
<td>126</td>
<td>64</td>
<td>55</td>
<td>28</td>
<td>196</td>
</tr>
<tr>
<td>1500 - over</td>
<td>5</td>
<td>16</td>
<td>14</td>
<td>44</td>
<td>13</td>
<td>40</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>69</td>
<td></td>
<td>289</td>
<td></td>
<td>121</td>
<td></td>
<td>459</td>
</tr>
<tr>
<td>Percent of Total</td>
<td>15</td>
<td></td>
<td>59</td>
<td></td>
<td>26</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

vocational-technical education, while 121 (26 percent) rated their knowledge of vocational education as "poor."

A higher percentage of administrators in the small and medium size schools rated their knowledge as "good" or "fair" than did administrators in the large schools. Thirteen (26 percent) of the large school administrators rated their knowledge of vocational education as "poor."

Though there is no assurance that enrolling and receiving college credits in vocational-technical education assures the acquisition of knowledge, this is one of three measures selected by the researcher to ascertain an understanding of the administrator's
knowledge about vocational education. The researcher does not wish to
intimate, however, that knowledge cannot be acquired in an informal
manner where specific college credits in vocational education are not
awarded.

As indicated in Table 35, college credits in vocational educa-
tion were reported by 159 (35 percent) of the administrators, while 300
(65 percent) reported holding no college credits in vocational edu-
cation.

Whether or not a school administrator reported holding college
credits in vocational education was not visibly dependent upon school
size.

<table>
<thead>
<tr>
<th>School Size</th>
<th>Yes</th>
<th>Percent</th>
<th>No</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 199</td>
<td>78</td>
<td>34</td>
<td>153</td>
<td>66</td>
<td>231</td>
</tr>
<tr>
<td>200 - 1499</td>
<td>68</td>
<td>35</td>
<td>123</td>
<td>65</td>
<td>196</td>
</tr>
<tr>
<td>1500 - over</td>
<td>13</td>
<td>41</td>
<td>19</td>
<td>59</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>159</td>
<td></td>
<td>300</td>
<td></td>
<td>459</td>
</tr>
<tr>
<td>Percent of Total</td>
<td>35</td>
<td></td>
<td>65</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>
When asked about the number of college credits administrators had earned in vocational education, 159 (35 percent) answered that they had earned credits. Table 26 shows that of the administrators earning credits, 61 (13 percent) indicated they had earned between 1-15 college credits in vocational education. Approximately this same number and percent had earned 20 or more quarter hour credits in vocational-technical education.

<table>
<thead>
<tr>
<th>Credits</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>318</td>
<td>69</td>
</tr>
<tr>
<td>1 - 1½</td>
<td>61</td>
<td>13</td>
</tr>
<tr>
<td>15 - 29</td>
<td>23</td>
<td>5</td>
</tr>
<tr>
<td>30 or more</td>
<td>57</td>
<td>12</td>
</tr>
</tbody>
</table>

To gain the opinion or attitude of school administrators, a series of statements were prepared by the researcher and reviewed by the several persons who reviewed the questionnaire. These statements were prepared with the hope of obtaining an instinctive mental reaction from the respondent. Statements used were those to which persons in
educational administration generally agree or disagree. The attitude, statements used were totally objective; however, they evoked the greatest number of unsolicited subjective comments from administrators. Generally, the comments went on to enforce their objective answer.

Statements 2, 4, 6, 8, 10, and 12 were designed to incite positive ("agree") reactions from school administrators about offering vocational-technical education in the high school if they shared similar beliefs. Statements 1, 3, 5, 7, 9, and 11 were designed to incite negative ("disagree") reactions from school administrators about offering vocational-technical education in the high school if they believed similarly.

Statement 12, regarding the equal opportunity of all students, had the highest number of school administrators, 435 (95 percent), agreeing. Statement number 5, relating to providing a comprehensive high school curriculum, was designed to incite a "disagree" reaction, yet 411 (90 percent) agreed that a good college preparatory and general education program leaves no room in the high school schedule for vocational education. It was surprising that 411 agreed, rather than disagreed, to this statement and at the same time 374 administrators indicated that it is not the responsibility of the high school to offer vocational education. Very few of the administrators agreed to statement number 11 that only a minimum number of vocational education courses should be offered at the local level to meet local employment needs. This was interpreted to mean that administrators are in favor of meeting the local demands of industry for trained
manpower, yet at the same time they agree that if their schools provide a good college preparatory and general education program this leaves no room to schedule vocational education classes.

There was a rather interesting distribution of reactions to statement number 2 which was related to the student's role in helping determine school curriculum. The same number and percent of school administrators responding to this statement agreed as disagreed.

A number of administrators gave unsolicited comments that statement number 2 should have used the word "assist" rather than "determine" curriculum in the school.

Item 10 points up a promising aspect of vocational education program development. If school administrators are administratively willing to let students transfer in order to take advantage of vocational education, this could well be one of the answers to providing adequate vocational education in our sparsely populated areas.

A further analysis of the following aggregate attitude scores will be made in Table 37.

The attitude scores toward offering vocational education in the high school were separated on the basis of the administrator's over-all score. The three categories were positive, neutral or negative.

These data indicate that 279 (61 percent) of the school administrators are already convinced that vocational education should be a viable part of the high school curriculum. Another 159 (35 percent) are neutral toward the idea and are apparently waiting to be convinced or persuaded. In most states the supervisory and teacher
training staffs of vocational education spend some time in promotional activities. These figures tend to legitimize the need for such activities.

### TABLE 37

**ATTITUDE OF LOCAL HIGH SCHOOL ADMINISTRATORS TOWARD OFFERING VOCATIONAL EDUCATION IN THE HIGH SCHOOL ON THE BASIS OF CERTAIN STATEMENTS**

<table>
<thead>
<tr>
<th>Statements</th>
<th>Agree</th>
<th>Percent</th>
<th>Disagree</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It is not the responsibility of the high school to offer vocational education.</td>
<td>294</td>
<td>75</td>
<td>115</td>
<td>25</td>
</tr>
<tr>
<td>2. High school students should be given the opportunity to determine curriculum in the school.</td>
<td>230</td>
<td>50</td>
<td>229</td>
<td>50</td>
</tr>
<tr>
<td>3. Vocational education is a post-high school responsibility.</td>
<td>294</td>
<td>62</td>
<td>175</td>
<td>38</td>
</tr>
<tr>
<td>4. Local faculty groups should be organized to study curricular needs of students in their respective school system.</td>
<td>432</td>
<td>94</td>
<td>27</td>
<td>6</td>
</tr>
<tr>
<td>5. A good college preparatory and general education program leaves no room in the schedule for vocational education.</td>
<td>411</td>
<td>90</td>
<td>48</td>
<td>10</td>
</tr>
<tr>
<td>6. A total area employment survey should be initiated to identify the need for offering vocational education in the high school.</td>
<td>383</td>
<td>83</td>
<td>76</td>
<td>17</td>
</tr>
<tr>
<td>Statements</td>
<td>Agree</td>
<td>Percent</td>
<td>Disagree</td>
<td>Percent</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>-------</td>
<td>---------</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>7. Current high school education expenses will not permit curricular expansion into vocational education.</td>
<td>278</td>
<td>61</td>
<td>181</td>
<td>39</td>
</tr>
<tr>
<td>8. A vocational education advisory committee should be appointed by the local board of education to instigate and maintain up-to-date vocational education offerings in the high school.</td>
<td>317</td>
<td>69</td>
<td>142</td>
<td>31</td>
</tr>
<tr>
<td>9. The high school should offer no vocational education courses but should provide for pre-vocational education or industrial arts courses.</td>
<td>287</td>
<td>80</td>
<td>92</td>
<td>20</td>
</tr>
<tr>
<td>10. High school students wishing vocational education courses should be permitted to transfer and receive full tuition to another school offering vocational education should it not be available in the student's resident high school.</td>
<td>321</td>
<td>70</td>
<td>138</td>
<td>30</td>
</tr>
<tr>
<td>11. A minimum number of vocational education courses should be offered in the high school to meet local needs of employers.</td>
<td>137</td>
<td>30</td>
<td>322</td>
<td>70</td>
</tr>
<tr>
<td>12. High schools should provide equal opportunities for all students whether for college preparatory, general education, or vocational education.</td>
<td>435</td>
<td>95</td>
<td>24</td>
<td>5</td>
</tr>
</tbody>
</table>
Only 21 (4 percent) of the administrators' attitudes were determined to be negative toward offering vocational-technical education at the high school level.

To glean information about the attitudes of school administrators toward offering vocational education at the high school level as it relates to school size, Table 38 further points out that the distribution of attitude scale scores is quite evenly distributed between the medium and large school sizes. However, in the small school there appears to be a higher percentage of negative and neutral replies and a smaller percentage of administrators having positive attitude scores. Perhaps the lower positive attitude scores in this group is associated with the many unique problems which administrators in this size school face in offering vocational education programs. It might also be a reflection of the administrator's professional training.

Financial Support

Because vocational education is expensive and since vocational-technical education is beneficial to more than the local community, state and Federal governments have shared in the initial cost of providing this education. To determine the amount of special state and/or Federal funds, per vocational student, per year, received by the local school district, the respondents were asked to indicate the funds received by their school on a pre-arranged interval scale.

The researcher determined the range of the interval scale on the basis of his own experience and findings revealed in the
reseaecher's Colliqueum Paqer prepared while working toward a M.A. degree in Agricultural Education at the University of Minnesota. 5

TABLE 38

DISTRIBUTION OF HIGH SCHOOL ADMINISTRATOR ATTITUDE SCALE SCORES BY SCHOOL SIZE

<table>
<thead>
<tr>
<th>School Size</th>
<th>Negative 0-4</th>
<th>Percent 5-8</th>
<th>Neutral 9-12</th>
<th>Positive</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 199</td>
<td>17</td>
<td>7</td>
<td>92</td>
<td>40</td>
<td>233</td>
</tr>
<tr>
<td>200 - 400</td>
<td>3</td>
<td>2</td>
<td>58</td>
<td>30</td>
<td>133</td>
</tr>
<tr>
<td>1500 - over</td>
<td>1</td>
<td>3</td>
<td>9</td>
<td>28</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>159</td>
<td>279</td>
<td>459</td>
<td></td>
</tr>
</tbody>
</table>

Percent of Total: 4% 35% 61% 100%

Table 39 indicates that even though state and Federal monies have been appropriated for the purpose of stimulating program development in vocational-technical education, these data point out that 168 (37 percent) of the schools receive no special assistance for vocational education.

### TABLE 39

**AMOUNT OF SPECIAL (STATE AND/OR FEDERAL) FUNDS RECEIVED PER VOCATIONAL STUDENT PER YEAR BY THE LOCAL SCHOOL DISTRICT**

\[ n = 459 \]

Schools Receiving Special Financial Assistance on a Per Student Basis

<table>
<thead>
<tr>
<th>School Size</th>
<th>None</th>
<th>$1-$75</th>
<th>$76-$149</th>
<th>$150-$225</th>
<th>$225+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 199</td>
<td>100</td>
<td>43</td>
<td>93</td>
<td>42</td>
<td>21</td>
<td>14</td>
</tr>
<tr>
<td>200 - 499</td>
<td>60</td>
<td>31</td>
<td>92</td>
<td>46</td>
<td>31</td>
<td>16</td>
</tr>
<tr>
<td>500 - over</td>
<td>8</td>
<td>25</td>
<td>14</td>
<td>44</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>168</td>
<td>202</td>
<td>50</td>
<td>31</td>
<td>31</td>
<td>459</td>
</tr>
<tr>
<td>Percent of Total</td>
<td>37</td>
<td>44</td>
<td>12</td>
<td>7</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Two hundred two (44 percent) of the schools indicated that they received between $1 - $75 per vocational student per year from state and/or Federal funds. Fifty-eight (12 percent) of the schools received between $76 - $149 per vocational student per year and only 31 (7 percent) of the schools received between $150 - $225 per vocational student for vocational-technical education.

When considering the added cost of providing high quality vocational education instruction for students, it is apparent that schools will need substantial additional resources.
There appeared to be some difference in the amount of financial assistance a school received and its size classification. In the small school 42 percent of the schools reported receiving between $1 - $75 per vocational education student per year.

Forty-three percent of the small schools received no special assistance compared with 31 percent in the medium and 25 percent for the large schools. There was little variance among school sizes and the percentage receiving between $1 - $75 per vocational student per year.

A higher percentage of medium and large schools received between $75 - $149 per vocational student per year than did the small high schools. This was similarly true in considering the distribution of schools receiving between $150 - $224 per vocational education student per year.

As is evident money from state and federal sources are presumably divided among 63 percent of the schools. We must consider that not all schools offer vocational education programs, however.

**Physical Facilities**

The specialized knowledge and skills taught in most vocational education courses require that the physical facilities be developed to fit the program. To determine the adequacy and the total number of vocational education facilities available, the respondents were asked to rate each vocational facility used by the school.
One thousand (63 percent) of the vocational facilities were rated "good" by the school administrator, as shown in Table 40. The facilities having the highest rating were agriculture with 187 (67 percent) of these facilities being rated "good." Approximately 23 percent of the distributive, office and technical education facilities were rated "poor."

