DOCUMENT RESUME

ED 075 572 VT 018 690

AUTHOR Arnold, Joseph P.; Ferguson, Edward T., Jr.
TITLE Determining Occupational Emphases for High School Program Design. Final Report.
INSTITUTION Ohio State Univ., Columbus. Center for Vocational and Technical Education.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
BUREAU NO BR-7-0158
PUB DATE Mar 73
GRANT OEG-3-7-000158-2037
NOTE 79p.; Research and Development Series No. 85
AVAILABLE FROM Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (no price quoted)

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS Community Involvement; Curriculum Development; Data Analysis; Data Collection; *Demand Occupations; Educational Needs; Grade 11; High School Students; *Manpower Needs; Methodology; *Occupational Aspiration; Parental Aspiration; *Program Planning; School Districts; *Student Needs; Vocational Education

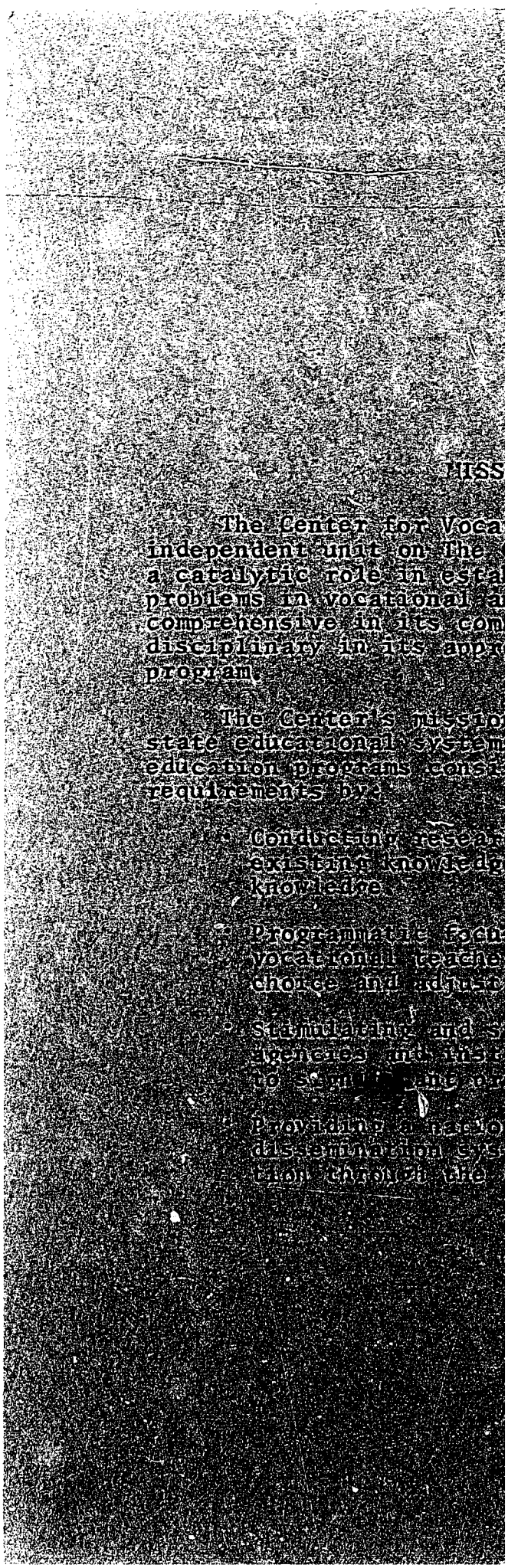
ABSTRACT

This study developed a methodology to determine occupational emphases for high school vocational education program planning. Major considerations for the selected occupations were manpower needs, student needs and aspirations, and parental preferences. Occupations were ranked in 39 areas according to Bureau of Labor Statistics projections, and these areas were arranged by 18 school districts according to the four major needs and aspirations. Local manpower data sources were community leaders and school district administrators. Questionnaires were completed by 11th grade students and their parents as to the students' career aspirations and their parents' occupational preferences for them. Occupational priorities in the 18 study communities were then identified and ranked. Data collected and synthesized are detailed in tabular and narrative form, and guidelines for further use of the methodology are included for local district staff information. Instruments used are appended. (MF)

Research and Development Series No. 85

Determining Occupational Emphases for High School Program Design

THE CENTER FOR VOCATIONAL AND TECHNICAL EDUCATION
THE OHIO STATE UNIVERSITY
1960 Kenny Rd., Columbus, Ohio 43210

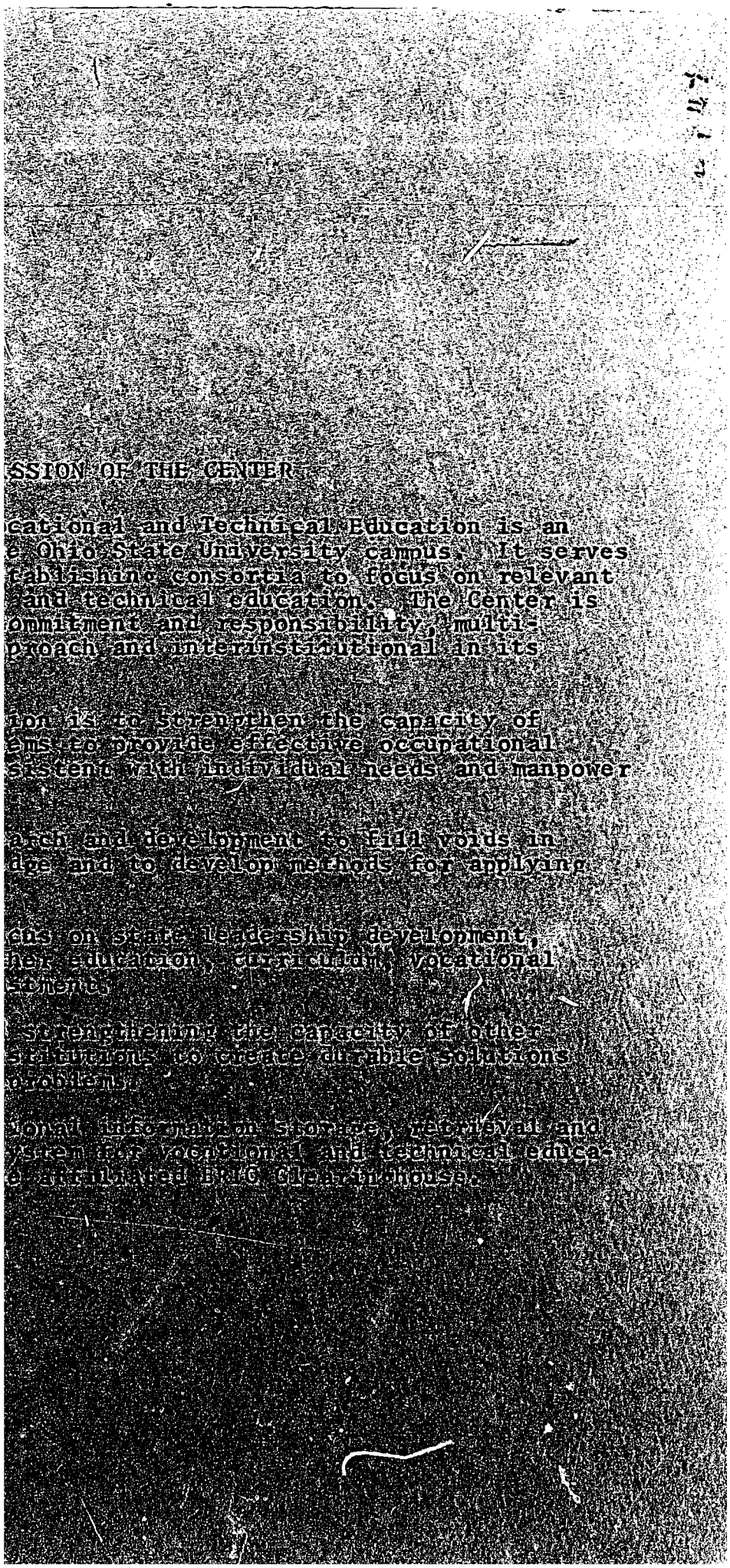


HISS

The Center for Voca
independent unit on The
a catalytic role in esta
problems in vocational a
comprehensive in its com
disciplinary in its appr
program.

The Center's missio
state educational syste
education programs const
requirements by:

- Conducting resea
existant knowledg
knowledge.
- Programmatic focu
vocational teache
choice and adjust
- Stimulating and s
agencies and inst
to s
- Providing a nat
dissemination sys
tion through the



SSION OF THE CENTER

cational and Technical Education is an
e Ohio State University campus. It serves
tablishing consortia to focus on relevant
and technical education. The Center is
ommitment and responsibility, multi-
proach and interinstitutional in its

ion is to strengthen the capacity of
ems to provide effective occupational
sistent with individual needs and manpower

arch and development to fill voids in
dge and to develop methods for applying

ons on state leadership development,
her education, curriculum, vocational
stments

strengthening the capacity of other
stitutions to create durable solutions
problems

ional information storage, retrieval and
ystem for vocational and technical educa-
e, affiliated ERIC Clearinghouse

Research and Development
Series No. 85

DETERMINING OCCUPATIONAL EMPHASES FOR HIGH SCHOOL PROGRAM DESIGN

Joseph P. Arnold

Edward T. Ferguson, Jr.

The Center for Vocational and Technical Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

MARCH 1973

A FINAL REPORT

ON A PROJECT CONDUCTED UNDER

PROJECT NO. 7-0158

GRANT NO. OEC-3-7-000158-2037

This publication was prepared pursuant to a grant with the National Institute of Education, U.S. Department of Health, Education and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their judgment in professional and technical matters. Points of view or opinions do not, therefore, necessarily represent official National Institute of Education position or policy.

U.S. DEPARTMENT OF
HEALTH, EDUCATION AND WELFARE
National Institute of Education

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402

FOREWORD

The Center has been engaged in several research efforts designed to aid planners as they work to improve the quality and efficiency of planning for vocational and technical education. One important component of these efforts sought a basis and rationale for determining occupational emphases for high school programs.

This study was undertaken to identify and assess inputs to vocational program planning and to design methods for their use by local school districts. It is expected that the methodology and findings of the study will be useful to school guidance and administrative personnel as well as to curriculum planners.

The Center is deeply indebted to the large number of school personnel, business leaders, union representatives, government officials, students, and parents who gave many hours of their time and much assistance to the study. We are especially indebted to the coordinator in each school district, who carried considerable administrative responsibilities for the project. Appreciation is also extended to the project staff: Drs. Joseph P. Arnold and Edward T. Ferguson, Jr., coinvestigators; W. Dean Martin, research consultant; Theodore Yerian, consultant; Charles Lundy, research associate; and Matthew Pasquale, research assistant.

Robert E. Taylor
Director
The Center for Vocational
and Technical Education

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

SUMMARY

The study was conducted to develop a prototype methodology for ascertaining the relative emphasis which should be given to various occupational areas in a local secondary school program.

The rationale identifies four considerations of major importance that can be the basis of a generally applicable methodology: (1) local and national manpower needs; (2) student needs as perceived by community representatives and school staff; (3) student occupational aspirations; and (4) parental occupational preferences for their children.

The spectrum of subprofessional occupations was categorized into thirty-nine areas and techniques were developed which permitted a school district to rank the thirty-nine areas relative to each of the above four considerations. The methodology was tried out in eighteen school districts. Data were obtained from school administrators, curriculum and guidance staffs, parents of eleventh graders, eleventh grade students, local business and community planners, and from the "New Openings Annually" projection of the U.S. Bureau of Labor Statistics. The data have been analyzed and reported for each of the districts and for the combination of all eighteen districts.

Guidelines are given for further use and refinement of the methodology on the basis of its trial in the eighteen school districts. Limitations of the techniques used in the study and ways by which they might be improved are pointed out. All instruments and procedures are fully described.

DETERMINING OCCUPATIONAL EMPHASES FOR HIGH SCHOOL PROGRAM DESIGN

INTRODUCTION

RATIONALE

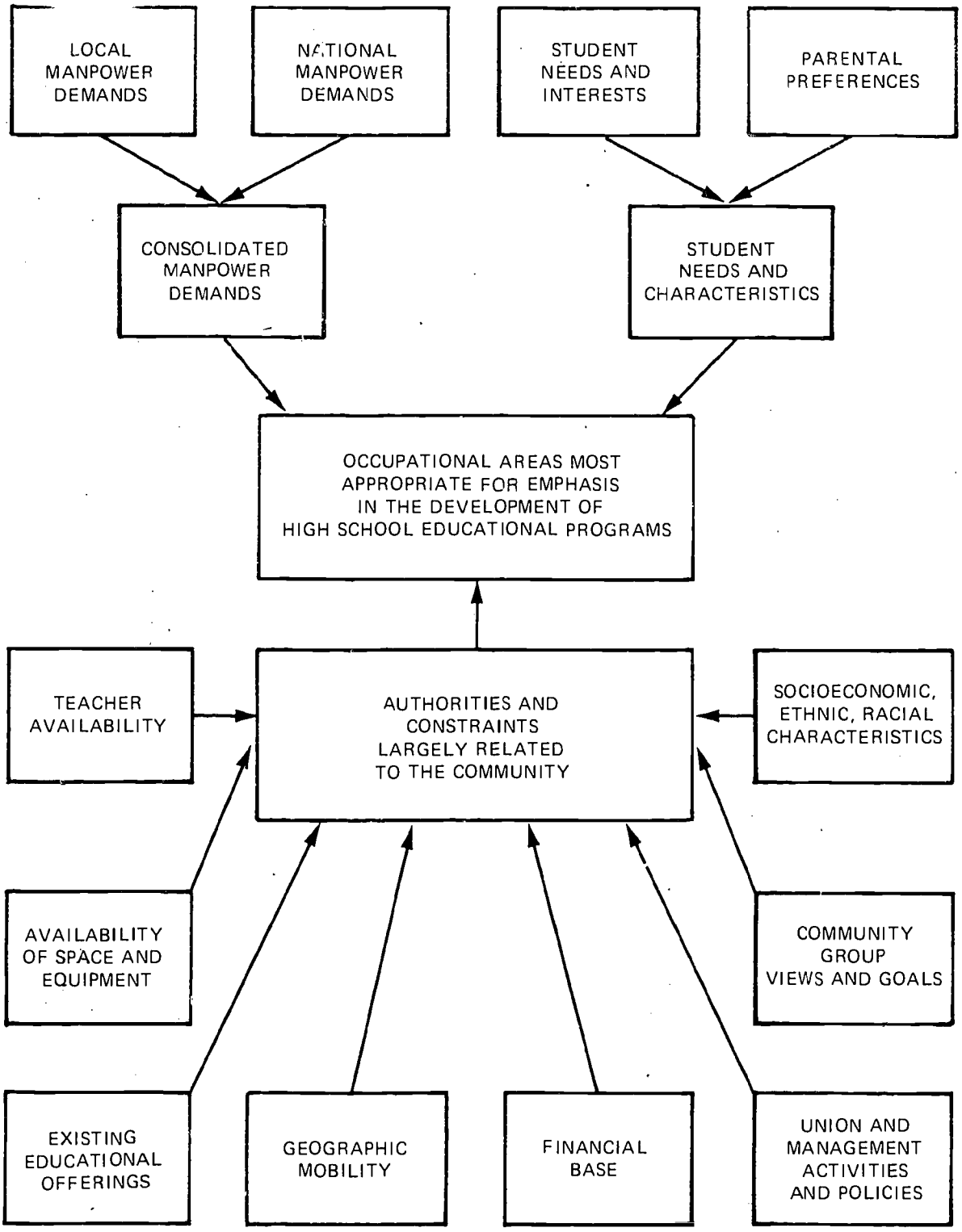
Educational planners in the next decade must recognize and weigh carefully a variety of potential inputs in designing school programs. A systematic and viable approach to educational programming must be developed which will provide visibility for and give consideration to the concerns of various individuals, groups, and social agencies which are affected by educational program planning. Area business and industrial interests, parents, students, school district staff, and minority groups are only some of the more obvious segments of society to which the school must relate more effectively than it has in the past.