No observations were made on these data as to school size due to an initial error in programming the data for analysis. The computer first used by the researcher is no longer available at this University. The only way to acquire this information is to re-run the data on the new Siger 7 Computer at Kent State University which would require writing a new program. It was rationalized that the needed relationships could be identified from the regression equation model and thus eliminate the added expense.

Teacher Supply

The shortage of vocational education teachers has been especially apparent in recent years. The shortage has been due to a number of reasons, but generally, to an increase in the number of new vocational programs. To determine the difficulty faced by school administrators in hiring fully qualified (certified) vocational education teachers, the respondents were asked to react to three statements. Their reactions were used to determine the degree of difficulty

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6 "Supply and Demand for Teachers of Vocational Agriculture in the United States for the 1966-67 School Year" (Columbus, Ohio: Department of Agricultural Education, The Ohio State University, 1967), p. 16.
TABLE 40
NUMBER AND PERCENT OF VOCATIONAL-TECHNICAL EDUCATION FACILITIES
AND THEIR CORRESPONDING RATINGS OF ADEQUACY
N = 407

<table>
<thead>
<tr>
<th>Vocational Program Area</th>
<th>Schools Reporting Facilities</th>
<th>Total Number and Percent of Vocational Facilities and Their Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>Agriculture</td>
<td>213</td>
<td>44</td>
</tr>
<tr>
<td>Distributive</td>
<td>103</td>
<td>21</td>
</tr>
<tr>
<td>Health Occupations</td>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>Home Economics</td>
<td>393</td>
<td>72</td>
</tr>
<tr>
<td>Office Education</td>
<td>236</td>
<td>61</td>
</tr>
<tr>
<td>Technical</td>
<td>61</td>
<td>13</td>
</tr>
<tr>
<td>Trade and Industrial</td>
<td>143</td>
<td>29</td>
</tr>
<tr>
<td>Total</td>
<td>1060</td>
<td></td>
</tr>
<tr>
<td>Percent of Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

in hiring fully qualified vocational education staff members. As shown
in Table 41, eighty-two (18 percent) of the school administrators indicated that it was "not difficult" to hire qualified vocational education teachers.

A majority, 239 (52 percent) of the school administrators indicated that it was "somewhat difficult" to hire staff, while 133 (30 percent) stated that it was "very difficult." The problems most commonly faced are presented in Table 42.
TABLE 41

ABILITY OF SCHOOLS TO HIRE FULLY QUALIFIED (Vocationally Certified) TEACHERS AS MEASURED ON THE BASIS OF THREE STATEMENTS BY SCHOOL SIZE

N = 459

<table>
<thead>
<tr>
<th>School Size</th>
<th>Not Difficult</th>
<th>Percent</th>
<th>Somewhat Difficult</th>
<th>Percent</th>
<th>Very Difficult</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-199</td>
<td>21</td>
<td>9</td>
<td>114</td>
<td>49</td>
<td>96</td>
<td>42</td>
<td>231</td>
</tr>
<tr>
<td>200-499</td>
<td>52</td>
<td>25</td>
<td>107</td>
<td>55</td>
<td>37</td>
<td>19</td>
<td>196</td>
</tr>
<tr>
<td>1500-over</td>
<td>9</td>
<td>23</td>
<td>18</td>
<td>55</td>
<td>5</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>82</td>
<td>239</td>
<td>138</td>
<td></td>
<td></td>
<td></td>
<td>459</td>
</tr>
</tbody>
</table>

Percent of Total: 18% 52% 30% 100%

Table 41 would further suggest that there appears to be differences in the data indicating that it is more difficult to hire fully qualified (certified) vocational education teachers in the small school system than is true in either the medium or large size school. There was practically no difference in the ability of the medium and large schools' ability to hire fully qualified (certified) vocational teachers.

To determine specifically the hiring problems faced by school administrators selected, hiring characteristics were presented to them
for their reactions. As Table 42 shows, the only characteristic to which a majority of the school administrators indicated "yes" was that there was an inadequate supply of teachers. One hundred eighty-four (40 percent) of the administrators indicated that an important characteristic was the low competitive salaries received by teachers. There is some indication that the other characteristics, isolation of school, poor physical plant and poor living conditions, should not however be ignored.

No observations were made of these characteristics on the basis of school size due to an initial error in processing the data.

<table>
<thead>
<tr>
<th>Administrative Problem Area</th>
<th>Number Indicating Yes</th>
<th>Percent</th>
<th>Number Indicating No</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low comparative salaries</td>
<td>184</td>
<td>40</td>
<td>275</td>
<td>60</td>
</tr>
<tr>
<td>Poor living conditions</td>
<td>66</td>
<td>14</td>
<td>393</td>
<td>86</td>
</tr>
<tr>
<td>Isolation of school</td>
<td>118</td>
<td>26</td>
<td>341</td>
<td>74</td>
</tr>
<tr>
<td>Inadequate teacher supply</td>
<td>230</td>
<td>50</td>
<td>229</td>
<td>50</td>
</tr>
<tr>
<td>Poor physical plant</td>
<td>85</td>
<td>19</td>
<td>374</td>
<td>81</td>
</tr>
<tr>
<td>All of the above items</td>
<td>24</td>
<td>5</td>
<td>435</td>
<td>95</td>
</tr>
<tr>
<td>None of the above items</td>
<td>62</td>
<td>14</td>
<td>396</td>
<td>85</td>
</tr>
</tbody>
</table>
Chapter Summary

1. When each variable was presented in tabular form according to school size, there was generally a marked difference in the data which indicated that school size was an extremely important indicator relating to vocational program outcomes.

2. The data do not always show a positive relationship when compared with the variable school size. In most instances the variable increases in relationship to the size of school while few variables show a negative relationship; as school size increases the data quantifying the variable decreases.

3. High school vocational education programs offered in order of their availability are: Home economics, office education, agriculture, trade and industrial, distributive, technical and health occupations. These are essentially the same data reported by the Panel of Consultants for Vocational Education in their report which preceded the passage of the Vocational Education Act of 1953.

4. Relatively few vocational education programs were either added, dropped or changed during the three-year period in question. Agriculture was most frequently dropped and office education was most frequently added. Curriculum changes occurred most frequently in home economics, trade and industrial and agriculture.

5. Forty percent of the vocational education teachers reported were teaching between 20-29 hours per week. As school size increased the teachers' teaching loads increased, as did the degree of teacher specialization. Teachers from large schools more often reported
making between 0-2 vocational education course preparations than did teachers from either the medium or small high schools.

6. The smaller the school the less apt school administrators were to report counselors, specific school board policy relating to offering vocational education or the use of vocational education advisory councils.

7. A similar percentage of school administrators, regardless of school size, had earned about an equal number of college credits in vocational education. On the basis of an attitude scale over half of the administrators had a "positive" attitude toward offering vocational education in the high schools; another one-third held a "neutral" position and four percent had a "negative" rating on the attitude scale administered.

8. Graduating seniors from larger high schools most frequently completed two years of vocational education while in high school and a higher percentage of these graduates were placed in jobs for which they were trained while in high school. The small high school reported a higher percentage of graduates completing two years of vocational education while in high school than did the medium size schools— but few of their graduates were employed in jobs for which they received training in vocational education. The researcher interprets this to mean that either the type of vocational education in the small school was inappropriate or there was a lack of job opportunities locally. There was a slightly greater percentage of the graduates being employed from small schools when the type of occupational training was not considered.
CHAPTER III

VARIABLES ASSOCIATED WITH VOCATIONAL-TECHNICAL
EDUCATION AT THE HIGH SCHOOL LEVEL

This chapter presents a rationale for the statistical technique used and an analysis of the several variables believed to be associated with vocational-technical education programs at the high school level.

In review, dependent variables identified from the literature, validated by the national jury of experts, and chosen for study were:

1. Percentage of high school student body enrolled in some vocational education courses.

2. Number of hours per day the vocational teacher teaches non-vocational education subjects.

3. Number of vocational education courses available.

4. Vocational student-vocational teacher ratio.

5. Exploratory vocational education courses offered (occupational information or industrial arts courses).

6. Vocational education courses dropped last five years (since July 1, 1961).

7. Vocational education courses added last five years (since July 1, 1961).

8. Number of major vocational education curriculum changes over past three years (since July 1, 1962) within existing vocational education programs.

10. Number of different vocational course preparations made by vocational teachers per day.

11. Students who were enrolled in vocational education in high school who are employed in jobs for which they were trained one year after graduation.

12. Number of vocational education programs offered.

13. Use of advisory committees for vocational education.

14. Percentage of those students who were enrolled in vocational education that are employed one year after graduation from high school.

15. Percentage of vocational teachers on extended employment (more than nine months).

16. Number of hours per week each vocational education teacher actually teaches vocational education subjects.

17. Number of occupational need surveys school cooperated in within past three years.

18. Presence of specific school board policy relating to vocational education.

19. Knowledge and understanding of vocational education on the part of school administrators.


Independent variables identified from the literature, validated by the national jury of experts, and chosen for study were:

1. Attitude of local school administrator toward offering vocational education in the high school.
2. Amount of special (state and/or federal) funds received per vocational student per year by local school district.

3. Size of high school student body.

4. Adequacy of vocational education facilities as rated by local school administrator.

5. School's ability to hire fully qualified (vocationally certified) teachers.

Selection and Use of a Statistical Model

Selection of a method to use in interpreting collected data was made jointly by the researcher and his graduate advisor. It was also decided to process the data for automatic data processing, utilizing the IBM 1620, Model II, computer at Montana State University.

It was decided that the multiple regression technique would be the statistical model most appropriate for estimating the parameters of the model and as a means of testing the significant relationships in a statistical sense. The multiple regression technique used was similar to that outlined by Snedecor.¹

As one authority pointed out, the regression technique provides a means of providing with an associative probability statement the degree of dependency of the variable (Y) on the independent variable (X). The technique may also be used to predict (Y) from (X).²

²Ibid., p. 122.
Furthermore, the multiple regression technique implies that two or more independent variables can be used to secure additional information about the dependent variable. In addition, there is the opportunity to assess the relative contribution of the various independent variables to information about the dependent variables. The multiple regression technique also provides an opportunity to express the degree of influence of the independent variables on the dependent variables and with a specific probability statement.

It should be mentioned that the multiple correlation (R) is a statistic derived from the sampled data, when squared (R²) provides an indication of the proportion of the sum of squares of the dependent variables which is explained by the multiple regression equation. The partitioning of the sum of squares is the essence of hypothesis testing when using regression techniques.

The total sum of squares is partitioned into two parts. The first is the sum of squares related to the difference between the observation and the regression plane. This is sometimes referred to as residual sum of squares or unexplained sum of squares. The difference between the total and the unexplained is usually referred to as regression sum of squares or explained sum of squares. It is

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3 Ibid., p. 413.
4 Conference with Mr. Dave Jacobsen, Programmer for the Montana State University Computer Center, Bozeman, Montana, February 22, 1968.
generally hoped that the ratio of explained to total is large, for this has some indication that the model is explaining the total variation in the dependent variable. Since the sum of squares is always positive, values are squared and hence are positive, and the explained could not possibly exceed the total sum of squares; the ratio must lie between 0 and 1. This ratio is commonly referred to as \( R^2 \). The ratio of the regression or explained sum of squares to the residual or unexplained sum of squares are in the analysis presented here assumed to follow the F distribution with \( k \) and \( n-k \) degrees of freedom. The \( k \) refers to the number of dependent variables in the equation and \( n \) refers to the sample size.

One of the decisions involved in utilizing the multiple regression technique was whether to use a one- or two-tailed test to determine the significance of \( t \) values. It was decided to use the two-tailed test since the researcher had no reasonable assurance of the direction which the independent variables (\( X \)) would influence the dependent variables (\( Y \)). This implies that the researcher does not have sufficient, a priori, knowledge about the relationships to specify that the relationships should be positively or negatively correlated.

The selection of confidence limits to use in determining significance with the \( t \) and \( F \) values was set at the .05 level. This is the accepted level of significance for similar research in education. Barnes states that "because of the relatively rough measuring instruments we must use (in education) the 5 percent level of significance..."

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6Conference with Mr. Dave Jacobsen, Montana State University Computer Center, February 8, 1968.
is as stringent a level as practicable." He further mentioned that "the level at which the researcher chooses to set significance should be determined by his estimate of the importance or practical significance of his findings." In other words, the relative importance of accepting a false hypothesis as opposed to rejecting a true hypothesis, and the consequences of each, must enter into the process of decision-making on the part of the researcher.

The researcher decided to accept as significant all values at the .05 level. This decision was in keeping with the objectives of the study and acceptable research practices.

In establishing a level of confidence for the F-values many of the same factors utilized in selecting the level for t were considered.

The F value is a statistic indicating the collective influence of the independent variables, sometimes referred to as the full model test.

The test used to indicate the significance of the relationship involved the use of the partial (r) with the t test. The t value needed using infinite degrees of freedom was 1.96 at the .05 level.9 The F value needed for significance at the .05 level of confidence with infinite degrees of freedom was 2.21.10

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8 Ibid., p. 81.
10 Ibid., p. 306.
In applying multiple regression equations to these problems, the variables denoting quality of vocational-technical education programs were designated as such by the researcher and were also validated by the jury to be the dependent variables (Y).

A common characteristic of econometric single equation models is the problem of the explanatory (independent) variables being so highly correlated one with another that it becomes very difficult, if not impossible, to disentangle their separate influences and obtain a reasonably precise estimate of their relative effects. This condition is commonly called multicollinearity. There is no specific statistical test to check for multicollinearity but one warning signal is large standard errors of the parameter estimates. In general, the model has an acceptable degree of precision when estimating the value of the dependent variable. One tends to discount the effect of individual variable predictors (i.e., tend to accept the null hypothesis that $B = 0$), when in fact the variable is significant as a result of this non-independence among independent variables.

Interpretations of Statistical Findings

In interpreting the partial $R$ it should be remembered that the actual value of the partial $R$ will be reported. In review, the partial $R$ is the statistic used to hypothesize the extent to which one of the individual independent variables is associated with a particular dependent variable (Y). The partial $R$ is a quantitative measure of one independent variable on the dependent variable with the remaining independent variables held constant or, in a sense, ignored in the statistical model.
The t test was used to indicate the significance of the relationship involving the use of the partial R. The t values were not reported. The rationale for not reporting the t values was that, even though t values may exceed the established level of confidence, this of and by itself may have little meaning when considering each of the independent variables separately. The t value at this point tends to be misleading since several of the independent variables are significant on the basis of a t test and only one of the t values may be important (significant) in providing the information that is needed about the relationship in question. For this reason the researcher has chosen to report in tabular form the partial R values rather than the t values. Partial R values that were significant are noted. These instances will also be described in the literature where the information will provide an additional insight into the relationship in question.

In interpreting the F value it should be pointed out that this is a test for statistical significance. If the F value for a given relationship is larger than 2.21 (using the degrees of freedom assumed), the level needed for significance at the .05 level of confidence, then collectively the independent variables are significantly associated with the ratings of the dependent variables in question.

When the t value for a given variable is larger than 1.96 (using the degree of freedom assumed), the individual independent variable is significantly associated with the dependent variable in question, at the .05 level of confidence.
Since one of the values of regression analysis is predicting the values of some variables from knowledge of other variables, the regression coefficients (quantitative measures of the impact of the independent variables) were reported in Appendix B, pages 214-216. From such information it presumably would be possible for a school to predict the influence of certain independent variables on the basis of values available to their own school for dependent variables reported in this study.

It should be pointed out that of the 495 questionnaires returned 499 contained data sufficient for machine analysis.

Unfortunately, all of the questions within the questionnaires returned were not complete. Only 297 schools responded to the series of questions about the 1956 high school graduating class. The two questions specifically involved were:

Number 11: Students who were enrolled in vocational education in high school who are employed in jobs for which they were trained one year after graduation.

Number 14: Percent of students regardless of employment area who were enrolled in vocational education that are employed one year after graduation from high school.

To quantify each of these variables it was necessary to compute a ratio. Where schools reported no, or only partial, enrollment figures, the computer could only compute the ratio when the denominator was a smaller number than the numerator. It was thus necessary to pre-sort the cards on this basis, eliminating any infinite ratio figures which would have been computed.
Unrealistic ratios would have greatly distorted the data quantifying these variables. For this reason the multiple regression analysis was run two times. The first regression analysis utilized 38% partially complete questionnaires; however, due to the incomplete data reported on dependent variables 11 and 14, the program entered or plugged these specific variables. These variables were concerned with graduate follow-up data.

To ascertain relationships about all dependent variables, including indices 11 and 14, a multiple regression analysis was run on the basis of the 183 questionnaires reporting complete data. As will be noted, the two runs did significantly change the relationships of the variables in question. Where this resulted both sets of data were reported.

Students enrolled in vocational education

Table 43 points out that, based on the analysis of 183 respondents, none of the independent variables independently were associated with the percent of high school student body enrolled in a vocational education course. It should be noted that the value of $R^2$ (.04) indicated that only 4 percent of the variability was accounted for by the dependent variable.

On the basis of 38% respondents the percent of high school student body enrolled in some vocational education courses was significantly associated with, at the .05 level using the t test by independent variables, school size, and by the adequacy of the vocational education facilities. Since the t value of the independent


<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>R</th>
<th>R</th>
<th>R</th>
<th>R</th>
<th>R</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Attitude of school administrator</td>
<td>-.07</td>
<td>-.03</td>
<td>.62</td>
<td>-.04</td>
<td>-.07</td>
<td>-.002</td>
</tr>
<tr>
<td>2. Amount of special funds</td>
<td>.12</td>
<td>.007</td>
<td>.12</td>
<td>.25</td>
<td>.05</td>
<td>.09</td>
</tr>
<tr>
<td>3. Size of student body</td>
<td>-.14</td>
<td>-.19</td>
<td>.21</td>
<td>.42</td>
<td>.43</td>
<td>.53</td>
</tr>
<tr>
<td>4. Administrator's rating of facilities</td>
<td>.09</td>
<td>.10</td>
<td>.10</td>
<td>.13</td>
<td>.11</td>
<td>.10</td>
</tr>
<tr>
<td>5. School's ability to hire teachers</td>
<td>.01</td>
<td>.04</td>
<td>.04</td>
<td>.09</td>
<td>.05</td>
<td>.09</td>
</tr>
</tbody>
</table>

\[ b \text{Significant at the .05 level of confidence.} \]
variable is significant, and the sign is negative, this indicates that the dependent and independent variables are inversely related.

As school enrollment increases one would expect to note a decrease in the percent of high school student body enrolled in vocational education courses. Conversely, the t value of independent variable, adequacy of vocational education facilities, is positive and significant, inferring that as the adequacy of vocational education facilities increases the percent of high school student body enrolled in some vocational education courses would likewise increase.

In this analysis \((R^2)\) indicated that 5 percent of the total variability is accounted for when considering the independent variables. This was significant at the .05 confidence level using the F test. This infers that collectively the independent variables are significantly associated with the percent of high school students enrolled in some vocational education courses.

Teachings vocational education

There is an indication in Table 43 that the number of hours per week each vocational education teacher actually teaches vocational education subjects is significantly associated at the .05 level by only one independent variable: Size of high school student body. The relationship is positive, indicating that as there is an increase in school size there would also tend to be an increase in this variable.

It will be noted from the \(R^2\) value in Table 43 that collectively the independent variables were associated to a significant
degree with the number of hours each week that each vocational education teacher actually teaches vocational education subjects. Only 3 percent of the variability is accounted for by the independent variables included in the regression equation.

**Vocational education courses available**

The number of vocational education courses available is associated at the .05 level of significance by both the adequacy of vocational education facilities as rated by the local school administrators and by the size of high school student body. As the adequacy of facilities and the size of the high school student body increase, you would expect an increase in the body of vocational education courses available.

Collectively the independent variables were associated to a significant degree with the number of vocational education courses available. This should be noted from the $R$ value of 27.89, when a value of only 2.21 is needed for significance at the .05 level of confidence. The two primary contributors to this relationship are school size and the adequacy of the vocational education facilities as rated by the local school administrators.

The $R^2$ value indicates that 44 percent of the variability is accounted for by the independent variables included in the regression equation.

The attitude of local school administrators about offering vocational education programs in the high school was not correlated
with the number of vocational education courses available in the high school.

As a measure of the availability of vocational education, a relationship between the five independent variables and the vocational student-vocational teacher ratio was sought. As is evident in Table 43, when considering this ratio, size of high school student body is the important independent variable in this relationship as indicated by its t test value being significant at the .05 level. Since the t value of the independent variable is significant and the sign is negative, this would indicate that the dependent and independent variables are dependent and that as the size of high school student body increases one would also expect a narrower vocational student-vocational teacher ratio.

Collectively the independent variables are associated to a significant degree with the number of vocational education courses available. As one can see by viewing the partial R values, most of the contribution comes from the variable size of high school student body. The F value (9.45) is significant at the .05 level of confidence. The value of $R^2$ indicates, however, that 21 percent of the total variation is accounted for by the independent variables which were included in the regression equation.

**Pre-vocational courses offered**

The independent variable school size is associated with the number of exploratory vocational education courses offered in the high school. Since the t value was positive and significant, it would
tend to indicate that as school size increases the number of exploratory vocational education courses offered in the high school would likewise tend to increase.

The F value of 16.15 reported in Table 43 reveals that the aggregate independent variables are significantly associated with the number of exploratory vocational education courses offered. In this relationship the key contributing variable was size of high school student body. The $R^2$ value (.31) indicates that 31 percent of the variability is accounted for by the independent variables in the regression equation.

Exploratory vocational education courses for use in this equation were determined to be the sum total of the industrial arts and pre-vocational education courses offered.

Table 43 shows an analysis of the relationships between all five independent variables and five of the twenty dependent variables selected for study.

Table 44 shows the association existing between the five independent variables and the number of vocational education courses dropped in the last five years. The independent variable, attitude of local school administrator toward offering vocational education in the high school, ranked high. However, the corresponding t value of the independent variable was not significant at the .05 level of confidence. It should be inferred that the independent variables are not
<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>R</th>
<th>R</th>
<th>R</th>
<th>R</th>
<th>R</th>
<th>R</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Attitude of school</td>
<td>.03</td>
<td>.07</td>
<td>.04</td>
<td>-.13</td>
<td>-.13</td>
<td>-.03</td>
<td></td>
</tr>
<tr>
<td>administrator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Amount of special funds</td>
<td>-.006</td>
<td>.26&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.22&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.04</td>
<td>.11</td>
<td>.04</td>
<td></td>
</tr>
<tr>
<td>3. Size of student body</td>
<td>-.03</td>
<td>.27&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.22&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.21&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.03</td>
<td>-.12&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>4. Administrator's rating of</td>
<td>-.01</td>
<td>.002</td>
<td>-.01</td>
<td>-.13&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.15&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.07</td>
<td></td>
</tr>
<tr>
<td>facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. School's ability to hire</td>
<td>-.03</td>
<td>.15&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.05</td>
<td>-.04</td>
<td>-.07</td>
<td>-.06</td>
<td></td>
</tr>
<tr>
<td>teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.008</td>
<td>.17</td>
<td>.19</td>
<td>.11</td>
<td>.05</td>
<td>.04</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>.34</td>
<td>7.35&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.05&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.22&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.57</td>
<td>2.84&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>183</td>
<td>183</td>
<td>183</td>
<td>183</td>
<td>183</td>
<td>357</td>
<td></td>
</tr>
</tbody>
</table>
associated with the number of vocational education courses dropped during the last five years.

It will be noted \( R^2 \) that the independent variables included in the regression formula accounted for less than one percent of the total variation.

Collectively, the independent variables included in the regression equation are not associated with, at the .05 level, the number of vocational education courses dropped during the last five years.

Vocational education courses added

Table 44 further notes that the partial R value of three of the five independent variables (2, 3, 5) are associated with the dependent variable, the number of vocational education courses added the last five years. Independent variables, the amount of special (state and/or federal) funds received per vocational student per year by local school district, size of high school student body, and adequacy of vocational education facilities as rated by the local school administrator, all had t test values sufficient to be significant at the .05 level of confidence. In essence this means that as special (state and/or federal) funds received per vocational student per year by local school district, size of high school student body, and adequacy of vocational education facilities as rated by the local school administrator independently increase, the number of vocational education courses added the last five years likewise would tend to increase.
The F value in Table 44 indicates that collectively the independent variables are associated at the .05 level with the number of vocational education courses added during the last five years; the primary contributors were these variables just mentioned.

Table 44 indicates the partial R values of two independent variables, amount of special (state and/or federal) funds received per vocational student per year by local school district, and size of high school student body, are associated with the dependent variable, number of major vocational education curriculum changes over the past three years within existing vocational education programs. The corresponding t test values for these partial R's were significant at the .05 level of confidence. Since both values were positive we would deduce that as there was an independent increase in the amount of special funds received by the local school district and as high school size increased, there would be a corresponding increase in the number of major vocational education curriculum changes over the past three years within existing vocational education programs.

The R^2 value (.10) indicated that the independent variables included in the regression formula accounted for 10 percent of the total variability. The F value in Table 44 further indicates that the collective independent variables are significantly associated with the number of major vocational education curriculum changes over the past three years within existing vocational education programs. Variables
making the primary contributions were amount of special funds and size of high school.

Counselor-student ratio

It was not possible to derive the student-counselor ratio using the computer because of the 0 values reported by schools with no counselors. For this reason a counselor-student ratio was utilized, thus facilitating computer computation.

Table 44 indicates that the partial R values of two independent variables, size of high school student body and adequacy of the vocational education facilities as rated by local school administrators, are significantly associated with the counselor-student ratio. Since the t values were negative and significant, this would tend to indicate that as the size of high school student body increases and independently as the adequacy of the vocational education facilities as rated by the local school administrators increases, there would tend to be a decrease in the counselor-student ratio.

The F value in Table 44 indicates that collectively the independent variables are associated to a significant degree with the counselor-student ratio. Only 11 percent of the variability is accounted for by the independent variables included in the regression equation.

Course preparations made by vocational teachers

In considering the independent variables that were associated with the number of different vocational course preparations made by
vocational teachers per day, only one was significant at the .05 level of confidence. This was the adequacy of vocational education facilities as rated by the school administrator. This indicates that the dependent and independent variables are directly related and that one would infer that as the ratings given vocational education facilities by local school administrators increase, there would tend to be an increase in the different vocational course preparations made by vocational teachers each day.

The F value indicates that collectively the independent variables were not significantly associated with the dependent variables in question.