High schools traditionally have emphasized those subjects and disciplines which stand apart from most of the world of work. Students have been channeled into predominantly academic pursuits regardless of their interests and abilities. All too often these pursuits have had only indirect relation to the employment opportunities in business and industry and to personal desires of students and their parents. Thus, an overwhelming majority of students with a predominantly general education have entered a complex labor market for which they have not been adequately prepared and for which they have little knowledge of the available options. Slocum and Bowles have stated that data would indicate that educators and public leaders have been successful in convincing young people that they should continue their education after high school, although these leaders have done little to come to grips with the question -- education for what end? These people must now deal with the consequences of this success (13). A focus on career orientation and occupational preparation in the schools is urgently needed. School programs which do not attempt to relate to the total spectrum of contemporary occupations and do not reflect the personal needs and desires of students and their parents are not relevant to today's society.

Figure 1 presents a scheme for visualizing the main sources of authority and constraints operating to influence and/or determine high school programs and content. In this study, several such forces were considered to be so closely related to the local environment that little could be done to establish a methodology for general application. Three facets did, though, lend themselves to investigation and the development of guidelines for application at the local level: (1) manpower needs, (2) student needs, and (3) student and parental aspirations. Limitations imposed by factors like "financial base", "availability of space and equipment", and "teacher availability" were viewed as inappropriate since it was believed that such restraints might preclude

FIGURE 1

FOR SELECTION OF OCCUPATIONAL AREAS APPROPRIATE
IN THE DEVELOPMENT OF HIGH SCHOOL EDUCATIONAL PROGRAMS



the development of ideal programs rather than aid in their realization. It was concluded that the evaluation of the inputs described in the lower portion of Figure 1 would be more effectively and appropriately undertaken by the local school districts rather than as a part of this project.

PURPOSE OF THE STUDY

With the above thoughts in mind, the present study was designed to provide educational planners with a means of identifying occupations for high school programs which would reflect: (1) national and local manpower trends, (2) student interests, and (3) parental preferences. These factors were considered parameters of the problem that would be common to the needs of educational planners no matter how unique their local conditions.

The other constraints posed in Figure 1 are not considered of lesser importance; rather, the present study was designed to take the local planner to a point where specific occupational areas to be considered for program design are brought to the foreground and can be rationally considered. Local adjustments must then be added to attain optimal program offerings for a given community.

OBJECTIVES OF THE STUDY

The specific objectives of the study were to develop and assess a methodology for determining occupational areas for emphasis in programs of local high school districts and, as a by-product, to identify areas of occupations for emphasis in educational program planning for each of eighteen school districts geographically distributed throughout the United States. Relationships were examined among (1) student occupational aspirations, (2) parental occupational preferences for their children, (3) administrator and school staff views of appropriateness and acceptability of occupations, (4) local manpower projections, and (5) national manpower projections.

REVIEW OF SELECTED LITERATURE

The following cursory treatment of selected literature is presented to provide educational planners with a basic understanding of four of the several components which should be recognized in the identification and selection of high school occupational programs.

Each of the areas covered has a wide array of literature which may be culled to obtain a more complete understanding of the topic. Thus, before attempting any comprehensive study concerned with occupational program selection, the researcher should undertake a thorough review of literature pertinent to the local conditions of the study area.

Manpower Data Local and National For Educational Planning

A variety of national manpower forecasts are currently available. Many local area forecasts are already in existence and more are being developed at a rapid pace. The problem, particularly in large metropolitan areas, is not so much one of being able to locate data as that of being able to select and utilize data which are appropriate for the occasion. This may not be the case, though, in smaller communities where more than likely there exists a dearth of information on all areas related to any study of this nature. The educational planner must, too, remember to take into account the several other factors which will ultimately affect his decision (see Figure 1), as well as weighing the effects of what, at times, may be an inconsistency between national and local projections. Nationally, the need may be great for highly educated professional and technical persons. A given locality, however, may reveal a more pressing need for semiskilled or skilled individuals in specific occupations. Therefore, the relative weight of local as opposed to national manpower needs might best be determined in terms of specific local conditions. Should local conditions prevail which warrant special consideration, they should be given priority in a meaningful manpower forecast. For example, a school district located in an economically depressed, low employed area, may justify little or no weight given to local manpower estimates and a higher weight given to national projections. Conversely, a school district located in an economically prosperous area may legitimately assign a higher weight to local manpower estimates and a lower or negligible weight to national projections.

The manpower literature reveals frequent mention of economists, labor force experts, politicians, and educators who are all involved to a greater degree than ever before in an attempt to analyze the nation's work force. Not only are they concerned with establishing effective education of specific groups of workers, but they also are concerned with forecasting future numeric occupational needs so that the appropriate educational, physical, and social skills may be developed within the population.

One objective of manpower forecasts is to provide the educational planner with information as to the probable future needs of the economy for persons with various kinds of training. It is apparent that Congress felt a more systematic method of developing information on manpower requirements for the planning of vocational education was needed. Five million dollars were authorized by the Vocational Education Amendments of 1968 to be used by the U.S. Bureau of Labor Statistics for projecting manpower requirements useful for vocational educational planning. Annual job openings, area skills surveys, and unfilled openings are but three methods for projecting manpower requirements.

In an area skills survey, employers are asked to predict the number of persons with certain qualifications to be needed by a projected date. The responses are then accumulated. Area skill surveys often are required as a basis for initiation of most new Manpower Development Training programs. Several drawbacks to the employer survey are: (1) few employers keep records of current openings, (2) employers experience great difficulty in projecting future needs, (3) business competition inhibits the desirability of

publicizing the information, and (4) the survey results become outdated rapidly. Hence, completion of the survey is difficult, time-consuming, and expensive.

The ratio of trained manpower to total employment has been projected on the basis of demographic information published in *Tomorrow's Manpower Needs* (18). In some cases, assumptions about likely shifts in the relative importance of different industry groups are applied to the projections. Some limitations of this method are its lack of consideration for such factors as total job vacancies, wage data, and labor composition by occupation as described by Goldstein (3) and by Wingeard (19). The National Planning Association has projected the average annual openings on the basis of national goals (6,14).

Medvin (8) presented a new technique based on unfilled job openings, which utilizes the ratio of hard-to-fill jobs (unfilled for thirty days or more) to the total unfilled jobs over a period of time to project future average annual job openings. The linking of current and past occupational shortages to the Bureau of Labor Statistics' national outlook for those same occupations is the final step in this method of projecting manpower needs. Principal limitations are lack of information from employers and the exclusion of wage and salary information.

Manpower needs forecasting has certain limitations of which the planner should be aware. Inappropriate statistical and sampling procedures and invalid assumptions affect the accuracy of a forecast. Hence, educational planners are advised to use the most current material available, to study the methods and source of its derivation, and to be familiar with the assumptions on which it is based.

Another limitation to manpower needs forecasting is the instability of the economic climate within which forecasts are made. Such conditions vary and their effects on manpower needs are usually evident at both the national and local levels. Pockets of prosperity exist during a general recession and pockets of poverty exist during periods of general prosperity. Government contracts and priorities frequently result in a population influx to one community and an exodus from another. On the national scene, shifts in military, social, and educational priorities can be observed. As a result, one must be aware of both state and national developments. One must also be cognizant of the trends that are assumed in preparing the forecasts by the various agencies and of the effects of political and economic shifts on the data to be utilized.

Manpower forecasting is not a science, and although it utilizes scientific and mathematical techniques, the educational planner must recognize this limitation. Every planner should be aware that short-range forecasts generally imply greater precision than long-range forecasts. The planner must also be aware that reliability of some forecasts is only intended for two to five years, while others attempt to make meaningful but more general predictions for ten years or beyond. The planner must differentiate one from another.

Student Aspirations And Parental Preferences In Educational Planning

People in a democratic society hold a sincere regard for individual aspirations. It is natural and important that one think in terms of human goals or aspirations when concerned with the career choices of high school students.

Cooley and Lohnes (1) support asking the student to find out his occupational aspirations. Assuming then that student aspirations have a major impact on occupational choice, it would seem imperative to check the major influence(s) on the student to give additional weight, and perhaps stability, to the student's judgment.

Student and parental aspirations have been studied by Drabick (2), who found significant relationships between aspirations of both adolescents and their parents in the choice of an occupation or career. There is also a positive relationship between adolescent aspirations and subsequent occupational attainment. Drabick also found:

1. Most high school seniors believed themselves responsible for their occupational decisions.

2. Parents remain the largest external source of influence upon the occupational decisions made by senior students, while siblings were considered a minor source of influence. Influence of other relatives was cited almost as frequently as the father.

3. Peer group influence was not as great as expected in our youth-oriented culture.

4. Teachers and close friends still were given as more frequent sources of influence than any other single source other than mothers.

5. Race, sex, intelligence, and residence were found to be related to occupational decisions. A greater proportion of black than white students gave mothers as a source of influence, presumably because the mother often is the ruling member of the black family. A greater proportion of black than white youth believed their occupational choices to be their own. Females indicated mothers and sisters more influential than fathers and brothers. Males reversed the influence to fathers and brothers. Male more frequently than females believed their career decisions to be their own.

6. About one-third of the youth in the study believed their mothers were in strong agreement with occupational choices. A small portion believed their mothers would have preferred different choices. Race had no apparent effect on mothers' attitudes toward occupational decisions, but sex was a factor in mothers' attitudes toward

occupational decisions.

7. Attitudes of fathers toward occupational choices were basically the same as mothers. However, a lesser proportion believed fathers' attitudes to be strongly in favor of choices made. The father in the black family was considered to contribute little influence in occupational decision-making. Males, excepting blacks, more frequently perceived fathers as strongly supporting occupational decisions than did females. Intelligence had the same relationship as for mothers -- the more intelligent were more in tune with fathers' expectations.

Kuvlesky and Bender (5) found that power to predict careers seemed to vary with different types of levels of occupational aspirations. Others have found that the aspirants to unskilled jobs, particularly blue-collar ones, had far the highest rate of congruence; the findings showed that the aspirants to the occupations related to farming had the highest rates of attainment success.

The literature pertaining to the aspirations of students and their parents is extremely extensive. The previous points are posed only to alert the program planner to the scope of the considerations which must accompany the undertaking of a similar study.

METHODOLOGY

OVERVIEW

The design and trial of an approach for determining occupational priorities for emphasis in high school program planning have been stated as the goal of this research. Several strategies and procedures were considered, all with the intent of providing planning information for use in the eighteen participating school districts as well as for providing suitable methodology for similar studies in other communities. Data collection instruments and analysis procedures were selected and designed on the premise that several inputs to educational program decisions were warranted and that the local school district administrative and curriculum staffs must be able to understand and interpret findings as well as to relate the findings to other factors and conditions in a given local situation.

The study focused on the development of a set of prototype techniques and their tryout under relatively uncontrolled conditions. Respondents were selected under constraints which restrict generalizations from the data. Reliability and validity of the prototype instruments were not assessed in this stage of development, although a reliability check of one instrument was made in a prior trial.

The first section which follows describes the development of the list of occupational areas which were ranked in each school district and also according to national norms. Next are described the instruments by which the list of areas was ranked from the standpoint of manpower needs, student occupational needs, student occupational aspirations, and parent occupational preferences for their children. Sections on the actual data sources, the data collection procedures, and the analysis procedures complete the chapter.

DESIGNING THE LIST OF SUBPROFESSIONAL OCCUPATIONAL AREAS

Basis to the entire study was the conceptualization and design of a list of occupational areas which could be ranked relative to local and national manpower needs, student needs, student aspirations, and parental preferences. To accomplish this, the spectrum of subprofessional occupations was divided

into occupational sets or categories which were intended to provide visibility for respondents who later would use them as a vehicle to rate local importance and demand for workers in essentially any subprofessional occupation. Since a satisfactory grouping system which would provide visibility to all occupational areas was available, the project staff found it necessary to develop an arbitrary arrangement of areas to identify occupations appropriate as major considerations on high school educational program planning.

First, the taxonomy of occupational categories as developed for the U.S. Office of Education publication, *Standard Terminology for Curriculum and Instruction in Local and State School Systems*, (11) was utilized as a starting point for categorizing occupations of concern in vocational education. The handbook was designed to assist local school systems and state departments of education in identifying and describing items of information about subject matter and cocurricular activities in elementary, secondary, junior college, and adult education. Among the twenty curriculum areas identified in the handbook are the seven vocational areas of agriculture, distributive education, health occupations education, home economics, office occupations, technical education, and trades and industrial occupations.

Next, the seven vocational areas were divided into 110 occupational areas. These 110 occupational areas were reviewed and revised by the research team, comprised of five researchers and specialists in vocational education, to produce the initial group of occupational sets classified by job function, industry, subject matter or discipline, or a combination thereof. Every effort was made to provide visibility to essentially all subprofessional occupations that may be appropriate for high school program planning and to eliminate duplication of subject matter areas.

Then an initial group of thirty-five sets was evaluated by eight vocational educational researchers and specialists for inclusiveness, clarity of wording, and potential for obtaining valid responses.

Finally, changes resulting from the review were made: (1) the division and redistribution of three of the original thirty-five areas into new areas, and (2) the addition of one new area. A list of thirty-nine occupational areas resulted. The areas and sample jobs in each are listed in Appendix A.

INSTRUMENTS DEVELOPMENT

Three instruments were prepared: (1) a card sort deck for assessing perceived local manpower needs and student occupational needs; (2) a questionnaire for surveying student occupational aspirations; and (3) a questionnaire for ascertaining parent occupational preferences for their children. Each of these instruments is described below. A brief reference is also made to the manpower projection techniques used by the U.S. Bureau of Labor Statistics in compiling data for "New Openings Annually." The interview guides employed in collecting data for the study are reviewed in a later section.