When dependent variables numbers 11 and 14 were not considered in the regression model, resulting in a larger total $R^2 (367)$, it should be noted that the $R$ value of the independent variable, size of high school student body, was significant at the .05 level of confidence. Thus size is significant when associated with the number of different vocational course preparations made by vocational teachers per day. Since the $t$ value for this relationship was negative and significant, one would infer that as the size of the high school student body increases there would be a decrease in the number of different vocational course preparations made by vocational teachers each day.

The $R^2$ value of Table 44 utilizing the larger $R$ has a value that is significant using the $F$ test at the .05 level of confidence.

Thus collectively the independent variables are associated with the number of different course preparations made by vocational teachers.
per day. Only 4 percent of the variability accounted for by the independent variables was included in the regression equation. The primary contributing variable to this relationship is school size.

Table 44 presents an analysis of the relationships between the five independent variables and five of the twenty dependent variables selected for study.

Employability of vocational education graduates

Table 45 shows that size of high school student body was the variable significantly associated with the percent of students who were employed in jobs for which they were trained one year after graduation. Since the t value was positive and significant, one would deduce that as the size of the high school student body increases the percentage of students who were employed in jobs for which they were trained one year after graduation would tend to increase.

It should be noted that the $R^2$ value (.36) shows that 36 percent of the variability was accounted for by independent variables included in the regression equation. The F value likewise indicated that collectively the independent variables were significantly associated with the number of students who were enrolled in vocational education in high school and who were employed in jobs for which they were trained one year after graduation. The primary contributor to this significant relationship was school size.
### TABLE 45

SELECTED VARIABLES AND THEIR ASSOCIATION WITH VOCATIONAL EDUCATION PROGRAM CUTOFFS

<table>
<thead>
<tr>
<th>Employability of High School Vocational Education Graduates in Jobs for Which Trained</th>
<th>Employability of High School Vocational Education Graduates Regardless of Job</th>
<th>Independent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Vocational Education Programs Offered</td>
<td>Use of Vocational Education Advisory Committees</td>
<td>Percent of Teachers with Extended Employment</td>
</tr>
<tr>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
</tbody>
</table>

1. **Attitude of school administrator**  
   - R: 0.06  
   - R: 0.11  
   - R: -0.15  
   - R: 0.02  
   - R: 0.01

2. **Amount of special funds**  
   - R: 0.09  
   - R: 0.15  
   - R: -0.12  
   - R: -0.03  
   - R: 0.23

3. **Size of student body**  
   - R: 0.56  
   - R: 0.49  
   - R: -0.17  
   - R: -0.03  
   - R: 0.01

4. **Administrator's rating of facilities**  
   - R: 0.03  
   - R: 0.03  
   - R: -0.15  
   - R: 0.07  
   - R: 0.03

5. **School's ability to hire teachers**  
   - R: 0.11  
   - R: 0.14  
   - R: -0.07  
   - R: 0.06  
   - R: 0.21

<table>
<thead>
<tr>
<th>R²</th>
<th>R²</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.26</td>
<td>0.25</td>
<td>0.11</td>
</tr>
<tr>
<td>0.11</td>
<td>0.01</td>
<td>0.11</td>
</tr>
<tr>
<td>19.78</td>
<td>11.92</td>
<td>4.39</td>
</tr>
<tr>
<td>183</td>
<td>183</td>
<td>183</td>
</tr>
</tbody>
</table>

bSignificant at the .05 level of confidence.
Vocational education programs offered

The number of vocational education programs offered was associated primarily with two independent variables, amount of special funds received by the local school district, and the size of high school student body. Both of the partial R values were significant at the .05 level of confidence. In essence this means that as schools received increased special funds and independently as there was an increase in the size of student body the number of vocational education programs offered increased.

The F test value indicates that collectively the independent variables were significantly associated with the number of vocational education programs offered. The significant association was derived primarily from the contributions of the two independent variables mentioned above.

Use of advisory committees

The practice of using advisory committees for vocational education was significantly associated with the attitude of local school administrators toward offering vocational education in the high school, size of high school student body, and adequacy of the vocational education facilities as rated by the local school administrator. The t test values for these three independent variables were negative and significant, inferring that as the attitude scores of local school administrators toward offering vocational education in the high school, size of high school student body, and adequacy scores of the vocational
education facilities as rated by local school administrators independently increased, there would tend to be a decrease in the use of vocational education advisory committees.

Collectively, all five independent variables were associated with the use of advisory committees for vocational education. The value of $F$ indicates that this influence was significant at the .05 level. The $R^2$ value (.11) suggests that 11 percent of the variability was accounted for in the independent variables in the equation.

Employability of high school graduates

Table 45 indicates that the partial $R$ values of the independent variables are not on the basis of a $t$ test significantly associated with the percent of students who were enrolled in vocational education that are employed one year after graduation from high school.

The $R$ values for attitude of local school administrators, adequacy of vocational education facilities as rated by the local school administrator, and school ability to hire fully qualified (vocationally certified) teachers are positive, and thus indicate that as their values independently increase there will be an increase in the percent of those students who were enrolled in vocational education who are employed one year after graduation from high school. However, since the relationship is not significant, no statistical inference can be made.

The $F$ value indicated that collectively the independent variables are not associated to a significant degree with the dependent variable in question.
Table 45 shows that two of the partial R values of the independent variables, amount of special funds received by local school district and school ability to hire fully qualified teachers, are primarily associated with the percentage of vocational education teachers on extended employment. The partial R values for independent variables 2 (.23) and 5 (.21) have corresponding t test values which are significant at the .05 level. Thus, as the amount of special funds received by the local school district increases and independently as the school's ability to hire fully qualified teachers increases, there would tend to be an increase in the percentage of vocational education teachers on extended employment.

It should be noted that the F value indicates that the independent variables when considered as an aggregate are significantly associated with the dependent variable at the .05 level. It would appear, based on this finding, that increased inputs to raise the levels of the five independent variables would result in an increase in the percentage of vocational education teachers on extended employment. The more immediate returns would perhaps come from increasing inputs on the two significant independent variables previously mentioned.
Vocational teachers’ non-vocational education teaching load

Table 46 shows that, when using the multiple regression model with an N of 183, none of the independent variables were associated independently or collectively with the number of hours per day the vocational teacher teaches other than vocational education subjects at the .05 level of confidence.

When considering these same variables from using the regression model with an incomplete N of 337, the school’s ability to hire fully qualified teachers had a negative partial R value sufficiently large that when considered on the basis of a t test it was significant at the .05 level of confidence. This negative and significant t value infers that as the school’s ability to hire fully qualified (vocationally certified) teachers increases, one would tend to expect a decrease in the vocational teacher’s non-vocational education teaching load.

It should be noted from the R² value (.03) that only 3 percent of the total variation that is accounted for by the independent variables is included in the regression equation. The F value (2.51) indicates that collectively the independent variables are associated with the number of hours per day the vocational teacher teaches other than vocational education subjects. The school’s hiring ability appears to be the primary contributing variable.

School’s participation in occupational need studies

The number of occupational need surveys in which the schools cooperated in the specified three-year period was significantly
<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Hours/Day</th>
<th>Vocational Teachers</th>
<th>Teach Non-Vocational Education Subjects</th>
<th>Occupational School in Which Subjects Cooperated</th>
<th>Presence of Specific School Board Policy</th>
<th>Administrator's Knowledge of Vocational Education</th>
<th>Stability of Vocational Education Teaching Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Attitude of school administrator</td>
<td>0.12</td>
<td>0.02</td>
<td>0.10</td>
<td>-0.13</td>
<td>0.01</td>
<td>0.008</td>
<td></td>
</tr>
<tr>
<td>2. Amount of special funds</td>
<td>-0.07</td>
<td>-0.05</td>
<td>0.17&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.16&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.20&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>3. Size of student body</td>
<td>-0.09</td>
<td>-0.08</td>
<td>0.31&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.002</td>
<td>0.05</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>4. Administrator's rating of facilities</td>
<td>-0.06</td>
<td>0.03</td>
<td>0.03</td>
<td>-0.18&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.25&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>5. School's ability to hire teachers</td>
<td>-0.10</td>
<td>-0.14&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.19</td>
<td>-0.02</td>
<td>0.004</td>
<td>0.07</td>
<td></td>
</tr>
</tbody>
</table>

R<sup>2</sup> | 0.03 | 0.03 | 0.16 | 0.08 | 0.10 | 0.01 |

F | 1.55 | 2.51<sup>b</sup> | 6.82<sup>b</sup> | 3.15<sup>b</sup> | 3.91<sup>b</sup> | 0.25 |

N | 183 | 337 | 183 | 183 | 183 | 183 |

<sup>b</sup>Significant at the .05 level of confidence
associated with two independent variables, the amount of special (state and/or federal) funds received by the local school district, and the size of the high school student body. The partial R values when considered on the basis of t tests were significant at the .05 level. It should be deduced that, as the amount of special funds received by the local school district increases and independently as the size of the high school student body increases, the number of occupational need surveys in which the school cooperated in the past three years increases.

The R^2 value (.16) indicated that 16 percent of the variability was accounted for by the independent variables. The F value (6.61) is significant at the .05 level. The variables making the greatest contributions were special funds received and school size.

**Presence of specific school board policy**

The presence of specific school board policy relating to vocational education, as indicated by the following partial R values, was associated with the amount of special (state and/or federal) funds received by the local school district and by the adequacy of vocational education facilities as rated by the local school administrator. These values were independently associated when using a t test at the .05 level of confidence. Since the t values were negative and significant, it should be inferred that as the amount of special funds to local districts increases and independently as the adequacy of vocational education facilities as rated by the local school
The presence of specific school board policy relating to vocational education would tend to decrease.

Collectively, all five independent variables were associated with the presence of specific school board policy relating to vocational education. The $R^2$ value (0.03) suggests that 3 percent of the variability in the independent variables was accounted for and the $F$ test value indicates that this association was significant at the 0.05 level.

Administrators' knowledge of vocational education

Table 43 indicates that the knowledge and understanding of vocational education on the part of school administrators was significantly associated with the amount of special (state and/or federal) funds received by the local school district, and by the adequacy of vocational education facilities as rated by the local school administrator. The partial $R$ value of these variables when considered on the basis of a $t$ test were significant at the 0.05 level of confidence. One would expect to note an increase in the knowledge and understanding about vocational education on the part of school administrators as there were increases in the amount of special (state and/or federal) funds received per vocational student per year by the local school district, and independently as there were additional inputs to increase the adequacy of vocational education facilities as rated by the local school administrator.
The $R^2$ value (.10) indicates that 10 percent of the variability was accounted for collectively by the independent variables. The $F$ value (3.91) was significant at the .05 level of confidence with the primary contributions coming from the two variables, special funds provided and adequacy of facilities.

**Stability of vocational education teaching staff**

The stability of the vocational education teaching staff was not associated either independently or accumulatively by the independent variables. Neither the t test values nor $F$ test values were significant at the .05 level of confidence.

Table 46 presents an analysis of the relationships existing between the five independent variables and five of the twenty dependent variables included in this study.

**Summary**

This chapter has presented an analysis of certain variables which the literature and a national jury of experts believed were associated with both the availability and quality of vocational education programs at the high school level. The quality of dependent variables were analyzed using a multiple regression model with the availability or independent variables to determine whether the five independent variables were significantly associated with the twenty dependent variables in question.
In seeking a degree of association in which one could place some confidence the t and F tests were applied to the data. The .05 value was established as the confidence level throughout this study.

As can be noted from Summary Table 167, the most important findings were: The independent variable most frequently associated with the dependent (quality) variables in question was size of high school student body. Thus school size is a major factor in determining quality of vocational education offerings. Secondly, the next most potent variables were the amount of special (state and/or federal) funds received per vocational student per year by the local school district and the adequacy of vocational education facilities as rated by the local school administrator.

The two independent (availability) variables which were not commonly associated with the dependent (quality) variables were:

The attitude of local school administrators toward offering vocational education in the high school and the school's ability to hire fully qualified (vocationally certified) teachers.

Collectively, the five independent variables included in the regression equation were significantly associated with seventeen of the twenty dependent variables on the basis of an F test at the .05 confidence level.