The Card Sort Deck

To develop the card sort deck, each of the thirty-nine occupational areas was assigned a number and typed on a 4 x 6 card. Each of the thirty-nine numbered cards included the title of the occupational area and a sample of six to twelve occupations that would be included in and would help define the category. Sample occupations on each card differed by skill and complexity level, function, and industry in which found. The thirty-nine areas and sample jobs in each are listed in Appendix A. The deck was used to assess manpower needs and students' needs, a separate sort being made for each type of need. In both sorts, respondents were asked to indicate what they considered to be the relative importance of the thirty-nine occupational areas by sorting (rating) them according to a five-point (equal-appearing interval) scale. Appendix B presents full directions for the two card sorts.

Grouping the thousands of specific occupations into a small number of categories or areas facilitated obtaining judgments by category from qualified raters. The thirty-nine occupational areas as devised for the study did appear to function as cues which could later be related back to more specific occupations. To avoid leaving curriculum planners with the total job of making such a critical and subjective translation, each card sort respondent was asked to identify the specific occupation(s) he had in mind for those cards rated highly. Project staff tallied the specific occupations identified for each of the top rated cards as listed in the priorities for the eighteen communities (Chapter III).

Reliability checks were made during the development of the deck of thirty-nine occupational areas between the raters in pilot card sorts. The results of these tests are as follows.

Manpower and student needs card sorts were tested in an initial pilot by seven vocational education researchers and specialists who were asked to assess the critical manpower needs

of a community of their choice. Five of the seven were then asked to rate the cards (a second time) on the basis of appropriateness for and acceptability to high school students for potential inclusion and emphasis in high school programs.

The same vocational education researchers participating in the initial pilot were then asked to make similar ratings two weeks following the trial just described. The participants were not previously aware that they would be asked to sort the cards a second time. Spearman rank correlations (R) between the first and second ratings were calculated for each pilot respondent for both manpower and student needs sorts. R ranged from .69 to .87 (average, .78) among the seven respondents in the manpower sort. Correlation between first and second ratings on student needs ranged from .68 to .86 (average, .72).

Student Aspiration Questionnaire

The student questionnaire (Appendix C) was designed to obtain information about the occupational aspirations of students. Respondents were asked to list first and second choices for their life's work. Occupations listed by the students were later classified and tallied among the thirty-nine occupational areas. Thirteen additional classifications were also made to include professional and other occupations which had been excluded from the original thirty-nine. A classification system of fifty-two categories ultimately was used for processing student aspirations (Appendix D).

Parental Preference Questionnaire

The parental questionnaire (Appendix E) was designed to obtain information about parents occupational preferences for their children. Respondents were asked to rate each of the occupational categories on a five-point scale from most appropriate to least appropriate. The criterion for the rating was parental judgment of the importance of high school preparation for employment for their child.

BLS Openings Annually

The BLS projections published in *Tomorrow's Manpower Needs*, U.S. Department of Labor, are made on a broad industry and

TABLE I

COOPERATING SCHOOL DISTRICTS

SCHOOL DISTRICT	STATE	HIGH SCHOOL	NUMBER OF PUPILS DISTRICT	NUMBER OF PUPILS SEL. SCHOOL	SETTING
San Mateo Union High School District	Calif.	San Mateo	11,641	1,848	Suburban
Atlanta Public School District	Ga.	Smith	27,826	1,050	Suburban
Howard School District	Fla.	Nova	27,057	3,000	Suburban
Boulder Valley School District	Colo.	Boulder	5,258	1,730	Suburban
Baltimore City Public School District	Md.	Lake Clifton	44,310	1,760	Urban
Monroe Public School District	Mich.	Monroe	2,384	1,758	Suburban
Duluth Minnesota District #3	Minn.	Central	6,240	1,506	Suburban
Billingboro Public School District	N.J.	John F. Kennedy	2,444	1,980	Suburban
Union Free School District #1, Mamaroneck	N.Y.	Mamaroneck	( )*	2,000	Suburban
Mineola School District	N.Y.	Mineola	1,770	1,770	Suburban
Portland School District	Ore.	John Adams	24,324	1,000	Suburban
Philadelphia School District	Pa.	University City	105,806	( )*	Urban
Edgewood Industrial School District	Tex.	Memorial	4,761	1,183	Urban
Houston Independent School District	Tex.	Booker T. Washington	93,275	2,300	Urban
Bloomfield Hills School District	Mich.	Bloomfield Hills Lahser	2,653	1,200	Suburban
Breathitt County School District	Ky.	Breathitt County	( )*	1,060	Rural
Quincy School District	Mass.	Quincy	4,763	1,554	Suburban
Archdiocesan School Board, Chicago	Ill.	Mt. Carmel	75,884	908	Urban
Archdiocesan School Board, Chicago	Ill.	Loretto Academy	75,884	354	Urban

( )* no information provided by school district

occupational group base using 146 occupations and 67 industries. Many of the 146 occupations cut across the entire group of 67 industries, and the 67 industries represent the entire spectrum of industry as described in the Standard Industrial Classification (SIC). Data used in this study were gathered with instruments used in 1968 (18).

DATA SOURCES

The data used in this study were drawn from surveys conducted in 18 local school districts and from one nationally focused source, the BLS "New Openings Annually."

Characteristics of the Eighteen Local Districts

Nineteen schools in eighteen school districts located throughout the United States were used to test the methodology developed for the study. The schools, widely geographically distributed, represented a considerable range in size of student population and in ethnic, racial, and socioeconomic background. They were located in urban, suburban, and rural school settings. Table I shows several selected characteristics of the schools and districts.

The cooperating school districts and communities were engaged in a national curricular reorganization effort based on the premise that the total educational program within the school must be adjusted to meet the demands of the next decade. Each school system expressed a need for the present study, as a result local cooperation was freely obtained.

Manpower Data Sources

Two groups of potential respondents were identified in each district to provide manpower data. These were:

1. Community, business, and industrial leaders, especially individuals with a close affiliation with community or metropolitan planning and development activities. Selections were made from among local or area directors (or their qualified designees) of the: (a) Chamber of Commerce, (b) Retail Merchants' Association, (c) Local or Area Manufacturers' Association, (d) Labor Unions, (e) State Employment Security Division (or Commission), and (f) non-school district planners and administrators of locally operated occupational training programs. The above individuals were identified because of their

overall knowledge of and concern for employment and the local area economy as indicated by their current function and experience. The intent was to obtain manpower needs ratings from the most qualified persons in the community. In many cases personal interview arrangements led the research team to better qualified persons in the same office or elsewhere in the region. When finally identified, each respondent was asked to sort (rate) the thirty-nine cards to identify the most critical local (including metropolitan area) manpower demands. Table II shows the distribution of respondents by community role.

2. School district administrators and specialists who were experienced in educational program planning, since most of these individuals are usually active in a variety of community affairs. They also were asked to rate the thirty-nine cards to identify the most critical local (including the metropolitan area) manpower needs. The district superintendent, district coordinator for this study, curriculum director, director of vocational education, guidance specialists, and high school principals were included. Table II shows the distribution of these respondents by position.

Student Needs Data

The same school district administrators and specialists described above in connection with manpower needs assessments were asked to judge the appropriateness of the thirty-nine cards for high school program planning. They were asked to identify occupational areas which are most appropriate for and acceptable to students for emphasis in high school program planning. Qualifications for performing the student needs sort were each individual's interaction in previous education planning experience in working with high school age youth. The local director of vocational education and the district director of guidance services particularly would tend to be qualified to perform the manpower sort and the student needs sort since their experience and responsibilities gave them a close proximity to both. Table III shows the distribution of school district respondents by position.

Student Aspiration Data

All eleventh grade students in one high school in each district were asked to complete the questionnaire designed to assess students' career aspirations.

TABLE II

DISTRIBUTION OF COMMUNITY AND SCHOOL DISTRICT RESPONDENTS

(Manpower Card - Sort Respondents Only)

Respondent	Community																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	D*	Total
Chamber of Commerce		1	1	1		1	1	2	1			1	1	1			2		(2)	13
Retail Merchants				1							1								(3)	2
Association of Manufacturers	1												1						(1)	2
Local Department of Labor	1	2	1	1	1	1	1	1	1	2	1	1	2	2	1	1	1	1		22
Nonschool District Occupational Programs		2		1	4		2	1	1			2	3	1		1	1	3	(1)	22
Other	2	1	1	1	3	1		1	1		1	1	2	1	2	3	5	2	(3)	28
Total	4	6	3	5	8	3	4	5	4	2	3	5	9	5	3	5	9	6	(10)	89
Superintendent	1	1	1	1	1	1	1	1			1	1	1	1	1	1	1	1	(1)	16
District Coordinator	1	1	1	1	1	1	1		1	1	1	1	1	1		1	1	1		16
Directors & Supervisors Vocational Education	3	1	1	1	3	2	1	1	2	3	1	2		1	1	1	1	1		26
Director, Guidance	1	1		2	1	1	1		1	1		1	1	1	1	1	1	1		16
Director, Curriculum	1	1		1		1			1		2			3		1			(1)	11
High School Principal			1	1		2	1	1	1				1	1		1			(1)	10
Other		4	2		4		2	8		5	3	2	6	2		1	2	1	(13)	42
Total	7	9	6	7	10	8	7	11	6	10	8	7	10	10	3	7	6	5	(16)	137

N=226

*Number of respondents interviewed but for whom data were excluded; see explanation on p. 20.

TABLE III

DISTRIBUTION OF SCHOOL DISTRICT RESPONDENTS

(Students Needs Card Sort Only)

	Community																			
Respondent	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	D*	Total
Superintendent	1	1		1	1	1	1	1			1	1	1		1	1	1	1		14
District Coordinator	1	1	1		1	1	1		1	1	1	1	1	1	1		1	1		15
Directors & Supervisors Vocational Education	4		2	2	3	2	1	1	2	1	2	3		1	1	1	1	1		28
Director, Guidance	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	(1)	19
Director, Curriculum	1	1		1		1			1		1			2		1			(2)	9
High School Principal			1	1		2	1	1	1		1		1	1		1				11
Other		3	1		4		3	7		3	4	1	5	4	1	1	3	2	(13)	42
Total	8	7	6	7	10	8	8	11	6	6	11	7	9	10	5	6	7	6	(16)	138

N=138

*Number of respondents interviewed but for whom data were excluded; see explanation on p. 20.

Parental Preference Data

All parents of the eleventh grade students in the same schools in which the student aspiration questionnaire was administered were asked to respond to the instrument designed to identify parental occupational interests and preferences for their eleventh grade sons and daughters.

SAMPLE REDUCTION

It became apparent during data collection interviews that some respondents did not have an appropriate background to perform the card sort(s) as requested or for some reason did not follow the directions given by the interviewer. To improve validity, data from nonqualified respondents were deleted. Two procedures were followed: (1) each school district and community respondent was given adequate opportunity to disqualify himself prior to or during the interview, and (2) interviewers recommend the exclusion of data in cases where respondents did not follow instructions as listed in Appendix I. The resulting reduction is noted in Tables II and III. Data supplied by 89 community representatives and 137 school staff were used in the manpower analysis. Data supplied by 138 school staff were used in the students needs analysis. The possible effects, if any, of rater attention on the acceptable data were not investigated since the number of unacceptable test instruments was relatively small (Table II and III).

National Data Source

National manpower demand data were drawn from the BLS "New Openings Annually" and based upon 1968 figures (18).

DATA COLLECTION PROCEDURES

All data collection from school district staff and local community business and industrial leaders was accomplished through personal interview by the project staff from The Center for Vocational and Technical Education at The Ohio State University. Data collection from eleventh grade students and their parents was arranged and completed through the cooperation of homeroom and guidance personnel in the schools. The local district coordinator for the study (or other school district official) assumed responsibility for arranging all local interviews, orienting cooperating teachers and guidance staff, and returning student and parental data to the project staff.

Community Representatives and School Staff

Differentiated interview recording forms were devised for: (a) school district staff, and (b) community, business and industrial leaders. All data collection from these two groups of respondents was accomplished during a personal interview. The interview recording forms guided the interview through questions on mobility in the community, estimates of attitudes toward vocational education and the listing of research reports and other local publications relating to the project. Space for recording card sort results was included. Revisions of the recording forms are found in Appendices F through H.

School district staff were asked to sort the thirty-nine cards twice during the interview: (a) the student needs sort (rating each occupational area for its appropriateness for and acceptability to high school students), and (b) the manpower sort (rating each occupational set in relation to its critical manpower demand in the community and surrounding metropolitan area).

Community, business, and industrial leaders provided the same kind of information in the interview as provided by school district staff, except card sort responses were restricted to the manpower sort.

Eleventh Grade Students

Occupational preferences were solicited from among all eleventh graders in each of the nineteen high schools. The local study coordinator made the necessary school contacts for distributing, completing, and returning the student questionnaires to The Center for processing. The total packet placed in the hands of each eleventh grade student contained a letter to the student, the one-page questionnaire for him to complete (Appendix C), a letter to his parents (Appendix I), and the parental questionnaire (Appendix E) for the student to deliver to his parent(s). Teachers and guidance staff in each school who distributed the packets and administered the instrument to the students were given instructions as included in Appendix J.

Parents of Eleventh Grade Students

After completing and returning the student questionnaire, eleventh graders were requested to take the parental questionnaire

and cover letter of explanation home with them. Upon completion of the questionnaires, parents were instructed to return them to the appropriate teachers or guidance staff via their eleventh grade son or daughter. Parents who were slow or reluctant to respond were issued reminders by the cooperating homeroom teacher or the guidance staff member who distributed the questionnaire.

DATA ANALYSIS PROCEDURES

The data analysis was designed to obtain the mean rankings of the thirty-nine sub-occupational areas for each of the eighteen communities and for a combined grouping of all eighteen. From the combined ranking, the areas perceived to have highest priority would be identified. The thirty-nine occupational areas had been ranked on the basis of (a) new openings annually (BLS), (b) critical local manpower needs, (c) administrator and school staff views of the appropriateness for and acceptability to high school age youth, (d) student aspirations, and (e) parental occupational preferences for their children. The means and standard deviations of ratings for each of these four groups of data from each of the eighteen districts were calculated and the thirty-nine occupational areas were ranked for each group according to mean scores. In cases of tied means, the area with the smaller standard deviation was assigned the higher rank. This procedure resulted in four sets of rankings for the thirty-nine occupational areas, each of which became one of five inputs in determining the priority of occupational areas for the eighteen communities.

The fifth input (18) was comprised of national manpower projections of new openings annually to 1975 by the Bureau of Labor Statistics (BLS). Since BLS data on occupations do not completely correspond with the thirty-nine occupational areas developed for this study, it was necessary to convert that data to a parallel form for ranking.

Because the thirty-nine occupational areas developed for the study were meant to encompass the entire range of nonprofessional occupations as found in the *Dictionary of Occupational Titles* (DOT), it was frequently necessary to separate broad occupational groups (BLS data) into smaller parts, an example of which may be found in the broad occupational category of managers, officials, and proprietors. This category includes store buyers and department heads, building managers and superintendents, public administrators, and inspectors, each of which was assigned to a different one of the thirty-nine occupational areas.