This analysis clearly suggests that size of the high school student body is the most potent variable with which one must contend and which is most commonly associated with the quality of vocational-technical education offerings at the high school level. Secondly, two variables are of equal importance. They are: The amount of
### TABLE 47

**A SUMMARY OF THE INDEPENDENT VARIABLES SIGNIFICANTLY ASSOCIATED WITH DEPENDENT VARIABLES**

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Independent Variables (Significant at the .05 level)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Percentage of high school student body enrolled in some vocational education courses</td>
<td>((-x)) (x) (x) (x) (x)</td>
</tr>
<tr>
<td>2. Numbers of hours/week each vocational education teacher actually teaches vocational education courses</td>
<td>(x) (x) (x) (x) (x)</td>
</tr>
<tr>
<td>3. Number of vocational education courses available</td>
<td>(x) (x) (x) (x) (x)</td>
</tr>
<tr>
<td>4. Vocational student-vocational teacher ratio</td>
<td>(x) (x) (x) (x) (x)</td>
</tr>
<tr>
<td>5. Exploratory vocational education courses offered (occupational information or industrial arts)</td>
<td>(x) (x) (x) (x) (x)</td>
</tr>
<tr>
<td>6. Vocational education courses dropped last 5 years (since July 1, 1951)</td>
<td>(-) (-) (-) (-) (-) (-)</td>
</tr>
<tr>
<td>7. Vocational education courses added last 5 years (since July 1, 1951)</td>
<td>(x) (x) (x) (x) (x)</td>
</tr>
<tr>
<td>8. Number of major vocational education curriculum changes over past 3 years (since July 1, 1953) within existing vocational education programs</td>
<td>(x) (x) (x) (x) (x)</td>
</tr>
<tr>
<td>Dependent Variables</td>
<td>Independent Variables (Significant at the .05 level)</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>9. Counselor-student ratio</td>
<td>( x_1 ) (-x) (-x) (x)</td>
</tr>
<tr>
<td>10. Number of different vocational course preparations made by vocational teachers per day</td>
<td>(-x)(387) (x)(183) (x)(387)</td>
</tr>
<tr>
<td>11. Students who were enrolled in vocational education in high school who are employed in jobs for which they were trained one year after graduation</td>
<td>(-x) (x) (x)</td>
</tr>
<tr>
<td>12. Number of vocational education programs offered</td>
<td>(x) (x) (x)</td>
</tr>
<tr>
<td>13. Use of advisory committees for vocational education</td>
<td>(-x) (-x) (-x) (x)</td>
</tr>
<tr>
<td>14. Percentage of those students who were enrolled in vocational education that are employed one year after graduation</td>
<td>(-) (-) (-) (-) (-) (-) (-) (-)</td>
</tr>
<tr>
<td>15. Percentage of vocational teachers on extended employment</td>
<td>(x) (x) (x)</td>
</tr>
</tbody>
</table>
| 16. Number of hours/week vocational teacher teaches non-vocational education subjects | \(-\) \(-\) \(-\) \(-\) \(-\) \(-\) \(-\) \(-\) \(-\) \(-\) \(x\)(387) \(x\)
<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Independent Variables (Significant at the .05 level)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17. Number of occupational need surveys school cooperated in within past 3 years</td>
<td>$x_1$  $x_2$  $x_3$  $x_4$  $x_5$  $F$</td>
</tr>
<tr>
<td>18. Presence of specific school board policy relating to vocational education</td>
<td>$(-x)$  $(-x)$  $x$</td>
</tr>
<tr>
<td>19. Knowledge and understanding of vocational education on the part of school administrators</td>
<td>$x$  $x$  $x$</td>
</tr>
<tr>
<td>20. Stability of vocational education teaching staff</td>
<td>$-$  $-$  $-$  $-$  $-$  $-$</td>
</tr>
</tbody>
</table>

| Total significant independent variables when $N=183$     | 1  7  12  7  2  17                                      |
| Total significant independent variables when $N=297$     | 1  7  13  7  3  17                                      |

$x$ indicates those relationships that are significant and positive.

$(-x)$ " " " " " " and negative.
special (state and/or federal) funds received per vocational student per year by the local school district, and the adequacy of vocational education facilities as rated by the local school administrator.

Seemingly, as a result of identifying these potent variables, responsible change to effect the variables in question could be made on the basis of a logical priority.

With limited resources educational planners should give attention to maximizing educational returns. This assessment of variables should provide the basis for a more orderly allocation of inputs to vocational education, whether these inputs be financial, managerial, or administrative.
CHAPTER IV

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This study is intended to contribute to a clearer understanding of the variables and situational factors which relate to the availability and quality of vocational education in various sized high schools.

Specific Objectives of the Study

Specific objectives to give direction to the study were:

1. To identify those variables which are important indicators of vocational program outcomes.

2. To determine the relationships of selected qualitative factors to the availability of vocational education in various high schools.

Rationale for the Study

The need for the study was determined by an analysis of the following conditions:

1. An estimated seven million young people will enter the labor force in the next 10 years (1965-1975) without benefit of high school graduation unless immediate steps are taken to provide programs designed to meet their needs, interests and motivations.

2. Total job preparations requires a liberal segment of general education together with training and education in skills.
technical education and related areas which together will prepare individuals for a successful career and for a worthwhile contribution to society.

3. The demand for excellence in education has aroused much concern about the adequacy of educational opportunities for rural youth. The limited educational opportunities in rural America are responsible in a large part for the social problems which result from migration of these unskilled youth into urban areas where they are unable to find employment at any but the lowest level jobs, if at all.

4. Vocational education has not been made available to adequate numbers of high school youth in urban centers and only limited offerings are available to youth in rural areas.

5. There did not exist in any one place or research an extensive study of the variables and situational factors which relate to the availability and quality of vocational education in various sized high schools.

Method of Investigation

The study design involved the use of several research techniques; namely, the use of a jury of experts for validation of study variables, the use of a questionnaire to collect data from schools and processing the variables with the use of a multiple regression model to seek statistical relationships. The design was particularly appropriate to this study as it utilized several techniques while striving to explain the relationships and findings which were associated with high school vocational education programs.
Following an extensive review of the literature on high school curriculum, with special emphasis on vocational education program offerings in the small high schools, the researcher developed a tentative list of variables which were commonly cited as relating to the availability and quality of vocational-technical education. These variables were submitted to a national jury of experts for refinement and ranking. The variables were revised and resubmitted to the same jury for final ranking. Using the variables which were rated by the jury, the researcher developed a questionnaire to collect data.

The researcher, assisted by his graduate committee and the staff of the Newton State University Computer Center, refined the tentative vocational education questionnaire. The tentative vocational education questionnaire was then submitted to two groups of educators for review.

The refined questionnaire was mailed to public high school administrators in the states of Colorado, Idaho, Montana, North Dakota, Nevada, Oregon, South Dakota, Utah, Washington, and Wyoming. These states were selected generally on the basis of population per square mile to assure an adequate representation of small schools. Of the 850 questionnaires sent in the selected states, 495 or 58 percent were returned.

Each questionnaire was analyzed by the researcher for accuracy and completeness, resulting in 459 usable questionnaires for machine analysis and 487 questionnaires where data were hand sorted.

The data received from the 10 states were analyzed using the multiple regression technique.
Variables Identified as Indicators in the Process of Studying Vocational Education

Variables identified from the literature ranked by the jury of experts and tested in this study do account for a reasonably high percentage of the variability and therefore are potent indicators of the quality of vocational education programs in various sized high schools. Following are the variables:

1. Percentage of high school student body enrolled in some vocational education courses.
2. Number of hours per day the vocational teacher teaches other than vocational education subjects.
3. Number of vocational education courses available.
4. Vocational student-vocational teacher ratio.
5. Exploratory vocational education courses offered (occupational information or industrial arts courses).
6. Vocational education courses dropped last five years (since July 1, 1951).
7. Vocational education courses added last five years (since July 1, 1961).
8. Number of major vocational education curricula changes over past three years (since July 1, 1963) within existing vocational education programs.
10. Number of different vocational course preparations made by vocational teachers per day.
11. Students who were enrolled in vocational education in high school who are employed in jobs for which they were trained one year after graduation.

12. Number of vocational education programs offered.

13. Use of advisory committees for vocational education.

14. Percentage of those students who were enrolled in vocational education that are employed one year after graduation from high school.

15. Percentage of vocational teachers on extended employment (more than nine months).

16. Number of hours per week each vocational education teacher actually teaches vocational education subjects.

17. Number of occupational need surveys school cooperated in within past three years.

18. Presence of specific school board policy relating to vocational education.

19. Knowledge and understanding of vocational education on the part of school administrators.


Variables identified from the literature as potential indicators of vocational education program availability as ranked by a national jury of experts are:

1. Attitude of local school administrator towards offering vocational education in the high school.

2. Amount of special (state and/or Federal) funds received per vocational student per year by local school district.
3. Size of high school student body.

4. Adequacy of vocational education facilities as rated by local school administrator.

5. School's ability to hire fully qualified (vocationally certified) teachers.

**Major Findings**

Following are the major findings derived from the analysis of data from this study.

**Variables Associated with Vocational Education Programs**

The most important finding revealed was that the independent variable, size of high school student body, was significantly associated with 17 of the 20 dependent variables in question.

Secondly, the amount of special (state and/or Federal) funds received per vocational student per year by the local school district and the adequacy of vocational education facilities as rated by the local school administrator were second and third in order of their significant association with the dependent variables in question.

The attitude of local school administrators toward offering vocational education in the high school was significantly associated with one of the 20 dependent variables. The school's ability to hire fully qualified (vocationally certified) teachers was significantly related with 3 of the 20 dependent variables included in the study.
Collectively, the five independent variables included in the regression equation were significantly related with 17 of the 20 dependent variables in this study. The range of variability accounted for in the regression equation using the five independent variables was from 3 to 44 percent when examining the 17 significant relationships.

In the states sampled a total of 3% percent of the high school students were enrolled in a vocational education program.

About one-third of all schools receive no special financial assistance for conducting programs of vocational education. Medium and large schools are more apt to receive larger amounts of special vocational education funds on a vocational student per year basis than are small schools.

High school vocational education facilities were rated "good" by 83 percent of all school administrators.

Hiring fully qualified (vocationally certified) teachers was reported "somewhat" to "very" difficult by 82 percent of the school administrators. Reasons given were inadequate numbers of teachers and low competitive salaries.

Forty percent of all vocational teachers have a teaching load between 20-29 hours of class per week. As school size increases the average teaching load increases in hours per week.

Approximately one-fourth of all vocational teachers teach between 0-2 non-vocational education subjects.

Seventy-six percent of all schools and slightly over 50 percent of the small schools have full-time counselors.
Of the high school graduating seniors (1966) only 47 percent were available for full-time employment, due to the armed services and students continuing their educational programs at the post-secondary level.

Of the high school graduates available for employment, 64 percent were employed. Thirty-six percent of all graduates completed two or more years of vocational education while in high school and of these 33 percent were employed in jobs for which they were trained. An additional 39 percent of those available for employment were reported employed when we disregarded the stipulation of former vocational education training.

Less than one-third of all schools were using advisory councils and slightly over one-third of the schools reported specific policies relating to offering vocational-technical education.

A majority of the school administrators rate their own knowledge about vocational-technical education as "fair," but a majority have a positive attitude toward offering vocational education in the high school.

Over one-third of all school administrators reported having earned college credits in vocational education.

Of the total number of high school students enrolled in vocational-technical education only 1.5 percent attend area vocational-technical schools.
Small High Schools

Fifty percent of the high schools were classified as small (0 - 199 students). They enrolled 12 percent of the total students. Forty percent of the students in small high schools were enrolled in vocational education. Only nine percent of all students attending area vocational schools were from the small school. The small high school most frequently reported dropping vocational education courses; their teachers had lighter vocational education teaching loads, were less specialized in terms of number of vocational education preparations made per day; they had fewer counselors, were involved in fewer occupational needs studies, had a smaller percent of their graduating seniors upon graduation employed in jobs for which they received vocational education while in high school. However, approximately the same percentage of graduates were employed, as compared with the larger schools, if employment in jobs for which previous vocational education training was ignored.

The use of advisory committees was less evident in the small school, as was the presence of specific vocational education policies. The small school administrator's self-rating about his knowledge of vocational education was somewhat higher than that of all administrators, but he had earned about the same number of college credits in vocational education as all other administrators. A higher percentage of small schools received no special funds, and their reports
indicated that it is more difficult to hire fully qualified vocational education teachers than in larger schools.

Medium Size High Schools

Forty-two percent of the high schools studied were in the medium size category (200 - 1499 students) and enrolled 55 percent of all students reported. Eighteen percent of these students were enrolled in vocational education. They employed the largest number of full-time equivalent vocational education teachers. Local school administrators reported that of all students attending area schools to acquire vocational-technical education, 63 percent were from medium size schools.

A smaller percent of the medium size school dropped vocational courses compared to the smaller schools; further, they added a higher percent of vocational courses than either the small or large high schools.

Teachers from these schools were more frequently on extended employment (over nine months), they taught more hours per day than teachers from small schools and had about the same teaching load as teachers from large schools. They taught fewer non-vocational education classes and were more specialized since they made fewer different course preparations each day than did teachers from either the small or large schools.

Ninety-seven percent of the medium size high schools reported counselors and 89 percent of the medium size schools had been involved in occupational needs studies.
Only 8 percent of all medium size high school graduates were employed in jobs for which they were trained while in high school; however, an additional 18 percent were employed in other jobs. Advisory councils and specific school board policy relating to offering vocational education were not in general use by medium size schools. Seventy-two percent of the school administrators rated their own knowledge about vocational education as "good" or "fair"; 35 percent had earned college credits in vocational education. These two factors may relate to the fact that 68 percent of the administrators' attitude responses were "positive," 30 percent were "neutral," and only 2 percent responded negatively.

Sixty-nine percent of the medium size schools received special funds for vocational education, compared with 57 percent in the small and 75 percent in the large high schools.

Large High Schools

High schools with 1500 and over enrollment represented seven percent of the schools sampled, enrolling 33 percent of the students, of which 23 percent were enrolled in a vocational education program. Twenty-eight percent of all students attending area vocational schools were from large schools.

Large schools dropped or added fewer vocational education courses. Comparatively speaking, vocational teachers from large high schools were less apt to be employed more than nine months, have heavier teaching loads, generally taught fewer non-vocational courses than teachers from medium schools and were more specialised in that
they made fewer different vocational course preparations each day than did teachers in small or medium size schools.

All large schools reported having counselors and 64 percent of these schools had been involved in occupational needs studies.

A greater number of graduates from large schools were employed in jobs for which they were trained while in high school, but fewer graduates were employed in jobs not related to the occupation for which they had been trained, compared with small and medium size high schools.

School administrators in large schools more frequently used specific policy for administering vocational education programs; rated their own knowledge about vocational education as "fair" (43 percent) and "poor" (40 percent). However, they had a higher percentage of "positive" attitude scores than did administrators from small or medium size schools.

Seventy-five percent of the large high schools received special vocational-technical education funds.

Conclusions:

The following conclusions were drawn as a result of the data presented in this study:

1. The 20 dependent and five independent variables are important indicators of vocational program outcomes.

2. The most important indicators associated with the quality of vocational education in various size high schools are:

   a. Size of high school enrollment, and to a lesser degree,
b. Amount of special (state and/or federal) funds received per vocational student per year by the local school district, and

c. Adequacy of vocational education facilities as rated by the local school administrator.

3. Vocational-technical education offerings are not available to all high school students who want, need or who can profit through enrolling in appropriate vocational-technical education programs.

4. In general a balanced offering of vocational education programs is not available to high school students. Further, school size appears to be a major factor in providing balanced vocational program offerings.

5. Area vocational-technical schools currently are not meeting the expectations of enrolling significant numbers of students from various nine high schools.

Recommendations of the Study

The following recommendations are based on the findings of this study:

1. To provide greater options in vocational education to high school students, every effort should be made to increase the number of high school students in attendance at single administrative attendance units through school consolidation.

2. To provide vocational education opportunities for all students, persons responsible for vocational education program development
at state and local levels should strive to increase the special (state and/or Federal) financial assistance to schools.

3. Every effort should be made to disseminate the findings of this study to key educational leaders, as state vocational directors, as a means of assisting in the expansion of vocational-technical education opportunities.

Other Recommendations

The following recommendations are based on the author's experiences in conducting the study and from other professional involvements. They are designed to point up means of improving and extending vocational-technical education offerings. They are not supported by the study.

1. Organize small school administrations in study councils to focus attention on precisely approaches to providing expanded programs of vocational-technical education to high school students.

2. High school students should be encouraged to visit business and marketing centers for carefully planned educational exploratory experiences as a regular part of the school curriculum.

3. Resource persons from agriculture, the trades, and from business should be invited into the school frequently to work with students on an individual and group basis under supervision of qualified teachers.

4. Where vocational-technical education opportunities are limited by virtue of geographic isolation, school size, and other
related factors, new approaches should be sought. Examples are:

a. sharing vocational education services between schools,
b. sharing vocational education teachers between schools,
c. sharing vocational education counselors between schools,
d. providing special financial inducements to schools for offering quality vocational education programs, and
e. simulating vocational education programs, coordinated by general or vocational teachers, so that youth might develop competencies desirable and necessary for entry into occupations.

5. A concerted effort by state and local educational officials should be made to disseminate information about the philosophy, purposes and objectives of vocational-technical education to the general public.

6. Individualize vocational education instruction for pupils interested in developing knowledge and skills in areas of vocational education through the use of a variety of media as: prepared tapes, films, combination telephone-computer based instruction, teaching machines, supervised occupational experiences, simulated experiences, radio, television and telelecture.

7. New types of vocational education programs should be developed for the small school where a teacher provides leadership for more than one vocational education program.

8. Area vocational-technical schools should be located to best serve the greatest number of students. However, by necessity some of these schools must provide residential facilities.
Recommendations for Further Study

In the conduct of this study several areas of needed research were revealed. These areas are as follows:

1. Additional study should be directed towards identifying other variables which influence high school vocational education program outcomes and their implications for vocational education program development with special emphasis on those variables which relate to vocational education program development in various size high schools.

2. To identify, try out and evaluate innovative or promising vocational education programs in the small high schools on the basis of certain variables developed in this study as listed on pages 168, 169, and 170 of Chapter IV.

3. To conceptualize a model vocational education program which might be applied in whole or in part to high schools of varying sizes without regard for current practice.

4. Repeat this study in the same ten states in 1971 as a means of assessing vocational education program development.

5. Further analyze the data collected, specifically data relating to the researcher's own state of Montana and compare it with the data from the other states.

6. An in-depth investigation is needed of the factors limiting the participation of students in area vocational-technical programs.

7. In further replication of this study additional attention should be given to the problem of measuring administrative attitudes.
APPENDIX I.
To be completely honest, I am writing to ask for your assistance in researching my Ph.D. dissertation. Very much I appreciate the many such letters you receive during the year. With my job as Acting Director here in Montana I find it very difficult to move ahead toward my degree, which I someday hope to attain at The Ohio State University, Columbus, Ohio.

The area in which I need help at this point is in obtaining a complete list of schools in your state, along with the names of the administrators of each school. From the total school list I plan to select a sample and study, through the use of a questionnaire, the inherent strengths and weaknesses of vocational education. How they might be related to school size will then be studied.

One of the hoped-for outcomes of this study will be to determine the actual differences that exist between vocational education programs in the various size high schools. I look forward to receiving this information from you and hope that I may be able to assist you in projects that you might undertake in the future.

Sincerely,

Max L. Ambersen

HIA/er
Directories provided by the State Directors of Vocational Education from which a mailing list was developed:


Members of the national jury of experts and their areas of specialization.

**Small School Researchers**

**Mr. Charles Bitters** -- Executive Secretary, Texas Small School Project  
Texas Education Agency  
Austin, Texas

**Dr. Frank Cyr** -- Professor Emeritus, Teachers College  
Columbia University  
New York, New York

**Dr. Al Sturgess** -- Director of Upper Midwest Small Schools Project  
University of North Dakota  
Grand Forks, North Dakota

**Mr. Roman State** -- Coordinator, Western States Small School  
Study Project  
State Department of Education  
Ogden, Utah

**Dr. Lewis Toulouse** -- Associate Secretary, Rural Education  
National Education Association  
Washington, D.C.

**State Vocational Education Directors**

**Mr. A. G. Ballard** -- State Director of Vocational Education  
State Department of Education  
Raleigh, North Carolina

**Mr. Ernest Kremer** -- State Director of Vocational Education  
Department of Public Instruction  
State Capitol Building  
Olympia, Washington

**Dr. H. G. Linson** -- State Director of Vocational Education  
State Department of Education  
State Services Office Building  
Denver, Colorado

**Mr. Mark Nichols** -- State Director of Vocational Education  
Department of Public Instruction  
State Capital Building  
Salt Lake City, Utah

**Mr. Cecil Stanley** -- State Director of Vocational Education  
State Capitol Building  
Lincoln, Nebraska
Mr. Leroy Swenson — — State Director of Vocational Education
Department of Public Instruction
State Capitol Building
Bismarck, North Dakota

Administrators of Small Schools

Mr. Blaine W. Allen — — Principal, Mesquite High School
Mesquite, Nevada

Mr. Robert King — — — Superintendent of Schools
Hoover, Colorado

Mr. Havland Schack — — Superintendent of Schools
Powell County High School
Deer Lodge, Montana

Mr. Hugh G. Simmons — — Superintendent of Schools
Fort Benton, Montana

Teacher Educators from Universities or Colleges

Dr. Hal Barlow — — — Head, Vocational Education
University of California
Los Angeles, California

Dr. Marshall Hanna — — — Professor of Education
Arps Hall, The Ohio State University
Columbus, Ohio

Mr. Sidney Sutherland — — Professor Emeritus
University of California
Davis, California

Dr. Gordon Swenson — — — Professor of Education
Department of Agricultural Education
University of Minnesota
St. Paul Campus, St. Paul, Minnesota
I am currently working on my dissertation at The Ohio State University under the direction of Dr. Robert Taylor at the Center for Vocational & Technical Education. The title of my study is "Vocational Education in the Small High School." The purpose is to assess the several differences in vocational education programs as a basis for developing and improving vocational education in small high schools.

In reviewing the literature, it was pointed up to me that you are quite knowledgeable in this area. For this reason I am asking you to assist me in the first two steps of my study.

**First Step:**

a. Assist in refining or adding to those variables which I have identified from the literature and giving them a tentative rating.

b. Assist by commenting on the quantifiable data base that I have suggested using.

**Second Step:**

Upon compiling the above information I will resubmit the variables to you for final rating.

To initiate the first step you will note the variables have been typed on 5" x 8" note cards. There are two sets; dependent variables on the buff cards, independent variables on the white cards.

Will you please consider each set of variables in keeping with the directions on the front of each set of cards. The major criteria for any judgment is the purpose of the study.
After you have finished working the variables, please secure with a rubber band and return to me in the enclosed self-addressed, stamped envelope. When I have remeasured the variables I will return them to you for final rating.

May I thank you in advance for your generous assistance.

Sincerely yours,

Max L. Ambercon
Department of Public Instruction
Helena, Montana 59601
The following variables are most frequently cited in the literature as influencing the general quality of available high school vocational education programs.

Will you please look at these variables and check the suggested category in which, in your best judgment, it most logically should be placed. On the variable rating scale (1) indicates poor, (3) average, and (5) good.

On the bottom of each card I have suggested a quantifiable data base. Feel free to change this data base if the change will assist in collecting more meaningful information.

Extra cards have been provided to add variables which you feel should be studied.

I.
Variable rating ___1___3___5
Percentage of high school student body enrolled in some vocational education courses.

Data Base:
Number of high school students enrolled in a vocational education course at the local school.
Number of high school students not enrolled in a vocational education course.
Number of high school students enrolled in a vocational education course at an area vocational school.

II.
Variable rating ___1___3___5
Number of hours per week vocational teacher actually teaches vocational subjects.

Data Base:
Hours

III.
Variable rating ___1___3___5
Number of vocational education courses available per 100 students.
(Card II. Continued)

Data Base:
Number of vocational courses offered in local high school.

Number of courses available to local school at an area vocational high school designated to serve that area.

IV.
Variable rating ___1 ___3 ___5
Vocational student-vocational teacher ratio.

Data Base:
Number of vocational education teachers (full-time equivalents).
Number of high school students enrolled in a vocational education course.

V.
Variable rating ___1 ___3 ___5
Vocational education exploratory courses offered (pre-vocational or industrial arts courses).

Data Base:
Yes
No
Pre-vocational courses: ________________________________

Industrial arts courses: ________________________________

VI.
Variable rating ___1 ___3 ___5
Vocational education courses dropped last five years.

Data Base:
Number of courses dropped: __________________________

VII.
Variable rating ___1 ___3 ___5
New vocational courses added last five years.
Data Base:

Number of new courses added: ____________________________

What were they: __________________________________________________________________________

VIII.

Variable rating ___1___ 3 ___5

Number of major vocational curriculum changes over past three years within existing vocational program.

Data Base:

Number of major curriculum changes: ____________________________

IX.

Variable rating ___1___ 3 ___5

Student-counselor ratio.

Data Base:

Number of counselors in full-time equivalents divided by total number of high school students.

X.

Variable rating ___1___ 3 ___5

Number of different vocational course preparations made by vocational teachers per day; per week.

Data Base:

Number of different course preparations made by vocational teacher:
Per day ______
Per week ______

XI.

Variable rating ___1___ 3 ___5

Students who were enrolled in vocational education in high school who are employed in jobs for which they were trained one year after graduation.

Data Base:

Vocational education follow-up form used by USOE.
XII. Variable rating __1__3__5

Number of vocational education programs offered per 100 high school students.

Data Base:
Number of vocational education programs offered (a program means a course offering with one of the following areas: agriculture, home economics, office, distributive education, trade and industrial education).

Number ____________

XIII. Variable rating __1__3__5

Do schools use advisory committees for vocational education?

Data Base:
Yes
No

How many different advisory councils? ____________

XIV. Variable rating __1__3__5

Percentage of those students who were enrolled in vocational education that are employed one year after graduation from high school.

Data Base:
Vocational education follow-up form used by USOE.

XV. Variable rating __1__3__5

Percentage of vocational teachers on extended employment.

Data Base:
Number of teachers directing vocational education programs who are employed by the school for more than the traditional nine months.
XVI.
Variable rating 1 3 5

Number of hours per day/per week vocational teacher teaches non-vocational subjects.

Data Base:
Number of hours vocational teacher teaches non-vocational subjects per day per week.

XVII.
Variable rating 1 3 5

Schools ability to hire fully qualified (certified) vocational teachers.

Data Base:
One subjective question asked of local school administrators.

XVIII.
Variable rating 1 3 5

Number of occupational needs studies school cooperated in within past three years.

Data Base:
Number
Type

XIX.
Variable rating 1 3 5

Presence of specific school board policy relating to vocational education

Data Base:
Yes
No
(This information was submitted to member of the national jury of experts on 5 x 7 buff cards for individual reactions.)

The following variables are most commonly cited in the literature as influencing the availability of vocational education offerings in high schools.

Will you please look at these variables and check the suggested category in which, in your best judgment, it most logically should be placed. On the variable rating scale (1) indicates poor, (3) average, and (5) good.

On the bottom of each card I have suggested a quantifiable data base. Feel free to change this data base if the change will assist in collecting more meaningful information.