Conversely, one finds airplane mechanics and repairmen in the broad category of craftsmen, foremen, and kindred workers, and airplane pilots and navigators in the broad category of professional, technical, and kindred. In this case these two,

along with stewardesses from yet another broad category, were included in only one of the thirty-nine occupational areas.

Through analysis and synthesis as described above, the entire range of occupations in the DOT were matched with the 140 broad occupational groups of BLS projections as they in turn were applied to the thirty-nine occupational sets developed in the study (Table IV).

Method for Identifying Priorities of Each Community

Manpower Needs. Individual rankings by (a) community, business, and industrial leaders, and (b) school district staffs in the eighteen communities (N=226) were totaled for each occupational set. Where mean ranks given by the two groups to each of the thirty-nine occupational areas were compared ($r = .97$, $p < .001$), a decision was made to combine the two sets of data for each community.

Student Needs. These rankings were calculated in the same manner as manpower needs, using the card sorting responses of school administrative and specialist staff members.

Student Aspirations. Participating eleventh grade students in the eighteen communities were asked, "What kind of occupation would you like for your life's work?" Responses were assigned to one of the thirty-nine categories and thirteen additional categories devised to handle responses relating to professional, military, business and other occupations not classifiable within the thirty-nine nonprofessional categories. A total of fifty-two categories were used for assigning responses, the thirty-nine occupational areas plus the thirteen additional categories. Appendix D lists categories forty through fifty-two. The method of ranking described above was followed.

Parental Preferences. Parents' occupational preferences for their eleventh graders were indicated by circling the appropriate estimate of their feelings on a one through five (equal-appearing interval) scale located beside each occupational area. The ranking of the thirty-nine areas was then based on the highest mean ratings.

Method for Identifying Priorities in Combined Eighteen Communities

The raw data (ratings) for each type of information collected (i.e., manpower, student needs, etc.) was combined over the eighteen samples to yield total group means. Priority rankings

TABLE IV

THE THIRTY-NINE OCCUPATIONAL AREAS RANKED ACCORDING TO U.S. BUREAU OF LABOR STATISTICS PROJECTIONS (16)

Occupational Set	New Openings Annually	% of '66 Employment	Rank
1	81,500	10.6%	4
2	5,000	5.0%	20
3	2,200	5.5%	17
4	Surplus	- 3.4%	39
5	53,250	3.5%	32
6	36,800	3.8%	31
7	19,000	6.7%	11
8	116,100	3.9%	30
9	123,000	7.8%	7
10	6,600	14.6%	1
11	3,900	7.0%	10
12	27,600	10.0%	5
13	16,000	5.9%	15
14	14,600	4.7%	23
15	18,200	4.0%	29
16	67,000	7.8%	7
17	146,500	5.2%	19
18	20,300	3.5%	32
19	32,400	6.3%	14
20	27,000	4.9%	22
21	20,200	4.6%	25
22	37,900	5.3%	18
23	5,250	2.4%	37
24	15,300	3.5%	32
25	Surplus	- 1.8%	38
26	28,500	3.3%	36
27	188,600	13.4%	2
28	55,000	8.4%	6
29	45,100	4.7%	23
30	44,000	6.7%	11
31	31,000	5.0%	20
32	18,400	12.7%	3
33	167,100	5.6%	16
34	47,000	4.1%	28
35	118,700	3.5%	32
36	37,100	4.6%	25
37	260,000	7.8%	7
38	108,900	6.6%	13
39	8,100	4.6%	25

were then computed for the total group. The BLS projections of "New Openings Annually" were ranked and integrated with the other four data types.

Spearman rank order correlations were computed between each of the five data types (over the thirty-nine areas) to aid in interpreting the findings.

Method for Selecting Highest Priorities Occupational Areas

High priority occupational areas were assessed by identifying areas which were present in the top ten ranks of (a) all five sets of ranking, (b) those in four of the sets, and (c) those in three of the sets.

FINDINGS AND RECOMMENDATIONS

The findings of this study are first presented for the eighteen separate districts involved and then for the combined communities. The identification of three levels of occupational area priority using the five sites of rankings is made from the combined communities data.

Supplementary data gathered in the questionnaire and interview guides were used only for special reports to each of the eighteen participating districts and are not presented here.

PRIORITIES FOR EACH OF THE EIGHTEEN COMMUNITIES

Manpower Needs Sort Both school district staff and community, business, and industrial leaders performed the manpower sort. A Pearson r, calculated between the manpower sort means obtained from the group composed of school district staff and the group made up of community, business, and industrial leaders, produced a correlation of $r = .97$ ($p < .001$). Because nearly identical results were obtained from the two groups of respondents, it was decided to include manpower sort data from school district staff as well as from community, business and industrial leaders.

Table V presents the combined results of the manpower card sort which was completed by 89 business and industrial leaders and 137 school staff members (see Table II for a further explanation of respondents in each category).

Student Needs Sort Table VI shows the ranking of each occupational area by community. It should be particularly noted that only school district personnel performed the card sort for student needs. This decision was made after several attempts to have business and industrial personnel sort the cards for student needs failed to produce usable data. Most business and industrial personnel simply expressed the lack of ability or knowledge needed to accomplish a student needs sort.

The cards rated high (by school district staff) will not surprise educational planners and guidance staff. Currently popular vocational program areas (by card number) such as

TABLE V

MANPOWER CARD SORT RANKINGS
BY SCHOOL AND COMMUNITY RESPONDENTS FOR EIGHTEEN INDIVIDUAL COMMUNITIES

	Community																		
Rank	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	Rank
1	7	8*	8	12	12	6	27	37	37	27	27	12	27	8	12	6	37	37	1
2	12	12*	20	9	8*	8	37	12	9*	6*	37	37	12	9	1	8	8*	12	2
3	37	9	37*	37*	37*	9*	1	9	12*	37*	12	6	29	27	27	21	27*	21	3
4	27	37	12*	6*	27	37*	30	8	27	12	6	27	6*	6	32	37	12	8	4
5	6	7	27	8	6	27	23	6	6	17	8	8	8*	12	6	29	6	39	5
6	32	39	36	27	9	12	9*	21	8	21	1	13	32	32	35	25	35	9	6
7	39	6	32	13	35	38*	6*	27	16*	9	32	39	37	37	38*	10	39	27	7
8	1	27	6	35	1	29*	8	39	39*	1	21	1	21	39	29*	9	1*	6	8
9	21	13	30	39	21	35	36	31	21	35	9	9	7	1	30+	36	32*	32	9
10	31	30	26	21	39	21*	32	17	10	39	29	33*	9	21	31+	11	31	10	10
11	9	20	9*	36	13	39*	38	36	36	13	35	36*	1	13	16	27	21	13	11
12	20	21	39*	32	32	13+	31	29	1	29	39	32	39	36	21*	39	9	22*	12
13	29*	32	13+	38	29	19+	10	32	32	8	10*	21	38	7	39*	1	13	1*	13
14	38*	36	38+	29	30	31	12	16	26	31	36*	10	33	29	13	19	30	29*	14
15	16	29	21	10	36	30	29	22	29	10*	30	31	30	18	10	33	16	7	15
16	30	24*	35	1*	10	36	12	30*	18*	26*	15	15	36	15	2*	16	29	13	16
17	33	38*	22	16*	24	22	17	35*	31*	30	7	16	31	30	22*	15	36	19	17
18	22	1	31	18	31	1	21	19	35	7	26	29	17	34	33	38	18	38	18
19	24	16	1	22	16	17	39	28	30	16	31	35	15	19	9	30	17	30	19
20	13	31	19	31	15*	33	11	38	13	38	24	30	19	33	8	26	22	36	20
21	35	10	29	19	22*	20*	24	15	17*	36	33	18	10	35	36	32	7	28	21
22	10	22	18	2	38	32*	25	18	15*	15	17	7	28	20	7*	31	38	16	22
23	17	33	17	24	18	10	35	10	33*	33	19	17	22	38	37*	28	33	34	23
24	8	2	16	30	33	7	13	13	38	32	38	22	35	17	17	4	19	17*	24
25	15*	15*	7	15	23*	16	22	33	19	28	16*	24*	13	31	28	22	15	24*	25
26	28*	17*	10	17	17*	24	16	1	22	18	18*	38*	16	2	19	17	10	2	26
27	26	28	33	33	28	26	18	2	28	19*	13	2	24	16	26	2	28	35	27
28	19	35	15	7	19	18	33	24	2	22*	11	19	20	10	18*	20	20	33	28
29	36	19	28	28	20	3	15	7	24	24	22	20	18	22	20*	18*	34	18	29
30	18	18	2	20	7	2	5	34	34	2	23	34	2	23	14	12*	2*	20	30
31	34*	26	24	34	2	28	2	14	20	20	28	28	34	24	24	13*	24*	15	31
32	2*	14	23	11	26	15	19	20	14	14	20	26	26	28	34	3	26	14	32
33	23	34	14	25	34	5	28	23	7	34	3	23	5	26	15	20*	14	26	33
34	14	5	5	26	14	34	7	4	23	23	5	13	3	25	11	24*	23	23	34
35	11	3	4	5	5	25	14	26	11	5*	2	5	14	5	25	5	3	11	35
36	3	11	3	3	11	23	34	3*	3	3*	34	3	4	14	3	14	11	3	36
37	5	25	34	4	3	4	26	5*	5	11*	4	25	25	3	5	34	25	5	37
38	4	23	11	14	25	14	3	25	25	4	14	11	11	4	23	7	5	4	38
39	25	4	25	23	4	11	4	11	4	25	25	4	23	11	4	23	4	25	39

* and + indicate tied ranks

Means and ranks calculated giving equal weight to each community; N= 226

TABLE VI

STUDENT NEEDS CARD SORT RANKINGS
BY SCHOOL DISTRICT PERSONNEL FOR EIGHTEEN INDIVIDUAL COMMUNITIES

Rank	Community 01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	Rank
1	37	12	12	9	12*	9*	37	37	9	37	37	12	6*	12	12	37	27	12	1
2	7*	9	37	12	37*	37*	12	9	37	12*	6	9*	27*	37	13	6	37	31	2
3	12*	37	9	31*	9	17	6	6	12*	21*	9	37*	37	9	22*	8	6*	16	3
4	6	7*	16	37*	6	12	9	12	16*	6+	26*	13+	9*	6	16*	39	12*	37	4
5	27	39*	31	6	18	6	27	28	8	17+	27*	32+	28*	18*	32*	28*	9	29	5
6	17	13	13*	2*	13	33	18	17	2	7*	12	31	7	27*	36	21	35	27	6
7	10	27	18*	39*	8	13	39	21	6*	9*	1	2*	17	39	7*	9	39	1	7
8	9	2	7+	13+	39	8	2*	18	18*	13	10	16*	12	13	14*	33	8	13*	8
9	30	16	27+	18+	32	16	13*	13	17	8	17	27*	29	21	31+	25	16	32*	9
10	1*	28	32	22	27	35	8	2	32	33	21*	1	32	30*	2+	27	7	9	10
11	13*	17	21	27	21	27	7	39	28	35	35*	14	21	32*	6+	19	21*	6	11
12	32	13*	2	16	2	10	32	14	27	16	18	39*	22	8	1	29	30*	39	12
13	21	18*	22	35	7	18*	1	27	31	18*	13	7*	8	2	18*	13	1	10	13
14	39	35*	14	32	16	19*	29	8	39*	32*	8	8*	39	31	35*	12	32	8	14
15	18	32	17*	14	35	38+	21	16	13*	14	33	18+	31	1	27	32	2	2	15
16	38	6	19*	7	36	29+	30*	32	30*	28*	30	21+	19	17	37*	11	13	21*	16
17	8	31	6	17	1	30+	33*	7	19	39*	7	29	1	10*	9*	1	31	28*	17
18	16	19	39	19	28	32	14	10	14*	22+	32	6	38	35*	21*	38	36	17	18
19	2	10	1*	1	30	7	10	19	21*	27+	19	17	13	19	39*	16	18	22	19
20	35	36	28*	11*	31	1	19	30	10	30	29	22	2*	28	29+	2	28	18	20
21	19	14	30	36*	29	22	36	33	7	31	38	19	16*	7	38+	15	22	19	21
22	26	8	29*	26	22	36*	38	38	35	19	39	36	18	16	8	4	10*	7	22
23	33	1	38*	38	17	2*	31	22	36	36	28	35	33	15	26	31	29*	14	23
24	31	30	8	21	19	20*	22	31	22	38	2	38	30	29	10	30	33	35	24
25	14*	29	10*	8	14	21*	20	29	29	29	20	33	10	14	19*	10*	14	33	25
26	29*	38	20*	30*	33	39*	28	36	33	2	15	10	15	33	34*	24*	19	36	26
27	20	7	35	34*	10	28	35	1	24	24	11	28	20	22	17	22	34	38	27
28	24	26	26	29	38	31	15	35	26	26	36	30	14	36	20	18	23	30	28
29	36	22	36	28	26	26	17	15	23	1	14*	34*	24	38	20	26	26	15	29
30	22	34	33	33	34	14	16	20*	1	10	16*	20*	35	20	33	17	17	20	30
31	28	15	11	20	20	15	24	26*	15	34	31	24*	36	26	28	34	15	34	31
32	34	24	34	10	15	4	11	34	34	15	24	26*	26	34	5*	7*	38	11	32
33	15	33	24	3*	24	34	26	24	38	20	34	15	34	11	25*	35*	20	24	33
34	27	11	3	24*	23	24	23	11	20	11	22	23	5	24	3	14	24	26	34
35	11	5	5	15	11	3	24	4	3	23*	23	5	3	5	11*	5*	11	3	35
36	4	3	15	25	3	11	34	23	11	25*	5	11	11*	23	24*	20*	25	5	36
37	5	25	4	4	4	5	5	3	25	3	4	3*	25*	25	23+	28	5	23*	37
38	3	4*	23	5	5*	23	3	25	5*	4	3	4*	4	4	4+	3	4	25*	38
39	25	23*	25	23	25*	25	4	5	4*	5	25	25	23	3	15+	23	3	4	39

* and + indicate tied ranks

Means and ranks calculated giving equal weight to each community; N=138

clerical and secretarial (card number 37), automotive [illegible], drafting (13) and graphic arts and photography (18) would appear as appropriate in the judgment of the school staff in districts which are already operating successful programs in these occupational areas.

Student Aspirations Inventory Table VII presents ranked findings associated with student aspirations concerning thirty-nine occupational areas. The findings are based upon 4,172 eleventh grade student responses from fifteen of the total of nineteen schools represented in the study.

It might be expected that school district staff members would reflect in their card sort some measure of student aspiration and interest; hence, one would predict some commonality between student needs as visualized by school personnel and student aspirations. Notable exceptions in the interests of students not held by school personnel were aircraft maintenance, operation and ground support (7), and entertainment and supportive occupations (14), neither of which was highly rated by other groups of respondents.

Parental Preference Inventory A questionnaire identified those occupational areas judged most appropriate for their eleventh grade sons and daughters. Table VIII presents data from fifteen schools associated with parental preferences. Each occupational area is ranked for each school. There was an overall return of 50.8 percent of the Parental Preference Questionnaire.

Parents and students did not show the same interest in and acceptability of the automotive occupations (card number 6). On the other hand, both groups rated clerical and secretarial (37), data processing and retrieval systems (12), and patient care (27) higher than most other cards. An apparent consciousness of and concern for the various service occupations is evident in both the student and parental results.

PRIORITIES FROM COMBINED COMMUNITIES

1. New Openings Annually (BLS) The number of new openings annually as reported by the Bureau of Labor Statistics comprised the data on which the ranks in Table IX, Column 1, are based. It may interest the reader to return to Table IV, p. 24, for the actual number of projected new openings by occupational set and for additional national manpower information.

2. Manpower Needs Sort Visual inspection of Table IX suggests similarity between the ranks in Columns 1 and 2.

TABLE VII

STUDENT LIFE'S WORK SELECTIONS BY SEX AND SCHOOL

Sets	School and (n)																			
	1(226)		2(103)		3(377)		4(443)		5(0)		6(439)		7(357)		8(525)		9(0)		10(372)	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	4	4	1	0	6	6	9	7	0	0	0	2	3	3	3	6	0	0	4	5
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	0	0	0	0	1	4	1	0	0	2	1	1	0	3	3	0	0	1	1
5	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
6	2	0	2	0	0	0	4	0	0	0	14	0	12	0	8	0	0	0	2	2
7	11	6	1	1	14	7	12	13	0	0	8	20	1	9	13	15	0	0	12	8
8	1	1	7	1	0	0	1	0	0	0	11	0	19	0	2	0	0	0	6	0
9	0	0	0	0	0	0	0	0	0	0	2	1	0	2	0	0	0	0	0	3
10	0	2	0	0	0	1	0	0	0	0	0	1	0	1	2	1	0	0	0	1
11	9	0	0	0	1	0	12	2	0	0	9	0	9	1	2	0	0	0	3	0
12	2	2	4	3	2	2	4	0	0	0	3	6	4	0	10	15	0	0	12	3
13	1	0	1	0	1	1	1	0	0	0	14	0	9	0	1	0	0	0	3	0
14	11	8	0	1	10	9	4	12	0	0	1	1	8	3	9	14	0	0	5	5
15	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
17	2	0	0	5	1	2	0	2	0	0	1	5	2	5	2	3	0	0	0	2
18	2	0	0	0	2	2	6	1	0	0	2	0	5	0	5	1	0	0	2	0
19	2	3	0	3	0	3	0	5	0	0	0	6	0	9	0	15	0	0	0	8
20	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
22	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0
26	1	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	1	1

TABLE VII(cont'd)

27	0	5	0	9	0	12	0	16	0	0	0	35	0	23	0	23	0	0	0	17
28	0	2	0	1	0	0	1	7	0	0	3	15	0	10	1	7	0	0	0	3
29	3	0	2	0	4	0	2	1	0	0	5	1	5	0	8	1	0	0	11	2
30	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0
31	1	0	0	0	0	0	2	0	0	0	8	0	0	0	2	0	0	0	3	0
32	0	1	1	0	1	1	0	0	0	0	0	5	3	3	2	6	0	0	0	3
33	0	0	1	0	0	0	1	0	0	0	5	0	2	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0
36	1	0	0	0	0	0	3	0	0	0	7	0	1	0	1	0	0	0	0	0
37	0	5	1	13	0	10	1	17	0	0	1	35	0	26	1	34	0	0	0	38
38	2	1	1	0	0	0	3	1	0	0	2	3	1	1	3	1	0	0	2	1
39	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
40	10	0	2	0	14	0	15	0	0	0	14	0	7	0	14	0	0	0	22	0
41	3	0	1	0	21	1	5	1	0	0	5	1	5	0	6	1	0	0	7	0
42	4	6	1	1	20	5	15	4	0	0	7	1	3	2	5	4	0	0	6	7
43	9	13	1	3	3	39	12	41	0	0	6	26	7	32	16	51	0	0	21	36
44	13	10	1	2	17	31	14	32	0	0	9	15	9	19	15	32	0	0	8	19
45	4	1	0	0	11	1	11	1	0	0	9	1	3	0	4	3	0	0	7	4
46	2	6	0	1	24	5	22	8	0	0	11	2	6	2	13	4	0	0	7	2
47	0	0	2	0	4	4	2	1	0	0	7	1	6	3	4	3	0	0	3	2
48	0	5	0	2	0	3	0	7	0	0	0	7	0	5	0	11	0	0	0	5
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	7	0	0	0	7	0	3	0	0	0	5	0	5	0	5	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	19	18	21	3	26	41	53	41	0	0	43	25	37	23	51	55	0	0	25	18
Σ	128	98	52	51	191	186	222	221	0	0	220	219	174	183	214	314	0	0	176	196

STUDENT LIFE'S WORK SELECTIONS BY SEX AND SCHOOL
(cont'd)

Sets	11(222)		12(320)		13(210)		14(114)		15(0)		16(207)		17(0)		18(77)		19(180)			
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
2	2	1	3	0	0	2	0	0	0	0	1	1	0	0	0	1	2	0	38	38
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	15	7
5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
6	6	0	8	0	7	0	4	0	0	0	18	6	0	0	0	0	1	0	88	8
7	4	5	1	1	2	7	0	1	0	0	0	1	0	0	0	3	6	0	85	97
8	4	0	4	2	4	0	3	0	0	0	17	1	0	0	0	0	6	0	85	5
9	0	0	1	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4	11
10	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	2	12
11	4	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	2	0	54	3
12	2	5	6	12	9	3	3	2	0	0	0	1	0	0	0	4	5	0	65	58
13	1	0	4	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	42	1
14	2	4	3	5	4	1	0	4	0	0	1	0	0	0	0	3	5	0	63	70
15	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
16	0	0	2	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	4	2
17	0	0	5	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	14	26
18	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	4
19	0	5	0	2	0	2	1	1	0	0	0	1	0	0	0	2	0	0	3	65
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	5	1
22	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	3
23	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3

TABLE VII (cont'd)

27	0	7	1	19	1	14	0	9	0	0	0	12	0	0	0	1	2	0	4	202
28	0	5	1	2	1	10	0	4	0	0	0	5	0	0	0	1	0	0	7	72
29	1	4	0	1	14	1	0	0	0	0	4	0	0	0	0	1	4	0	63	12
30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1
31	0	0	0	1	1	0	0	1	0	0	2	1	0	0	0	0	1	0	20	3
32	4	1	3	7	4	2	0	4	0	0	0	1	0	0	0	0	1	0	19	34
33	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	13	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	1
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0
37	0	18	1	50	3	32	1	9	0	0	2	37	0	0	0	7	0	0	11	331
38	2	0	0	1	0	2	0	0	0	0	0	2	0	0	0	1	1	0	17	14
39	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	5	1
40	5	0	12	1	5	0	2	0	0	0	1	0	0	0	0	0	15	0	136	1
41	4	1	2	2	0	0	1	1	0	0	3	1	0	0	0	0	12	0	75	9
42	3	2	4	0	2	3	0	1	0	0	2	0	0	0	0	16	15	0	85	50
43	10	15	7	10	5	10	2	5	0	0	8	16	0	0	0	16	13	0	120	317
44	4	4	2	12	3	3	3	7	0	0	3	3	0	0	0	7	11	0	112	196
45	0	0	4	2	2	1	4	3	0	0	2	0	0	0	0	4	18	0	85	21
46	3	2	2	2	3	1	3	4	0	0	2	1	0	0	0	0	4	0	102	38
47	3	0	1	0	4	1	1	0	0	0	1	0	0	0	0	0	0	0	38	15
48	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	51
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	1	0	4	1	1	0	0	0	0	0	1	1	0	0	0	0	5	0	44	2
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	33	26	47	38	21	15	13	10	0	0	24	17	0	0	0	6	43	0	456	336
$\sum$	110	112	134	186	98	112	46	68	0	0	99	108	0	0	0	77	180	0	2044	2128

The manpower card sort was not a numerical tally of job openings and the eighteen communities were not claimed as a representative national sample.

However, a Spearman rank difference correlation between the two sets of data was calculated and resulted in $R = .52$ ($p < .001$). This correlation tends to suggest that the geographical areas in which the eighteen school districts are, at least moderately resemble a national sample in relation to manpower needs.

4. Student Aspirations Inventory The correlation $R = .58$ between Student Aspirations and Student Needs suggests moderate agreement between students and school staff (see Table X). But the obtained value of R(.17) between Student Aspirations and New Openings Annually shows relatively little commonality between the two sets of data, which suggests reasons for lack of enrollment in the programs designed solely on the basis of manpower needs. Possibly this latter finding points out a general problem of education.

An additional inspection of aspiration findings revealed that 45.2 percent of the students selected as a first choice for their life's work an occupation that was other than professional. Further, 19 percent of the students did not know what they wanted to do for their life's work.

A second set of ranked student aspiration data may be of possible interest. The first (Table VII) was based on student responses which could be categorized into the thirty-nine occupational areas. Table XI represents a second set of data based on frequencies of response across the thirty-nine occupational areas combined with professional and miscellaneous categories (see Appendix H), resulting in a total of fifty-two categories for classifying and ranking student responses. These two overlapping listings for the top ten ranked data are shown in Table XI.

5. Parental Preference Inventory It is interesting to note high correlations between Parental Preference, Manpower Card Sort, and Student Aspirations (see Table X).

Also, from Table X parental preference showed a great deal of similarity to student interests (Table X, Column 4) and also to school district staff judgments in the student needs card sort (Table X, Column 3).

TABLE VIII

PARENTAL PREFERENCES RANKED BY SCHOOL

	School and (n)																		
Rank	01 (58)	02 (8)	03 (162)	04 (159)	05 (0)	06 (183)	07 (225)	08 (200)	09 (0)	10 (134)	11 (91)	12 (65)	13 (145)	14 (95)	15 (0)	16 (140)	17 (0)	18 (20)	19 (80)	Rank
1	31	31	31	2		37	9	37		9	12	12	12	12		9*		12	12	1
2	9*	9*	9*	9*		9	37	9		37	7	9	37	9		37*		9	31	2
3	37*	37*	37*	37*		12	32	12		12	9*	37	9	37		29+		37	16	3
4	12	12	12	31		27	27	31		10	37*	27	32	29*		38+		31	22	4
5	32	2	2	19		32	29	27		31	31	16	29	38*		16		10	13	5
6	2	32	16	7		38	12	10		27	29*	29	38	16		27		27	32	6
7	7	29*	14	2		29	38	16		38	38*	32	27	32		10		1	14	7
8	10	38*	32	14		16	31	14		29	16	38	31	27		1		32	8	8
9	14	7	27	27		7	1	32		7	32	10	16	31		19		16	2	9
10	17	10	13	32		1	10	1		14	2	31	7	1		12		29*	7	10
11	27	19	10	10		31	7	19		16	27	19	1	19		28		38*	9	11
12	13	28	7	16		10	19	2		19	10	1	13	10		30		2	37	12
13	16	1	19	29*		19	17	29*		32	17	17	10	35		14		19	21*	13
14	19	14	1	38*		13	16	38*		2	13	7	17	17		31		17	39*	14
15	22	20	17	13		17	2	17		1	1	13	6	13		7		22	6	15
16	18	39*	18	1		14	14	7		13	14	14	2	14		22		14	29*	16
17	29*	21*	29*	17		2	13	13		17	6	35	14	22		32		7	38*	17
18	38*	36*	38*	18		35	6	22		39	19	30	39	28		35		18	34	18
19	1	5	22	11		11	8	18		21	22	18	19	30		17		28	18	19
20	11	27	21*	22		30	35	6		26	35	39	21	7		20		13	1	20
21	26	13*	39*	6		8	11	21*		18	18	28	22	2		33		30	35	21
22	6	33*	35	35		26	28	39*		35	8	21	18	18		36		21*	36	22
23	8	16	6	8		6	30	35		8	11	24	8	6		13		39*	27	23
24	21*	6	8	26		22	18	8		22	28	2	35	24		2		35	11	24
25	39*	34	11	21*		18	21*	30		6	36	22	30	21*		21*		20	17	25
26	28+	17	26	39*		34	39*	28		11	21*	8	3	39*		39*		34	3	26
27	33+	35	34	30		28	36	11		28	39*	3	24	33		18		3	26	27
28	35	8*	20	28		39	24	26		34	30	6	28*	20		11		8	28	28
29	20	15*	30	36		36	33	34		30	24	34	33*	8		15		26	25	29
30	30	25	25	33		21	22	3		36	34	11	34	5		6		36	33	30
31	4	18	36	34		33	26	15		20	33	33	5	15		26		6	4	31
32	3	3	28	20		3	34	20		3	26	26	36	34		24		11	20	32
33	36	4*	3	24		20	20	36		33	5	5*	26	36		4		24	24	33
34	24	23*	4	25		25	3	33		24	25	15*	11	3		8		15*	5	34
35	34	30	15	4		5	25	4		5	4	36	25	11		3		33*	10	35
36	25	11*	24	3		24	4	25		25	15	25	15	26		5		5	30	36
37	5	22*	23	15		4	23	5		4	25	4	20	25		34		25	19	37
38	23	24	5	23		15	5	24		23	20	20	4	4		23		4	15	38
39	15	26	33	5		23	15	23		15	5	23	23	23		25		23	23	39

* and + indicate tied ranks for occupational areas
Means and ranks calculated giving equal weight to each community; N=1774

TABLE IX

COMBINED RANKING OF THIRTY-NINE OCCUPATIONAL AREAS
FOR THE EIGHTEEN COMMUNITIES
(Numbers in Columns 1-5 Represent Rankings)

Set No.	1. New Openings Annually-BLS	2. Manpower Card Sort N=138	3. Student Needs Card Sort N=138	4. Student Aspir. Questionnaire N=4172	5. Parental Pref. Questionnaire N=2119
1	9	9	17	37	12
2	35	30	15	9	14
3	37	37	36	33	33
4	39	39	39	19	35
5	12	36	37	35	36
6	18	4	4	6	21
7	26	25	12	3	10
8	7	5	11	7	22
9	5	6	3	20-	1
10	33	17	24	21-	11
11	36	35	34	12	27
12	22	3	2	5	3
13	29	15	5	14	16
14	31	34	25	4-	13
15	28	24	31	31-	38
16	10	19	10	27+	7
17	4	21	16	15+	17
18	24	26	8	16	19
19	19	23	20	11	15
20	23	29	30	38	34
21	25	8	13	28-	24
22	16	22	21	25-	18
23	34	33	35	30	39
24	30	27	33	36	32
25	38	38	38	34-	37
26	21	31	29	26-	28
27	2	2	6	2-	5
28	11	28	22	8-	26
29	14	12	19	10-	8
30	15	16	23	32+	25
31	20	14	14	18+	4
32	27	10	7	13+	6
33	3	20	26	22-	31
34	13	32	32	39-	30
35	6	13	18	25	20
36	17	11	27	23-	29
37	1	1	1	1-	2
38	8	18	28	17-	9
39	32	7	9	29	23