Extra cards have been provided to add variables which you feel should be studied.

I. Variable rating 1 3 5

Average number of years of college or equivalent training of vocational teachers in the high-school.

Data Base:
Total years of college (or years of job experience in case of non-professional craftsmen) of each vocational education staff member. To be averaged by researcher.

II. Variable rating 1 3 5

Attitude of local school administrator toward vocational education.

Data Base:
Michigan State University - Attitude Scale of School Administrators Towards Vocational-Technical-Education.

III. Variable rating 1 3 5

Total special (state and federal) vocational funds received per pupil per year by local school district.
(Card III Continued)

Data Base:
Number of dollars reimbursed to local high school district from state and federal sources divided by the total number of high school students in the high school district the previous fiscal year.

IV.
Variable rating ___1___3___5
Average salary of vocational teachers by school.

Data Base:
Total salaries of all vocational staff by school. To be averaged by researcher.

V.
Variable rating ___1___3___5
Average per pupil high school district assessed evaluation.

Data Base:
Total high school district assessed evaluation divided by the total number of high school students in the high school district.

VI.
Variable rating ___1___3___5
Total average cost per high school pupil.

Data Base:
Total cost of education (maintenance and operation) for that high school district for previous fiscal year divided by the total number of high school students in the high school district the previous fiscal year.

VII.
Variable rating ___1___3___5
Total population of high school district.

Data Base:
1960 Census data.
VIII.
Variable rating 1 3 5
Number of businesses in town where high school is located that employ some part- or full-time help.

Data Base:
Number to be identified by school administrator using either the local Chamber of Commerce, Yellow Pages, or by actual count.

IX.
Variable rating 1 3 5
Isolation from population centers of 2500 or more.

Data Base:
Number of miles.
Number of minutes of school bus driving time.
Number of days each year roads are impassable to school bus travel.

X.
Variable rating 1 3 5
Total funds expended on vocational education during last fiscal year.

Data Base:
Total dollars for maintenance, operation, equipment, construction and transfer tuition.

XI.
Variable rating 1 3 5
Number of square miles in high school district.

Data Base:
Square miles.

XII.
Variable rating 1 3 5
High school size.

Data Base:
Number of full-time high school student in grades 9-12.
XIII.
Variable rating 1 3 5

Adequacy of vocational education facilities (as rated by local school administrator).

Data Base:
One subjective question for rating.
I was quite hopeful that I might have a 100% return on my small high school vocational education questionnaire which was sent to you three weeks ago. As you will remember, I had asked that you react to certain variables isolated in my review of literature which are to be studied further.

If you still have these materials, would you be kind enough to complete and return to me. If the materials never reached you or were misplaced, please indicate on the enclosed self-addressed postcard.

I appreciate the heavy schedule you are keeping, thus my hesitancy for contacting you again. I would, however, appreciate your assistance.

Sincerely,

Max L. Amberson

MLAmfp
Enclosure
Thank you for your cooperation in assisting me with the first step of my study by offering suggestions and comments on those variables identified from the literature which relates to progress of vocational education in small high schools. As a result of these suggestions some of the variables have been changed or deleted.

May I now solicit your assistance in the second step of this study by asking you to give final rating to the several enclosed variables. Your rating will assist me in identifying those variables which reflect high aggregate value scores and which should be studied in more depth.

Please rate each set of variables in accordance with the directions at the top of each page. Upon rating the variables, please return to me in the enclosed self-addressed, stamped envelope.

May I thank you in advance for your generous assistance.

Sincerely yours,

MAX L. AMBERSON

Enclosures
The following dependent variables are commonly cited in the literature as influencing the quality of vocational education programs in the high school.

Please give a rating to each variable in terms of the suggested value indicators by placing a circle around the number which most nearly indicates your opinion of the importance of each item. Give only one rating to each variable.

**IMPORTANCE SCALE**

<table>
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- **4** - OF EXTREME IMPORTANCE - Those items that in your opinion are essential or crucial to the proper operation of the program, or in other words, absolutely necessary.

- **3** - OF CONSIDERABLE IMPORTANCE - Those items which have much importance but cannot be classified as absolutely necessary.

- **2** - OF SOME IMPORTANCE - Those items which can be classified as important, but would only be performed if the time and effort needed for their completion would hinder the completion of items classified as extremely important or of much importance.

- **1** - OF LIMITED IMPORTANCE - Those items which have some value but would have little effect upon the success of the over-all program.

- **0** - OF NO IMPORTANCE - Those items which you feel should not be undertaken because they would bring no benefit to the program and in some cases they may have an undesirable effect.

1. Percentage of high school student body enrolled in some vocational education courses.

2. Number of hours per week each vocational education teacher actually teaches vocational education subjects.

3. Number of vocational education courses available per 100 students (Example: Agriculture I-II, Home Economics I-II, Auto Mechanics I-II = 6 courses).
4. Vocational student-vocational teacher ratio.

5. Exploratory vocational education courses offered (Occupational information or industrial arts courses).

6. Vocational education courses dropped last five years (since July 1, 1961).

7. Vocational education courses added last five years (since July 1, 1961).

8. Number of major vocational education curriculum changes over past three years (since July 1, 1963) within existing vocational education programs.

9. Student-counselor ratio.

10. Number of different vocational course prepa­
     rations made by vocational teachers per day, per week.

11. Students who were enrolled in vocational educa­
     tion in high school who are employed in jobs for
     which they were trained one year after graduation.

12. Number of vocational education programs offered
     per 100 high school students (Example: Agriculture,
     Home Economics, Trades and Industry, Technical
     = 4 programs).

13. Use of advisory committees for vocational
     education.

14. Percentage of those students who were enrolled in
     vocational education that are employed one year after
     graduation from high school.

15. Percentage of vocational teachers on extended
     employment (more than nine months).

16. Number of hours (per day, per week) vocational
     teacher teaches other than vocational education subjects.

17. Number of occupational need surveys school coopera­
     ted in within past three years.

18. Presence of specific school board policy relating
     to vocational education.

19. Knowledge and understanding of vocational education
     on the part of school administrators and counselors.

Earlier in the year I wrote to you seeking the names of high school superintendents in your state. The reason for this information was so that I could collect certain data by questionnaire that I will need for work toward an advanced degree in Vocational Education at The Ohio State University. Unfortunately, because this was a Legislature year, it has not been possible for me to contact a sample of school superintendents in your state to date. I am, however, very desirous of collecting this information yet this summer.

May I solicit your assistance in this behalf by considering the following possible alternatives:

I. Permit me to send to approximately 50% of the school superintendents in your state the enclosed questionnaire and cover letter. If you will agree to co-sign such a letter with me, I will send a multi-lith master to you for your original signature by return mail.

II. Should the above alternative not be desirable or possible, may I have your permission to state in a cover letter to superintendents in your state that I have checked the questionnaire with you and that you are encouraged that the results of such a study could prove valuable to improving vocational education. Such a letter, if sent would bear my own signature.

III. If neither of the above alternatives are acceptable, I will plan to write a cover letter under my own name, not mentioning my contact with you.
I would appreciate your response on the enclosed self-addressed stamped card and may I thank you in advance for considerations shown a struggling graduate student.

Sincerely,

Max L. Amberson

Enc. 2
(Sample of card enclosed with letter to State Directors of Vocational Education)

...It will be possible for me to work with you on your vocational education study to the degree stated in:

Alternative  I.
II.
III.

Name:
State:
Comments:
The following independent variables are commonly cited in the literature as influencing the availability of vocational education in the high school.

Please give a rating to each variable in terms of the suggested value indicators by placing a circle around the number which most nearly indicates your opinion of the importance of each item. Give only one rating to each variable.

### IMPORTANCE SCALE

<table>
<thead>
<tr>
<th>Importance</th>
<th>Of Extreme</th>
<th>Of Considerable</th>
<th>Of Some</th>
<th>Of Limited</th>
<th>Of No</th>
</tr>
</thead>
</table>

1. Attitude of local school administrator toward offering vocational education in the high school.  4 3 2 1 0

2. Amount of special (state and/or federal) funds received per vocational student per year by local school district.  4 3 2 1 0

3. Average assessed valuation per student in high school district.  4 3 2 1 0

4. Total average cost per high school student.  4 3 2 1 0

5. Total population of high school district.  4 3 2 1 0

6. Number of businesses in town where high school is located that employ some part of full-time persons.  4 3 2 1 0

7. Isolation from centers of population.  4 3 2 1 0

8. Total funds expended on vocational education during last fiscal year.  4 3 2 1 0

9. Number of square miles in high school district.  4 3 2 1 0

10. Size of high school student body.  4 3 2 1 0

11. Adequacy of vocational education facilities (as rated by local school administrator).  4 3 2 1 0

12. Proximity of high school to an area vocational school or community college which offers vocational education courses.  4 3 2 1 0
13. Students' knowledge and understanding of vocational-technical education.

14. Professional consultative assistance provided by State Department of Education vocational education staff members.

15. Funds expended on local high school administrative personnel responsible for vocational education.

17. School's ability to hire fully qualified (vocationally certified) teachers.
July 8, 1967

(Initial letter sent to high school administrators in all of the states sampled except Montana)

To:__________________________High School Administrators

From: Max L. Amberson, Director, Vocational-Technical Education, Montana

Re: Vocational Education Survey

Vocational education has recently been recognized by society as the bridge between man and his work. Schools are being encouraged in many ways to make vocational-technical education available to all persons who either need or may benefit from such instruction. This goal, though desirable, offers some unique problems, particularly as one looks at states where small schools predominate. The interest of our state's citizens in vocational and technical education is quite new, thus our reason for looking at school programs in our neighboring states for basic information.

The base line data you provide will be used to assist Montana's vocational education staff in program planning efforts. Some of the data will also be used personally to develop my doctoral dissertation. I feel confident that the data collected will point to some promising directions; thus my reasons for soliciting your cooperation in completing the attached questionnaire.

I have reviewed this questionnaire with________________________, your State Director of Vocational Education, and he is encouraged that the information will be worth-while in your own state.

Upon completion, will you please return the enclosed questionnaire to me using the enclosed self-addressed stamped envelope. I can assure you that all individual school responses will be merged into an aggregate summary insuring anonymity.

I thank you in advance for your prompt attention to this matter.
July 10, 1967

(Initial letter to Montana High School Administrators)

To: Montana High School Administrators

From: Max L. Amberson, Acting Director, Vocational Education, Montana

Re: Vocational Education Survey

Vocational education has recently been recognized by society as the bridge between man and his work. Schools are being encouraged in many ways to make vocational-technical education available to all persons who either need or may benefit from instruction. This goal, though desirable, offers some unique problems, particularly as one looks at states where small schools predominate. Our state’s citizens have recently shown considerable interest in vocational and technical education, thus my reason for looking at each school’s individual programs in more detail.

The base line data you provide will be used to assist our vocational education staff in program planning efforts. Some of the data will also be used personally to develop my doctoral dissertation. I feel confident that the data collected will point to some promising new directions; thus my reasons for soliciting your cooperation in completing the attached questionnaire.

Upon completion, will you please return the enclosed questionnaire to me using the enclosed self-addressed stamped envelope. I can assure you that all individual school responses will be merged into an aggregate summary insuring anonymity.

I thank you in advance for your prompt attention to this matter.
VOCATIONAL EDUCATION QUESTIONNAIRE

PART I

The following questions have been designed to collect data about certain variables which are commonly cited in the literature as being associated with providing high quality vocational education programs at the high school level. Please answer those questions for which you have data. If data is not available, place the initials N.A. (not available) in the space provided for the answer. If the question does not otherwise specify, use the past school year (1966-67) as the basis for your answer.

1. Number of full-time high school students currently in your high school by grade level.
   Grade 9 ______ Grade 10 ______ Grade 11 ______ Grade 12 ______
   a. Number of full-time high school students enrolled in one or more vocational education courses in your high school. ______
   b. Number of full-time high school students who hold residence in your high school district but who are enrolled in a vocational education course at an area vocational school which serves your area. ______

2. What vocational education program areas are available to your high school students?
   Available Not Available
   Agriculture ________
   Distributive Education ________
   Health Occupations ________
   Home Economics ________
   Office Education ________
   Technical ________
   Trades and Industries ________

3. Number of different vocational education courses available at your high school. Report only those which run for one school year in length. (Example of course: Agriculture I-II, Home Economics I-II, Auto Mechanics I-II = 6 courses.) ______

4. Number of prevocational or exploratory vocational education courses offered by your high school. Report all courses offered regardless of length.
   a. Number of prevocational education courses. ______
   b. Number of industrial arts courses. ______

5. Number of vocational education courses dropped in the last five years (since July 1, 1962).
   What course? ______ Why dropped? ______
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________

6. Number of vocational education courses added in the last five years (since July 1, 1962).
   What course? ______ Why added? ______
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________

7. Major vocational education curriculum changes in the past three school years. Indicate in which areas major vocational education curriculum changes have been made by checking major vocational program area.