- and + indicate tied ranks

Coefficient of Concordance (W) =.61
($p < .001$)

TABLE X

FIVE RANKINGS OF THIRTY-NINE CORRELATIONS
AMONG OCCUPATIONAL AREAS

(As Listed in Table IX)

		1. New Openings Annually-BLS	2. Manpower Card Sort N=226	3. Student Needs Card Sort N=138	4. Student Aspir. Questionnaire N=4172	5. Parental Pref. Questionnaire N=2119
New Openings Annually-BLS	1	---	---	---	---	---
***Manpower Card Sort N=226	2	.54*	---	---	---	---
***Student Needs Card Sort N=138	3	.39**	.81*	---	---	---
Student Aspir. Questionnaire N=4172	4	.17	.36**	.58*	---	---
Parental Pref. Questionnaire N=2119	5	.39**	.64*	.81*	.62*	---

Spearman Rho
*Significant at .001

**Significant at .05

***Overlapping subjects

The occupational areas derived from the ten top-ranked items for all communities in Table IX in three levels of priorities are as follows:

Occupational areas (by card number) ranked within the top ten in all five columns

37 Clerical and Secretarial Occupations (1.2)*

Examples: Stenographer, Clerk-stenographer, Clerk-typist, Receptionist, Executive Secretary

27 Patient Care--Health (3.2)*

Examples: Registered Nurse, Practical Nurse, Hospital Attendant

Occupational areas (by card number) ranked within the top ten in four of the five columns

9 Bookkeeping and Business Machines Operation (7.0)*

Examples: Bookkeeper, Duplicating Machine Operator, Junior Accountant, Business Machine Operator

12 Data Processing and Information Retrieval Systems (7.0)*

Examples: Keypunch Operator, Computer Programmer, Other Data Processing Machine Operators

Occupational areas (by card number) ranked within the top ten in three of the five columns

8 Building Construction and Maintenance Trades (10.4)*

Examples: Mason, Carpenter, Electrician, Heating and Air Conditioning Installer

6 Automotive Repair and Internal Combustion Engine Maintenance and Repair (10.6)*

Examples: Auto Mechanic, Auto Body Man, Small Engine Mechanic, Automotive Technician

32 Technical and Laboratory-Focused Health Occupations (12.6)*

Examples: X-Ray Technician, Electro-Cardio Technician, Dental Laboratory Technician, Medical Laboratory Technician

16 Finance and Credit (14.6)*

Examples: Brokerage Clerk, Teller, Credit Manager, Securities Salesman, Bank Cashier

Several of the thirty-nine occupational areas listed in the Top Ten merit discussion because of their rather interesting differences between manpower and student needs ratings. These cards are:

		Rank Manpower	Rank Student needs
13	Drafting Occupations	15	5
	The apparent popularity of drafting in high school educational programs is reflected in the relatively high ratings of this item by school district staff participating in the student needs sort.		
16	Finance and Credit Occupations	19	10
	This card, not ranked particularly high in the manpower ratings, was judged considerably higher in its appropriateness for and acceptability to high school students. The experience and perceived successes of the high schools in these areas tend to reflect the high rating given by school district staff in the student needs sort.		
18	Graphic Arts and Commercial Photography	26	8
	Showing an unusual divergency of rankings (between the two means), this item is one which, although limited in comparison with the manpower needs of the other thirty-		

*Mean ranks shown in parentheses were calculated across the five columns in Table IX.

TABLE XI

TOP TEN RANKS OF CATEGORIES OF
OCCUPATIONAL ASPIRATIONS BY ELEVENTH GRADE STUDENTS

Rank	Card Number	(N = 1911) 39 Occupational Sets	Card Number	(N = 4225) 52 Categories
1	(37)	Clerical and Secretarial Occupations	(52)	Don't Know
2	(27)	Patient Care -- Health	(43)	Education
3	(7)	Aircraft Maintenance, Operation, and Ground Support	(37)	Clerical and Secretarial Occupations
4	(14)	Entertainment and Supportive Occupations	(44)	Arts and Humanities
5	(12)	Data Processing and Information Retrieval Systems	(27)	Patient Care--Health
6	(6)	Automotive Repair and Internal Combustion Engine Maintenance and Repair	(7)	Aircraft Maintenance, Operation, and Ground Support
7	(8)	Building Construction and Maintenance	(46)	Natural and Physical Sciences
8	(28)	Personal Services	(40)	Medical and Dental
9	+(2)	Advertising Services and Commercial Art	(14)	Entertainment and Supportive Occupations
10	+(29)	Public Services - Government	(12)	Data Processing and Information Retrieval Systems

(+) Tied ranks

eight occupational areas, may warrant strong consideration for inclusion in the educational program.

27	Patient Care--Health	2	6

As one of the top priority recommendations for emphasis in the school program, some form of patient care would appear to deserve inclusion in the high school program. The ranking of six on the student needs sort may put educational planners on guard in that the maturity level is an important consideration.

Occupational areas prominent in the Bottom Ten category warrant a brief discussion. Although not within the specific mission of this research, it would appear that local educational planners may profit from a brief review of the items rated especially low. The consistency of the commonly low ratings is the most significant point. Card numbers 3,4, and 5--embracing the great majority of the occupations in agriculture-- are ranked consistently near the bottom in all five columns. Card 26, ornamental horticulture, an area in which new school vocational programs are becoming popular, was rated only slightly higher than the other agriculture sets, just missing the lowest ten in student needs ratings, student aspirations, and parental preferences.

Cards relating to occupations peculiar to specific geographic areas are prominent in the low rated group. Mining and extraction of natural resources (card number 25), maritime occupations (23), and conservation of forestry and natural resources (11) all would qualify in this group. However, areas which tend to cut across geographic and industry lines, such as entertainment and supportive occupations (14), apparel maintenance and service (15), and materials handling and storage (24), were given similarly low ratings, hence generating little or no potential interest for use in high school program planning.

GUIDELINES FOR FURTHER USE OF THE METHODOLOGY

Review and replication of the previous sections of this report will provide one approach to guidelines for further use of the methodology. However, it is preferable for local district staff to be aware of the procedures reported up to this point but to utilize this chapter for suggestions which improve upon the methodology actually used in the study.

The temptation to become prescriptive was resisted in the preparation of these guidelines. Use will vary among school districts. It is hoped that the methodology and findings in the report can be of value to most school districts when making program decisions. In recognition of the need for discriminating application of the methodology, the following eight points are offered as refinement of the procedures utilized in this study for identifying the priority occupations for consideration on high school program planning.

METHODOLOGICAL REFINEMENTS

1. An Integrated System of Selection. A single focus, such as manpower needs, would not normally become the main determinant of the occupational emphases in the schools. Rather, a host of inputs (e.g., numeric manpower needs, social acceptability of occupations, student maturity and interest patterns, and parental aspirations for their children) might be utilized in the determination of vocational curricula. To rely only on manpower needs as rationale for a school program or curriculum would fail to recognize the feelings, interests, and aspirations of the students and parents. On the other hand, to ignore the consideration of manpower needs in the community and the nation would tend to perpetuate much of the irrelevance of today's educational practice which for the most part has ignored the economic scene in the community and the nation. A methodology for integrating these and other important inputs into educational programming is mandatory (see Figure 1).

A numerical weighting system for the inputs listed in Figure 1 would be potentially different for nearly every local school district in the nation. A community with no manpower needs could hardly be expected to give precedence to training for local employment; the affluent suburb which is sending 80 percent of its youth to college will hardly relate to a strong local need for foundry workers. Every local school district probably will weight the inputs (from Figure 1) differently.

2. Importance of Local Manpower Needs. Local, regional, and national occupational needs are, in most geographic areas, different. While local educators attempt to adjust programs to accommodate the needs of local and regional businesses and industries, they must be aware that many students may not live most of their economically productive lives in that particular locale. On the other hand, a major emphasis on the needs of local and nearby urban areas is necessary for high school educational programs. This emphasis helps satisfy the economic needs of the area, as well as provides some solution to social problems relating to the failure to equip residents for productive lives in the community. The desired learning experiences in many cases may be provided through cooperative and in-school programs utilizing in-plant, industry owned and controlled equipment, thus making coordination with local business and industry a necessity for the educational planner.

Local manpower needs must also be viewed in connection with the numbers of personnel being trained in the various occupational areas by manpower training programs and in existing high school occupational programs. Both factors must be taken into consideration when assessing manpower needs at the local level.

3. Use of Existing Manpower Data. The Bureau of Labor Statistics, Bureau of Employment Security, National Planning Association, and other governmental and private agencies all generate projections and data which are potentially valuable for coordination with local survey findings. Current research efforts and other work in process by these and other agencies will probably, in the near future, provide an acceptable means of assessing manpower needs and relating them to vocational education programs.

4. Local Occupational Survey. The manpower needs card sort is a variation of the usual local occupational survey often utilized when conducting a community analysis to provide a basis for the design and initiation of new and expanded vocational programs and facilities. A survey of some type to be used in assessing the local occupational demand is a prerequisite to educational planning which is usually necessary. Mail questionnaire techniques are not considered by the project staff to be the most appropriate means for assessing the local manpower scene, although a low budget or other reasons may make their use necessary. A personal interview and card sort of the type reported in this study is preferable because the personal contact allows the interviewer to assess the qualifications of the respondent in a manner not possible through mail responses.

5. Survey and Card-Sort Instruments. Two hundred-sixty occupations are listed in the *Occupational Outlook Handbook* (16), which includes 96 percent of the employed persons in the United States. These 260 occupations, or a selected grouping of them, are recommended as the primary basis for local occupational surveys. A subsequent grouping of the 260 occupations into a lesser number of broader categories encompassing all similar occupations would be considered a better procedure than to use the thirty-nine categories developed for use in this study. A well qualified advisory group of local manpower specialists and community and industrial planners might also be

asked to add additional occupations or categories to the list which would reflect unique local needs or anticipated future demands not evident in the 260 occupations.

The occupational survey (or card sort) should serve as a combined judgment of social and economic needs of the geographic area rather than a strictly numeric estimate of manpower needs. Numeric needs for essentially all occupations can be found or derived from existing Bureau of Labor Statistics and other manpower projections, both nationally and regionally, and may frequently be available on a local basis. It is suggested that local, regional, and national projections can be compared with the occupational survey findings of the local area and utilized as one input to ultimate program decision.

The sample of respondents in the occupational survey (or card sort) should be significantly expanded over the six to twelve respondents utilized in most communities in the recently completed study. Respondents should be carefully selected from among the knowledgeable community, business, and industrial planners and larger employers in the area. A representative from each of the more significant employing firms and labor organizations should be chosen on the basis of his participation and experience in community, economic and related affairs, as well as his relationship to the occupational needs of the particular firm he represents. Further, local school district administrative, curriculum, and guidance staffs who are heavily involved in community affairs may also be considered competent to make judgments of local manpower needs. If persons selected do not have the perspective to view needs beyond their own firms, findings are likely to be misleading.

6. Student Needs Card Sort. This card sort should be performed to obtain estimates by adult educators of the occupational areas most appropriate for and most acceptable to high school students of a community (or school). Again, this sort should be based on the revised occupational areas as described under number five herein (from *Occupational Outlook Handbook*).

Ten or more persons carefully selected from among the: (a) high school principals; (b) district curriculum director; (c) local vocational director; (d) guidance staff; and (e) others who have been recently and integrally involved with high school students and with educational program and curriculum planning, should be asked to respond. Sample selection for the student needs sort must be carefully accomplished. Their views, although those of adults, represent an educator's perception of what occupational areas would be beneficial to youth. Therefore, these views should be taken into consideration, and should contribute an important input to educational program design. It is reasonable to assume that twenty or more reasonably qualified persons should be available and appropriate for use in most multiple high school districts.

Again, these data can be obtained via a mail survey technique rather than a card sort. However, the respondents can be better instructed in the purpose of the survey and in the ratings to be made if an interviewer is present to explain and administer the sort as well as to establish and guarantee each individual data source.

7. Assessment of Student and Parental Aspirations. The assessment of student and parental aspirations as accomplished in this study was a cumbersome process. The most appropriate method for obtaining student opinions regarding occupations could be accomplished as a part of regular school registration or counseling procedures each year, thus accumulating a bank of aspirations and related trends. Parental occupational preferences for their sons and daughters in high school could also be obtained as a part of student registration or at parent-night programs. These parental and student aspirational assessments may on occasion result in and justify different educational programs for different sections of large urban school districts.

8. Geographic Mobility of Students. Population mobility is generally a concern of educational and manpower theorists in educational program planning, but seldom can they do anything about it. Until recently much research pointed toward a great degree of geographic mobility of students following graduation. However, recent research tends to indicate that people seldom relocate their residence to obtain a specific job, particularly when the type of work is new to them. Other findings show a variety of factors which function to inhibit mobility, e.g., company pension plans, union seniority, home ownership, and family ties. Although it is unlikely that most students in many communities will spend all their adult lives in the same community, preparation for the first job in the local community can be easily defended. Local employers normally are exhibiting an increased feeling of responsibility and commitment in hiring from among the local population. Although mobility may sometimes be a factor, local employment needs and opportunities provide an immediate direction and base for education and hence are probably more relevant than opportunities in the broader community or nation.

Geographic mobility patterns in each community, particularly of youth through their early years of maturity, warrant a great deal of systematic study before exerting significant influence on local educational programs. Long-range follow-up studies of graduates and dropouts may help reveal mobility patterns sufficiently common to warrant consideration of occupational preparation for opportunities not presently available in the immediate locality.

USE OF THE REPORT

The methodology employed in this study, including the comments and refinements as suggested in this closing chapter, are recommended as appropriate for use by local school district program planners until such time as these and other techniques have been more adequately tested and refined. It is the authors' judgment that the methodology as outlined has sufficient face validity to constitute an improvement over the manner in which vocational program identification is most often accomplished in most school districts.

Researchers in this study observed that school districts tend to be closely tied to existing programs--that these programs tend to become permanent once the laboratories, the teachers, and the flow of students through the program have been established. This system, or a refinement of it, could be conducted periodically to provide a basis for nearly continuous review of existing instructional programs as well as for new program considerations. However, in adapting the methodology for use in a given community, a number of considerations have yet to be noted. Those considerations are summarized as follows:

1. Review the five data bases (see Table IX) used in the study, then make decisions regarding the importance and/or relative weight to be assigned to each. It may be appropriate to use other data bases due to the unique characteristics of a given community, but adherence to an appropriate balance of inputs relating to Figure 1 (p.4) is recommended.

2. Review curriculum and program planning, guidance, student follow-up, and other activities within the district's present operational responsibility to locate components of the study that already exist and may be usable with little or no modification.

3. Consult with the review existing citizens' advisory committees and district staff committees and organizations for potential respondents' names and to gain public and staff support for the study.

4. Plan toward continuous or periodic operation of the components to the extent practicable. Student and parental aspirations, for example, often can be assessed quickly and routinely within present guidance, homeroom, or student program planning activities.

5. Use the periodic results of the assessments for longitudinal study of trends and to test the stability of responses. Over a period of time these results should help district staff to determine the relative importance of each data input, its stability, and hence the frequency for conducting specific portions of the study.

REFERENCES

(1) Cooley, William W., and Lohnes, Paul R. *Predicting Development of Young Adults, Project Talent.* American Institute for Research and School of Education, University of Pittsburgh, 1968.

(2) Drabick, Lawrence W. *Perceived Sources of Influence Upon Occupational and Educational Expectations.* Raleigh, North Carolina: A Report of Research Conducted Cooperatively by the Department of Agriculture Education and Department of Sociology and Anthropology, North Carolina State University, 1967.

(3) Goldstein, Harold. "Forecasting Occupational Employment for State Vocational Education Planning." *Manpower Information for Vocational Education Planning,* June 12-13, 1969.

(4) Kerr, William D., and Willis, Warren D. "Interest and Ability: Are They Related?" *The Vocational Guidance Quarterly,* Volume 14, Number 3. Fredonia, New York: State University College, Spring, 1966.

(5) Kuvlesky, William P., and Bender, Robert G. "The Relevance of Adolescents' Occupational Aspirations for Subsequent Job Attainments." *Rural Sociology,* September 1967.

(6) Lecht, Leonard A. *Manpower Requirements for National Objectives in the 1970's.* Washington, D. C.: Manpower Administration, 1968.

(7) Marshall, Jon C., and Mowrer, George E. "Validity of Parents' Perceptions of Their Sons' Interests." *Journal of Counseling Psychology,* Volume 15, Number 4. St. Louis, Missouri: University of Missouri, July 1968.

(8) Medvin, Norman. *Occupational Job Requirements: A Shortcut Approach to Long-Range Forecasting.* Washington, D.C.: U.S. Employment Service, 1967.

(9) National Commission on Technology, Automation, and Economic Progress. *The Outlook for Technological Change and Employment.* Washington, D.C.: U.S. Government Printing Office, 1966.

(10) Parnes, Herbert S. *Manpower Forecasting in Educational Planning, Organization for Economic Cooperation and Development.* Paris, 1967.

(11) Putman, John F. and Chismore, Dale, eds. Standard Terminology for Curriculum and Instruction in Local and State School Systems. Washington, D. C.: U.S. Government Printing Office, 1970.

(12) *70,000 High School Seniors, Their Educational and Vocational Plans.* IVTC Research Bulletin 1, A Report of the Survey of the Educational and Vocational Interest and Plans of Indiana's 70,000 High School Graduates in 1966. Indianapolis, Indiana: Indiana Vocational Technical College, Department of Research, 1967.

(13) Slocum, Walter L., and Bowles, Roy T. *Educational and Occupational Aspirations and Expectations of High School Juniors and Seniors in the State of Washington.* Report 1 of the Vocational-Technical Research and Development Project, Department of Education, Sociology, and Rural Sociology cooperating, Washington State University, January 1967.

(14) Teeple, John B. "Variables in Planning Occupational Education Programs." *American Association of Junior Colleges Journal,* February 1970.

(15) U.S. Department of Labor. *Manpower - United States.* Washington, D.C., 1967.

(16) U.S. Department of Labor. *Occupational Outlook Handbook.* Washington, D.C.: Bureau of Labor Statistics, 1968-1969.

(17) U.S. Department of Labor, Occupational Outlook Quarterly. Washington, D.C.: Bureau of Labor Statistics, Volume 12, Number 12, May 1968.

(18) U.S. Department of Labor, *Tomorrow's Manpower Needs.* Volume IV. Washington, D.C.: Bureau of Labor Statistics, 1969.

(19) Wingeard, Irvin F. O. *Forecasting Occupational Employment for State Vocational Education Planning.* U.S. Training and Employment Services Manpower Administration U.S. Department of Labor.

(20) Wrenn, Charles Gilbert. *The Counselor in a Changing World.* American Personnel and Guidance Association, Washington, 1962.

APPENDICES

APPENDIX A

OCCUPATIONAL SETS

1. ADMINISTRATION AND PLANNING--HEALTH

   *a. Food Service
   b. Ward Clerk
   c. Housekeeper
   d. Dietary Technician
   e. Ward Supervisor
   f. Medical Records Clerk
   g. Dietitian
   h. Records Librarian

2. ADVERTISING SERVICES AND COMMERCIAL ART

   a. Billposter
   b. Display Assistant
   c. Advertising Salesman
   d. Signwriter
   e. Solicitors and Canvassers
   f. Illustrator
   g. Cartoonist
   h. Copywriter
   i. Layout Man
   j. Advertising Assistant

3. AGRICULTURAL MECHANICS AND TECHNOLOGY

   a. Agricultural Machinery Inspector
   b. Agricultural Machinery Setup
   c. Agricultural Machinery Partsman
   d. Agricultural Machinery Mechanic
   e. Agricultural Machinery Salesman
   f. Agricultural Service Manager
   g. Agricultural Sales Manager
   h. Agricultural Field Representative

4. AGRICULTURAL PRODUCTION

   a. Farmhand
   b. Farm Equipment Operator
   c. Part-time Farmer
   d. General Farmer
   e. Grain Farmer
   f. Dairy Farmer
   g. Livestock Farmer
   h. Farm Manager

*Sample jobs for illustrative purposes only and are non-inclusive

5. AGRICULTURAL PRODUCTS

a. Grain Elevator Hand
b. Poultry Processor
c. Fruit-Vegetable Inspector
d. Agricultural Commodity Grader
e. Meat Processor
f. Meat and Poultry Salesman
g. Grain Elevator Operator
h. Meat Processing Manager

6. AUTOMOTIVE REPAIR AND INTERNAL COMBUSTION ENGINE MAINTENANCE AND REPAIR

a. Auto Wash Operator
b. Small Engine Mechanic
c. Auto Body Man
d. Auto Partsman
e. Marine Engine Mechanic
f. Auto Mechanic
g. Diesel Mechanic
h. Automotive Service Manager
i. Automotive Alignment
j. Automotive Technician
k. Manufacturer Service Representative

7. AIRCRAFT MAINTENANCE, OPERATION, AND GROUND SUPPORT

a. Aircraft Baggage Man
b. Aircraft Ground Crewman
c. Aircraft Serviceman
d. Steward/Stewardess
e. Aircraft Navigator
f. Aircraft Instrument Mechanic
g. Aircraft Engine Mechanic
h. Electronic Technician
i. Aircraft Pilot

8. BUILDING CONSTRUCTION AND MAINTENANCE TRADES

a. Construction Helper
b. Roofer
c. Glazier
d. Cement Finisher
e. Flooring Installer
f. Mason
g. Heating and Air Conditioning Installer
h. Plumber
i. Electrican

9. BOOKKEEPING AND BUSINESS MACHINE OPERATION

   a. Bookkeeper
   b. Bookkeeping Machine Operator
   c. Business Machines Operator (other than bookkeeping)
   d. Duplicating Machine Operator
   e. Tabulating Machine Operator
   f. Junior Accountant

10. CARE AND GUIDANCE OF CHILDREN

   a. Baby-Sitter
   b. Child Monitor
   c. Dietary Aide
   d. Children's Nurse
   e. Infant Nurse
   f. Playground Supervisor
   g. Director's Aide
   h. Nursery Director

11. CONSERVATION AND UTILIZATION OF AGRICULTURAL AND FORESTRY RESOURCES

   a. Tree Planter
   b. Conservation Aide
   c. Fire Control Aide
   d. Surveyors Aide
   e. Forester Aide
   f. Timber Cutter
   g. Fire Lookout
   h. Lumber Grader
   i. Fire Warden
   j. Woods Boss

12. DATA PROCESSING AND INFORMATION RETRIEVAL SYSTEMS

   a. Keypunch Operator
   b. Verifier Operator
   c. Sorting Machine Operator
   d. Tabulating Operator
   e. Tape Handler
   f. Off-Line Printer Operator
   g. Card-Tape Converter Operator
   h. Assistant Console Operator
   i. Digital Computer Operator
   j. Computer Programmer

13. DRAFTING OCCUPATIONS

   a. Detailer
   b. Tracer

c. Draftsman Apprentice
d. Commercial Draftsman
e. Construction Draftsman
f. Layout Man
g. Topographical Draftsman
h. Multiplex Operator
i. Body Designer
j. Design Draftsman

14. ENTERTAINMENT AND SUPPORTIVE OCCUPATIONS

a. Prompter
b. Sound Man
c. Lighting and Set Man
d. Dancer
e. Television Cameraman
f. Actor or Actress
g. Musician
h. Choreographer
i. Script Writer
j. Television and Radio Equipment Technician

15. APPAREL MAINTENANCE AND SERVICE

a. Marker
b. Sorter
c. Washerman
d. Laundryman
e. Dry Cleaner
f. Garment Machine Operator
g. Spotter
h. Machine Presser
i. Repair Estimator
j. Dyer
k. Shoe Repairman
l. Tailor

16. FINANCE AND CREDIT OCCUPATIONS

a. Bank Messenger
b. Broker's Floor Representative
c. Safe Deposit Clerk
d. Brokerage Clerk
e. Financial Service Salesman
f. Teller
g. Loan Officer
h. Credit Manager
i. Securities Salesman
j. Bank Cashier

17. GENERAL MERCHANDISE AND APPAREL

a. Sample Girl
b. Stockroom Work
c. Salesperson
d. Window Trimmer
e. Department Manager
f. Fashion Coordinator
g. Buyer

18. GRAPHIC ARTS AND COMMERCIAL PHOTOGRAPHY

a. Darkroom Man
b. Signwriter
c. Bookbinder
d. Paste-Up Man
e. Electrotyper
f. Photographer
g. Printer
h. Photolith Operator
i. Airbrush Artist
j. Lithographer
k. Engraver
l. Industrial Illustrator

19. HOME FURNISHING AND EQUIPMENT SALES AND SERVICE

a. Salesman
b. Floor-Covering Estimator
c. Seamstress, Drapery
d. Decorator's Assistant
e. Upholsterer
f. Home Service Representative
g. Interior Decorator
h. Buyer

20. HOTEL, MOTEL AND INSTITUTIONAL OPERATION AND MANAGEMENT

a. Baggage Porter
b. Doorman
c. Housekeeper
d. Bell Captain
e. Stationary Engineer
f. Room Clerk
g. Floor Supervisor
h. Custodian
i. Building Service Manager
j. Motel Manager

21. INSTRUMENT AND APPLIANCE SERVICE AND REPAIR

a. Vending Machine Serviceman
b. Instrument Repairman
c. Vending Machine Repairman
d. Appliance Repairman
e. Refrigeration Repairman
f. Watch Repairman
g. Electric Motor Repairman
h. Radio and Television Repairman
i. Service Center Supervisor
j. Electronic Technician

22. INSURANCE AND REAL ESTATE

a. Rental Agent
b. Investigator
c. Claims Adjustor
d. Real Estate Salesman
e. Property Manager
f. Insurance Agent
g. Underwriter
h. Right-Of-Way Agent
i. Real Estate Appraiser
j. Insurance Examiner

23. MARITIME OCCUPATIONS

a. Longshoreman
b. Deckhand
c. Marine Oiler
d. Fisherman
e. Lock Tender
f. Marine Engineer
g. Quartermaster
h. Marine Electrician
i. Barge Captain

24. MATERIALS HANDLING AND STORAGE

a. Dockhand
b. Fork-Lift Operator
c. Car Chaser
d. Shipping Clerk
e. Stock Clerk
f. Inventory Clerk
g. Route Clerk
h. Yard Clerk
i. Station Agent
j. Expeditor
k. Warehouse Foreman

25. MINING AND EXTRACTION OF NATURAL AND MINERAL RESOURCES

a. Driller Helper
b. Miner
c. Caser
d. Quarryman
e. Jackhammer Operator
f. Blaster
g. Machine Driller
h. Dredgemaster
i. Bank Boss
j. Seismograph Technician

26. ORNAMENTAL HORTICULTURE

a. Landscape Gardner
b. Greenskeeper
c. Garden Supply Salesman
d. Flower Salesman
e. Florist Supply Salesman
f. Park Caretaker
g. Floral Designer
h. Flower Grower
i. Greenhouse Operator
j. Nurseryman

27. PATIENT CARE--HEALTH

a. Hospital Attendant
b. Ambulance Attendant
c. Medical Receptionist
d. Practical Nurse
e. Veterinary Aide
f. Registered Nurse
g. Medical Therapist
h. Dental Hygienist

28. PERSONAL SERVICES

a. Wardrobe Attendant
b. Masseur
c. Manicurist
d. Beautician
e. Hair Stylist
f. Barber
g. Make-Up Man
h. Dance Instructor
i. Income Tax Consultant
j. Embalmer Apprentice
k. Mortician

29. PUBLIC SERVICES--GOVERNMENTAL

a. Mail Clerk and Carrier
b. Security Guard
c. Library Clerk
d. Welfare Office Clerk
e. Building Inspector
f. Fireman
g. Recreation Supervisor
h. Policeman (or Woman)
i. Teacher Aide
j. Grounds or Building Maintenance Supervisor

30. QUANTITY FOOD PREPARATION AND DISTRIBUTION

a. Miller
b. Route Salesman
c. Cook
d. Food and Meat Salesman
e. Meatcutter
f. Baker
g. Chef
h. Dietary Technician
i. Supermarket Manager

31. SUPERVISORY, ADMINISTRATIVE, MANAGEMENT AND PERSONNEL OCCUPATIONS

a. Management Trainee
b. Personnel Interviewer
c. Training Assistant
d. Buyer
e. Credit Officer
f. Food Broker
g. Placement Manager
h. Sales Manager
i. Office Manager

32. TECHNICAL AND LABORATORY FOCUSED HEALTH OCCUPATIONS

a. Denture Finisher
b. Optician Apprentice
c. Radiation Monitor
d. Pharmacist's Aide
e. Lens Maker
f. Dental Ceramist Assistant
g. X-ray Technician
h. Electro-Cardio Technician
i. Dental Laboratory Technician
j. Medical Laboratory Technician

33. TRANSPORTATION SERVICES (EXCEPT AIR)

a. Service Station Attendant
b. Transit Operator
c. Taxi Driver
d. Bus Dispatcher
e. Truck Driver (Local/Long Distance)
f. Railway Engineer
g. Yardmaster (Railroad)
h. Travel Agent
i. Auto Service Center Manager