   Agriculture 1964-65 1965-66 1966-67
   Distributive Education
   Health Occupations
   Home Economics
   Office Education
   Technical
   Trades and Industries
   Other
8. **Number of vocational teachers (full-time equivalents) in your high school.**

<table>
<thead>
<tr>
<th>No. of H.S. teachers (full-time equivalents)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
</tr>
<tr>
<td>Distributive Education</td>
</tr>
<tr>
<td>Health Occupations</td>
</tr>
<tr>
<td>Home Economics</td>
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<tr>
<td>Office Education</td>
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<tr>
<td>Technical</td>
</tr>
<tr>
<td>Trades and Industries</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>

9. **Number of vocational teachers on extended employment (over nine months) by your school in the following vocational education programs.**

<table>
<thead>
<tr>
<th>No. of H.S. teachers on extended employment (over nine months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
</tr>
<tr>
<td>Distributive Education</td>
</tr>
<tr>
<td>Health Occupations</td>
</tr>
<tr>
<td>Home Economics</td>
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<tr>
<td>Office Education</td>
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<tr>
<td>Technical</td>
</tr>
<tr>
<td>Trades and Industries</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>

10. **Number of hours per week each vocational education teacher actually teaches high school vocational education subjects.** If there is more than one teacher figure the average number of hours per week for the teachers and check in the appropriate column.

<table>
<thead>
<tr>
<th>0-9</th>
<th>10-19</th>
<th>20-29</th>
<th>30-39</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distributive Education</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Health Occupations</td>
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<td>Office Education</td>
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<td>Technical</td>
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<td>Trades and Industries</td>
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<tr>
<td>Other</td>
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</tr>
</tbody>
</table>

11. **Number of hours per day vocational education teachers teach other than vocational subjects.**

<table>
<thead>
<tr>
<th>0-2</th>
<th>3-4</th>
<th>5-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distributive Education</td>
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<td></td>
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<tr>
<td>Health Occupations</td>
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<td>Trades and Industries</td>
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<tr>
<td>Other</td>
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</tbody>
</table>

12. **Number of different vocational education course preparations made by vocational education teachers per day.**

<table>
<thead>
<tr>
<th>0-2</th>
<th>3-4</th>
<th>5-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
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<td>Office Education</td>
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<tr>
<td>Technical</td>
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<tr>
<td>Trades and Industries</td>
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<tr>
<td>Other</td>
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</tr>
</tbody>
</table>

13. **What is the tenure of your school's vocational education teaching staff?** (List the number of vocational education instructors by vocational education program area and the total accumulated years of service for each group of vocational teachers).
### Part I

<table>
<thead>
<tr>
<th>Area</th>
<th>Number of Instructors</th>
<th>Total Accumulated Years of Experience at Your School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>3</td>
<td>27</td>
</tr>
<tr>
<td>Distributive Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Occupations</td>
<td></td>
<td></td>
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<tr>
<td>Home Economics</td>
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<tr>
<td>Trades and Industries</td>
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<td></td>
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<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How does this compare to the tenure of other teachers in the school system? Longer _______________ Same _______________ Shorter _______________

14. Number of counselors (full-time equivalents) in your school. (Two persons assigned 1/2 time to counseling equal one full-time equivalent.) ________________

15. Number of occupational or vocational needs studies your school conducted or cooperated in within past three years. ________________

16. Number of high school graduates who were enrolled in vocational education courses during the 1965-66 school year who are now employed in jobs for which they received vocational education provided by your high school. (Includes high school students from your school district who attended area school.)
   a. Number of high school graduates. ________________
   b. Number who are in the military service. ________________
   c. Number continuing their education at post high school level. ________________
   d. Number who, when in high school, completed two or more years of a vocational education course. ________________
   e. Number of those mentioned in (d) who are now employed in jobs for which they received vocational education. ________________
   f. Number who are currently employed regardless of the type of job. ________________
   g. Number of graduates unaccounted for. ________________

17. Does your school presently have an overall vocational education advisory or consultative committee? Yes ____ No ________________
   a. Number of different vocational education advisory or consultative committees used by your school. (List total number whether used by teachers or administrative staff). ________________

18. Does your school have specific policies adopted by the board relating to vocational education? Yes ________________ No ________________

19. How would you, as a school administrator, rate your own general knowledge of vocational-technical education? Good ________________ Fair ________________ Poor ________________
   a. Does your professional education include college work in vocational-technical education courses? Yes ________________ No ________________
      If yes, state number of quarter hour credits. ________________

### Part II

The following questions have been designed to collect data about certain variables which are commonly cited in the literature as being associated with the availability of vocational education programs at the high school level. Please answer those questions for which you have data. If data is not available, place the initials N.A. (not available) in the space provided for the answer. If the question does not otherwise specify, use the past school year (1966-67) as the basis for your answer.

1. Please check the most appropriate statement indicating your personal beliefs about your high school's offering vocational education. If you agree with the statement, check agree; if your disagree with the statement, check disagree. Remember, there are no right or wrong answers.

   a. It is not the responsibility of the high school to offer vocational education. ___ agree ___ disagree

   b. High school students should be given the opportunity to determine curriculum in the school. ___ agree ___ disagree
c. Vocational education is a post-high school responsibility. ___________________________

d. Local faculty groups should be organized to study curricular needs of students in their respective school system. __________________________

e. A good college preparatory and general education program leaves no room in the schedule for vocational education. __________________________

f. A total area employment survey should be initiated to identify the need for offering vocational education in the high school. __________________________

g. Current high school education expenses will not permit curriculum expansion into vocational education. __________________________

h. A vocational education advisory committee should be appointed by the local board of education to instigate and maintain up-to-date vocational education offerings in the high school. __________________________

i. The high school should offer no vocational education courses but should provide for prevocational education or industrial arts courses. __________________________

j. High school students wishing vocational education courses should be permitted to transfer and receive full tuition to another school offering vocational education should it not be available in the student's resident high school. __________________________

k. A minimum number of vocational education courses should be offered in the high school to meet local needs of employers. __________________________

l. High schools should provide equal opportunities for all students whether for college preparatory, general education, or vocational education. __________________________

2. Amount of financial assistance received by your local high school district from state and/or federal vocational education funds (anticipated or already received for the 1966-67 school year) per high school student enrolled in vocational education classes.
a. $1 - $74 per vocational student ________________
b. $75 - $149 per vocational student ________________
c. $150 - $224 per vocational student ________________

d. Which of the following statements best describes your school's ability to hire qualified (certified) vocational teachers?____________________

Not difficult Somewhat difficult Very difficult

What specific problems do you face in hiring fully qualified (certified) vocational teachers? __________________________
a. Low comparative salaries. __________________________
b. Poor living conditions. __________________________
c. Isolation of school. __________________________
d. Inadequate supply. __________________________
e. Poor physical plant. __________________________
f. All of the above. __________________________
g. None of the above. __________________________
August 9, 1967

(Follow-up letter sent to high school administrators who had not yet returned questionnaire)

To: High School Administrators

From: Max L. Amberson, Director, Vocational Education, Montana

Re: Vocational Education Survey

I am hopeful that the enclosed request for information about vocational education in your local high school is more timely than my first request. My first request was mailed to your school near the completion of the school year when undoubtedly your work load was at a peak.

As I mentioned in my earlier letter, vocational education has recently been recognized by society as the bridge between man and his work. Schools are being encouraged in many ways to make vocational-technical education available to all persons who either need or may benefit from such instruction. This goal, though desirable, offers some unique problems, particularly as one looks at states where small schools predominate. The interest of our state’s citizens in vocational and technical education is quite new, thus our reason for looking at school programs in our neighboring states for basic information.

The baseline data you may be good enough to provide will be used to assist Montana’s vocational education staff in program planning efforts. Some of the data will also be used personally to develop my doctoral dissertation. I feel confident that the data collected will point to some promising directions; thus my reasons for soliciting your cooperation in completing the attached questionnaire.

Upon completion, will you please return the enclosed questionnaire to me using the enclosed self-addressed, stamped envelope. I can assure you that all individual school responses will be merged into an aggregate summary insuring anonymity.

Thank you for your prompt reply to this letter.

MIA/cr

encl.
### Values of Independent Variables

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>$b_0$</th>
<th>$b_1$</th>
<th>$b_2$</th>
<th>$b_3$</th>
<th>$b_4$</th>
<th>$b_5$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Percentage of high school student body enrolled in some vocational courses.</td>
<td>.3853</td>
<td>-.0110</td>
<td>.0406</td>
<td>.0000</td>
<td>.0820</td>
<td>.0048</td>
</tr>
<tr>
<td>2. Number of hours per week each vocational education teacher actually teaches vocational education subjects.</td>
<td>9.939</td>
<td>.1372</td>
<td>1.300</td>
<td>.0043</td>
<td>3.059</td>
<td>.5503</td>
</tr>
<tr>
<td>3. Number of vocational education courses available.</td>
<td>.7513</td>
<td>-.0001</td>
<td>1.558</td>
<td>.0089</td>
<td>2.126</td>
<td>.6962</td>
</tr>
<tr>
<td>4. Vocational student-vocational teacher ratio</td>
<td>14.35</td>
<td>-.9806</td>
<td>1.5855</td>
<td>.0261</td>
<td>9.149</td>
<td>1.736</td>
</tr>
<tr>
<td>5. Exploratory vocational education courses offered (occupational information or industrial arts)</td>
<td>-1.181</td>
<td>-.0043</td>
<td>.4515</td>
<td>.0057</td>
<td>1.445</td>
<td>.5505</td>
</tr>
<tr>
<td>6. Vocational education courses dropped last 5 years (since July 1, 1961)</td>
<td>.0866</td>
<td>.0278</td>
<td>-.0047</td>
<td>-.0001</td>
<td>-.0307</td>
<td>-.0329</td>
</tr>
<tr>
<td>7. Vocational education courses added last 5 years (since July 1, 1961)</td>
<td>-.7050</td>
<td>.0322</td>
<td>.5453</td>
<td>.0010</td>
<td>.0098</td>
<td>.3925</td>
</tr>
<tr>
<td>8. Number of major vocational education curriculum changes over past 3 years (since July 1, 1963) within existing vocational education programs</td>
<td>.3838</td>
<td>.0446</td>
<td>.5003</td>
<td>.0010</td>
<td>-.0954</td>
<td>.1649</td>
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<tr>
<td>Dependent Variables</td>
<td>$b_0$</td>
<td>$b_1$</td>
<td>$b_2$</td>
<td>$b_3$</td>
<td>$b_4$</td>
<td>$b_5$</td>
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<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>9. Student-counselor ratio</td>
<td>0.0157</td>
<td>-0.0004</td>
<td>0.0003</td>
<td>0.0000</td>
<td>-0.0034</td>
<td>-0.0004</td>
</tr>
<tr>
<td>10. Number of different vocational course preparations made by vocational teachers per day</td>
<td>2.132</td>
<td>-0.2588</td>
<td>0.4742</td>
<td>-0.0007</td>
<td>1.917</td>
<td>-0.3923</td>
</tr>
<tr>
<td>11. Students who were enrolled in vocational education in high school who are employed in jobs which they were trained one year after graduation</td>
<td>-12.02</td>
<td>0.641</td>
<td>1.429</td>
<td>0.0203</td>
<td>3.563</td>
<td>2.159</td>
</tr>
<tr>
<td>12. Number of vocational education programs offered</td>
<td>1.243</td>
<td>0.0711</td>
<td>0.2215</td>
<td>0.0012</td>
<td>0.1190</td>
<td>0.2435</td>
</tr>
<tr>
<td>13. Use of advisory committees for vocational education</td>
<td>2.613</td>
<td>-0.0371</td>
<td>-0.0672</td>
<td>-0.0002</td>
<td>-0.2279</td>
<td>-0.0467</td>
</tr>
<tr>
<td>14. Percentage of those students who were enrolled in vocational education that are employed one year after graduation from high school</td>
<td>0.1793</td>
<td>0.0395</td>
<td>-0.0131</td>
<td>-0.0003</td>
<td>0.9737</td>
<td>0.3842</td>
</tr>
<tr>
<td>15. Percentage of vocational teachers on extended employment (more than nine months)</td>
<td>-0.0215</td>
<td>0.0028</td>
<td>0.1005</td>
<td>0.0000</td>
<td>0.0889</td>
<td>0.1134</td>
</tr>
<tr>
<td>Dependent Variables</td>
<td>Values of Independent Variables&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
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<td>-------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Number of hours per week, vocational teachers teaches other than vocational education subjects</td>
<td>[ b_0 = 1.862, b_1 = .1045, b_2 = -.1378, b_3 = -.0003, b_4 = -.3097, b_5 = -.2392 ]</td>
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<td>17. Number of occupational need surveys school cooperated in within past three years</td>
<td>[ b_0 = -.4039, b_1 = .0687, b_2 = .2751, b_3 = .0009, b_4 = .1243, b_5 = .2079 ]</td>
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<td>18. Presence of specific school board policy relating to vocational education</td>
<td>[ b_0 = 2.625, b_1 = -.0349, b_2 = -.0952, b_3 = .0000, b_4 = -.2963, b_5 = -.0294 ]</td>
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<td>19. Knowledge and understanding of vocational education on the part of school administrators</td>
<td>[ b_0 = -.0437, b_1 = .0039, b_2 = .1635, b_3 = .0001, b_4 = .5660, b_5 = .0043 ]</td>
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<td>20. Stability of vocational education teaching staff</td>
<td>[ b_0 = 1.191, b_1 = .0033, b_2 = .0434, b_3 = .0001, b_4 = -.1490, b_5 = -.0871 ]</td>
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<sup>a</sup>Key to independent variables on page 163, Chapter IV.
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