34. DERIVATION AND PROCESSING OF CHEMICAL AND SYNTHETIC MATERIALS

a. Processing Helper
b. Tap-Out Man
c. Moldman
d. Plater
e. Saw Mill Operator
f. Blender or Batch Mixer
g. Mix Machine Tender
h. Treating Plant Operator
i. Metallurgical Technician
j. Control Technician

35. DESIGN, FABRICATION, AND ASSEMBLY OF MANUFACTURED PRODUCTS (EXCEPT AGRICULTURAL AND AVIATION)

a. Machine Helper
b. Assembler
c. Vacuum Form Machine Operator
d. Laminator
e. Glassblower
f. Shipfitter
g. Machinist
h. Laboratory Technician
i. Tool Design Technician
j. Product Design Technician

36. CONSTRUCTION (EXCEPT BUILDINGS)

a. Construction Helper
b. Rodman
c. Asphalt Handler
d. Backhoe Operator
e. Bulldozer Operator
f. Heavy Equipment Operator
g. Batch Mix Operator
h. Highway Department Technician

37. CLERICAL AND SECRETARIAL OCCUPATIONS

a. Correspondence Clerk
b. File Clerk
c. Clerk-Typist
d. Receptionist
e. Switchboard Operator
f. Clerk-Steno
g. Stenographer
h. Legal Secretary
i. Executive Secretary
j. Office Manager

38. PUBLIC SERVICES-NONGOVERNMENTAL

a. Meter Reader
b. Waitress/Waiter
c. Bartender
d. Lifeguard
e. Restaurant Hostess
f. Telephone Operator
g. Camp Counselor
h. Telephone/Power Lineman
i. Tailor
j. Radio/Television Announcer

39. BUSINESS MACHINE SERVICE AND REPAIR

a. Typewriter Serviceman
b. Duplicating Machine Serviceman
c. Adding Machine/Calculator Serviceman
d. Accounting Machine Serviceman
e. Business Machine Service Manager
f. Factory Service Representative
g. Electronic Data Machine Serviceman
h. Computer Serviceman
i. Computer Installer
j. Electronic Data Field Representative

APPENDIX B

DIRECTIONS FOR THE CARD SORT

Each of the thirty-nine cards in this deck describes a set or catetory of occupations. Included on each card is a sample of the occupations that would be included in that set. The samples represent several levels and kinds of work within each occupational set. Jobs which usually require a four-year college degree are not included.

You are being asked to judge the relative importance of the thirty-nine occupational sets by distributing them throughout a five-point scale of importance.

For the manpower demand sort (using yellow guide cards) additional instructions are:

The five yellow cards placed before you provide a five-point scale of importance. Each of the thirty-nine sets for which you feel current and future manpower demand is very high in this community (including the surrounding metropolitan area) should be placed on card No. 1. Those occupational sets for which little or manpower demand exists should be placed on card No. 5. Business, industrial, and community activities and trends affecting employment should be considered to the best of your ability. Distribute the entire deck throughout the five-point scale on the combined basis of relative numbers of workers needed and the social and economic importance to the community

For the student needs sort (using green guide cards) additional instructions are:

The five green cards placed before you provide a five-point scale of importance for the distribution of the cards. Each of the thirty-nine sets for which you feel high school preparation is appropriate for and acceptable to high school students of this school district should be placed on card No. 1. Those cards which tend to contain occupations that you judge as inappropriate and not acceptable as high school preparation should be placed on card No. 5. Distribute the entire deck throughout the five-point scale as suggested by the five green cards.

APPENDIX C

Student Questionnaire

		School Code
		Group ID

Your answers are confidential. Other students and teachers will not be involved in the processing of these forms. The boxes are for use in processing and should not be filled in by students.

1. Name of high school: _____

_____
(Location)

2. Sex: _____ Male _____ Female

3. Father's occupation:
What does he do? _____

Where is he employed? _____
(Name of employer or company)

_____
(Location: City and State)

4. Is your mother employed? ____ Yes ____ No ____ Part-time

If yes, what does she do? _____

Where is she employed? _____
(Name of employer or company)

_____
(Location: City and State)

5. Educational background of parents or guardian:

	Less than high school graduate	High school graduate	Education beyond high school
Mother (or guardian)	_____	_____	_____
Father (or guardian)	_____	_____	_____

61/65

6. What do you <u>really think</u> you will be doing after graduation from high school? (Check one.)

_____ 4-Year College or University
_____ Junior or Community College
_____ Armed Forces
_____ Permanent Job
_____ Technical or Vocational School
_____ Don't Know

_____ Other, specify: _____

7. What kind of job would you <u>like</u> to have after graduation from high school? (Name a specific occupation, not a company.) _____

_____

8. What kind of occupation would you like for your <u>life's work</u>? (Name a specific occupation, not a company.)

First choice: _____

Second choice: _____

Don't know: _____

9. How important to you is each in selecting your occupation? (Make one check for each.)

	(1) Important	(2) Somewhat Important	(3) Unimportant
a. Security	_____	_____	_____
b. High pay	_____	_____	_____
c. Status and prestige	_____	_____	_____
d. Clean surroundings	_____	_____	_____
e. Chance for advancement	_____	_____	_____
f. Setting one's own hours	_____	_____	_____
g. Working with tools and materials	_____	_____	_____
h. Working indoors	_____	_____	_____
i. Regular working hours	_____	_____	_____
j. Working with people	_____	_____	_____
k. Liking your work	_____	_____	_____
l. Working with ideas	_____	_____	_____
m. Being able to find a job	_____	_____	_____
n. Working outdoors	_____	_____	_____
o. Pleasant working conditions	_____	_____	_____
p. Working alone (mainly under own direction)	_____	_____	_____
q. Work which requires travel	_____	_____	_____

10. Do you now or have you worked for pay during the past two years?

_____Yes _____No

If yes, check the following (more than one check may be appropriate):

_____During school time in work-study or cooperative programs
_____Full-time during summer or other vacations
_____Occasionally
_____Regularly after school
What work do you do? _____

11. How long have you lived in this community? (Check one.)

_____Less than one year
_____One year but less than three
_____Three years but less than nine
_____Nine years or more

12. Do you intend to remain in this community after graduation?

_____Probably yes
_____Probably not
_____Don't know
_____It depends upon (explain): _____

_____

APPENDIX D

ADDITIONAL CATEGORIES UTILIZED FOR CLASSIFICATION OF STUDENT INTEREST AND PARENTAL PREFERENCE RESPONSES

40 ENGINEERING

41 LAW

42 MEDICAL AND DENTAL

43 EDUCATION

44 ARTS AND HUMANITIES

45 BUSINESS

46 NATURAL AND PHYSICAL SCIENCES

47 MILITARY

48 HOUSEWIFE

49 RETIRED

50 OTHER

51 DECEASED

52 DON'T KNOW

APPENDIX E

Parent Questionnaire

		School Code
		Group ID

1. Name of high school attended by your son or daughter: _____

_____

2. Your eleventh grade child is: (1)____Boy (2)____Girl

3. Do you intend to encourage or support your son or daughter in a college or other post-high school educational program?
(1)_____Yes (2)_____No
If yes, indicate your preference from among: (Check one.)

(1)_____4-Year college or university
(2)_____2-Year junior or community college
(3)_____technical institute or vocational school
(4)_____other (specify): _____

4. How important do you feel is each for your son or daughter in selecting an occupation? (Check each as you feel is appropriate.)

	(1) Important	(2) Somewhat Important	(3) Unimportant
a. Security	____	____	____
b. High pay	____	____	____
c. Status and prestige	____	____	____
d. Clean surroundings	____	____	____
e. Chance for advancement	____	____	____
f. Setting one's own hours	____	____	____
g. Working with tools and materials	____	____	____
h. Working indoors	____	____	____
i. Regular working hours	____	____	____
j. Working with people	____	____	____
k. Liking your work	____	____	____
l. Working with ideas	____	____	____
m. Being able to find a job	____	____	____
n. Working outdoors	____	____	____
o. Pleasant working conditions	____	____	____
p. Working alone (mainly under own direction)	____	____	____
q. Work which requires travel	____	____	____

8. Check one space which most closely describes what you feel a high school program should provide your child: (Check one.)

(1) _____A college preparatory, academic program
(2) _____A general high school program
(3) _____Education for immediate employment
(4) _____Education both for college preparation and employment

DO NOT COMPLETE THIS SECTION IF YOU FEEL HIGH SCHOOL PREPARATION FOR EMPLOYMENT IS NOT APPROPRIATE:

If you do feel high school occupational preparation may be important for your child, please rate each of the following sets of occupations by circling the appropriate number on the scale (at the left side of the page).

Circle the one "1" for those categories which you feel are Most Appropriate for your child.

Circle the five "5" for those categories which you feel are Least Appropriate for your child.

Circle number "2", "3", or "4" for a rating between 1 and 5.

(Include each occupational set used in collecting data from (1) community and business leaders and (2) school personnel.) An example follows:

Rating:	Occupational Set:	Sample Jobs:
1 2 3 4 5	INSURANCE AND REAL ESTATE	Insurance Investigator, Real Estate Salesman, Property Manager, Insurance Agent, Real Estate Appraiser

(THE COMPLETE FORM LISTS ALL 39 CATEGORIES)

APPENDIX F

Interview Guide
Superintendent

		School Code
		Group ID

1. Most important occupations in Highly Important categories; Manpower Sort;

Card by Rank	Specific Occupations Considered:

2. Most important occupations in Highly Important categories; Student Needs Sort:

Card by Rank	Specific Occupations Considered:

3. Studies and publications which describe employment in the community:

Area employment: _____

_____

Geographic mobility: _____

_____

Employer and union practices: _____

_____

Follow-up Studies of high school graduates and dropouts: _____

_____

APPENDIX G

Interview Guide
School Personnel

		School Code
		Group ID

1. Your Position:

_____(1) District Study Coordinator
_____(2) High School Principal
_____(3) Local Director of Vocational Education
_____(4) Guidance Director
_____(5) Curriculum Director
_____(6) Research Director
_____(7) Other
Describe: _____

2. Most important occupations in Highly Important categories; Manpower Sort:

Card by Rank	Specific Occupations Considered:
_____	_____
_____	_____
_____	_____
_____	_____

3. Most important occupations in Most Appropriate categories; Student Needs Sort:

Card by Rank	Specific Occupations Considered:
_____	_____
_____	_____
_____	_____
_____	_____

4. Studies and publications which describe employment in the community:

Area employment: _____

_____

Geographic mobility: _____

_____

Employer and union practices: _____

_____

Follow-up studies of high school graduates and dropouts: _____

_____

7/1/75

APPENDIX H

Interview Guide
Community and Business Leaders

		School Code
		Group ID

1. Affiliation:

_____(1) Chamber of Commerce
_____(2) Local Employment Security Office
_____(3) State Employment Security Division
_____(4) Retail Merchants' Association
_____(5) Association of Manufacturers (local or regional)
_____(6) Local MDTA, OEO or other special government occupational programs
_____(7) Other: _____

2. Position:

Describe: _____

_____

3. Most important occupations in Highly Important categories; Manpower Sort:

Card by Rank	Specific Occupations Considered:
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

4. Studies and publications recommended to describe employment in the community:

Area Employment:

_____

_____

_____

_____

_____

Geographic Mobility:

_____

_____

_____

_____

_____

_____

Employer and Union Practices:

_____

_____

_____

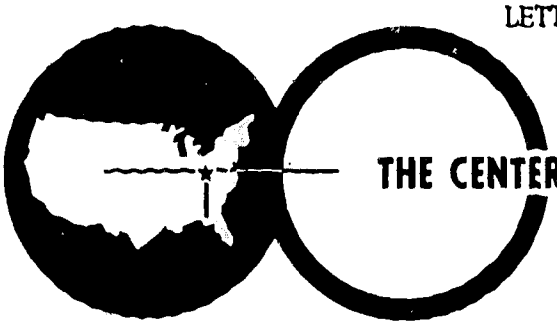
_____

_____

7d/77

APPENDIX I

LETTER TO PARENTS



THE CENTER FOR VOCATIONAL AND TECHNICAL EDUCATION

Phone (614) 486-3655

THE OHIO STATE UNIVERSITY
1960 KENNY ROAD
COLUMBUS, OHIO 43210

Dear Parents:

Yours and eighteen other high schools located throughout the United States are participating in an important study which may influence the course of education for years to come. You as parents can play a vital role in this far-reaching study.

The study is designed to make more meaningful the education that is needed to meet the challenges and demands that will be made upon the high school graduates of the 1970's.

It is vital to the study to know your occupational interests regarding your eleventh grade son and/or daughter. Your thoughts will be used to help identify occupational programs which might be offered by the high schools. Every completed questionnaire, then, is important!

Notice your name need not be put on the questionnaire. No individual will be identified in any reports resulting from the study.

Please personally complete the questionnaire and ask your son or daughter to return it to the high school tomorrow. YOU CAN BE SURE THAT YOUR COOPERATION WILL BE APPRECIATED.

Cordially yours,

Joseph P. Arnold
Edward T. Ferguson, Jr.
Research Specialists

APPENDIX J

INSTRUCTIONS FOR ADMINISTERING STUDENT
AND PARENT QUESTIONNAIRES

I. Give each eleventh grade student one packet of materials. Each packet contains:

a. Student questionnaire (green)

b. Letter to the parents

c. Parent questionnaire

Retain extra parent questionnaires for later use.

II. Say to the students:

1. Our school is cooperating in a study that will make high school education more meaningful in meeting the demands imposed on its graduates in the 1970's.

2. The packet contains one questionnaire (green sheet) for you and one for your parents.

3. Tear off the green sheet, the student questionnaire. Complete both sides of the student questionnaire.

4. The remainder of the packet contains a letter to your parents and a questionnaire for them to fill out tonight. Please return the completed parent questionnaire tomorrow or as soon as possible.

III. Teacher

1. Five to ten minutes should be sufficient time for students to complete the questionnaire.

2. Please collect the student questionnaires as they are completed and place them in the envelope provided.

3. Forward all student questionnaires immediately to _____, the District Study Coordinator for your school district.

4. Remind students to bring back the completed parent questionnaires the next day. If all questionnaires are not returned the next day, remind students to return them the following (third) day. However, do not wait more than three days to return the parent questionnaires no matter how many are missing.

5. Check off student names on your attendance list or roster as parent questionnaires are returned. Students who need a second parent questionnaire to take home should be given one from the packet of extra copies.

6. Return all parent questionnaires (do not return parent letter), in the envelope provided, to the District Study Coordinator. Should a few parent questionnaires be returned after the main collection is in the hands of the District Study Coordinator, please send them to him at your earliest convenience.

Thank you for your assistance,

Joseph P. Arnold

Edward T. Ferguson, Jr.
Research Specialists
The Center for Vocational
and Technical Education
The Ohio State University

☆U.S. BOVERNMENT PRINTING OFFICE: 1973 - 758-324/5489