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AUTHOR	Thomas, Hollie B.; And Others
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ABSTRACT

To establish the feasibility of implementing applied biological and agricultural occupations programs in the metropolitan area of Chicago, four populations were surveyed by means of mailed questionnaires or interest inventories to determine: (1) the employment opportunities in the applied biological and agricultural industries, (2) the interests and attitudes of students, (3) the attitudes of school administrators, and (4) the attitudes and willingness of teachers to teach courses in applied biological and agricultural occupations. The procedures utilized to select the population, instrumentation, data, results, and conclusions are presented separately for each of the four populations. Some major conclusions were: (1) Administrators and teachers have generally positive attitudes toward the development of applied biological and agricultural programs, (2) Many teachers and administrators felt that not enough students are interested in these occupations, (3) Student interest in the applied biological and agricultural areas compared favorably with industrial and health occupations but not with business and office as personal and public service occupations, and (4) Ample job opportunities exist to merit the implementation of programs in applied biology and agriculture. (SB)

FINAL REPORT
Project No. RDB-A1-034

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Hollie B. Thomas

March 1972

Vocational and Technical Education Department
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Hollie B. Thomas

with the assistance of
Ali Ammadi, Franklin Jackson and Arthur Neavill

Vocational and Technical Education Department
College of Education
University of Illinois at Urbana-Champaign
Urbana, Illinois

March, 1972

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Franklin Jackson
Arthur Neavill

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INTRODUCTION

The schools in the metropolitan area of greater Chicago have provided little, if any, vocational or prevocational education for students with an interest in occupations in the applied biological and agricultural area. The reasons for this void in educational opportunities for students were not apparent. Individuals in industries in Chicago employing persons needing a knowledge of applied biology and agriculture reported a deficit of qualified workers. Other metropolitan areas, such as Cleveland (Feck, 1968), Boston (Sprissler, 1968), Miami (Murray, 1968), New York City (Chrein, 1968), Los Angeles (Regan, 1968), and Gary, Indiana (Gray, 1968), have on-going programs in applied biological and agricultural occupations. Thus, such programs can be conducted in metropolitan areas.

A systematic study of needs for employees in urban areas in jobs requiring knowledge and skills in applied biological and agricultural occupations had not been conducted and the Department of Labor Statistics does not include such a category in its reports.

In addition, a recent downstate Illinois survey* of off-farm employment needs, when 55 percent completed, indicated that in the next five years, 1969-1973, over twenty-one thousand full-time and over twelve thousand part-time employees would be needed in specific areas of applied biological and agricultural occupations. The areas included were agricultural supplies, agricultural mechanics, agricultural products, ornamental horticulture, agricultural resources and forestry. It is assumed that occupations requiring knowledge and skill of applied biology and agriculture included in these areas, as well as other areas, exist in the greater Chicago area. Thus, a

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*Division of Vocational and Technical Education - unpublished

study of employment opportunities in the metropolitan area of Chicago was thought to be desirable.

If programs are to be established for the purpose of preparing young men and women to enter occupations in applied biology and agricultural occupations, interested students must be available and willing to enroll in such a program. Little was known about the attitudes of metropolitan Chicago students toward the occupations related to applied biology and agriculture. Thus, determining the attitudes of young men and women of high school and elementary school age was thought to be a prerequisite to the implementation of programs of applied biological and agricultural occupations in metropolitan areas.

It was also thought desirable to ascertain the attitude of school officials toward starting programs in applied biological and agricultural occupations in order to establish a base line of attitudes with which program implementation must start. It was assumed that metropolitan Chicago school officials did not see a need for vocational education in applied biological and agricultural occupations since programs were nearly non-existent.

The availability of teachers within school systems who were prepared or were willing to prepare to conduct programs in applied biological and agricultural occupations was considered to be an important input to the program planning process. The researchers assumed that teachers were available within the school system who would be willing to prepare and conduct these programs if suitable in-service education was made readily available to them.

PURPOSE OF THE STUDY

The purpose of this study was to establish the feasibility of establishing applied biological and agricultural occupations programs in the metropolitan area of Chicago; thus, the objectives of this study were:

1. To determine the employment needs in specified areas of applied biological and agricultural occupations in the Chicago metropolitan area.

2. To determine attitudes of students in metropolitan areas concerning applied biological and agricultural occupations.

3. To determine the attitude of school administrative personnel regarding offering programs in applied biological and agricultural occupations.

4. To ascertain the attitudes of teachers in the metropolitan area of Chicago concerning applied biological and agricultural occupations and to ascertain if the teachers in the identified school systems were prepared or were willing to prepare to teach courses in applied biological and agricultural occupations.

PROCEDURES

As outlined by the objectives, this study includes four phases with four populations: the applied biological and agricultural industries, students, administrators, and teachers. These phases were conducted concurrently on approximately the same timetable. However, due to the inherent differences, each phase will be discussed in turn. Procedures for each phase of the study are reported in the corresponding section of the report.

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Attitudes of Metropolitan Chicago Administrators Toward

Applied Biological and Agricultural Occupations

INTRODUCTION

This research study was initiated to determine the feasibility of implementing programs in applied biological and agricultural occupations in the greater Chicago metropolitan area high schools. This phase of the study reports the administrative attitudes toward vocational education with emphasis on applied biological and agricultural occupations.

Reports have indicated that there exists the need for programs in applied biological and agricultural occupations in the high schools throughout the state of Illinois. According to Hemp (1969), "most educators and horticulture industry people recognized the need to train workers and to prepare high school students for careers in ornamental horticulture. Opportunities for employment in occupations requiring knowledge and skills in ornamental horticulture are prevalent in most sections of Illinois especially in the urban and suburban areas of the state."

It was assumed that the observation made by Hemp holds true for the various applied biological and agricultural occupational areas; however, one aspect of the present study was to determine the availability of occupational opportunities in the greater Chicago metropolitan area.

Before programs in applied biological and agricultural occupations can be implemented in the high schools, the school administrators must first perceive the needs for the programs and indicate their willingness to assist in promoting the programs. It was felt that if program planners operate completely in the abstract, concentrating only on logical sequences, the plan is likely to be relegated to the waste basket or to a shelf. Kemmer (1954) has stated that "the attitudes individuals and groups have about various aspects of their world are probably more determinative of behavior than mere cognitive understanding

of it." It was therefore thought necessary to determine the attitudes of school administrators towards the offering of programs in applied biological and agricultural occupations.

PROCEDURES

The procedures used to select and delimit the population, develop the instrument, collect the data, and the nature of analysis are included in this section.

Research Population

Areas from which the population was identified were from the city of Chicago and contiguous suburbs. The population consisted of all the secondary superintendents, assistant superintendents, principals and assistant principals within the designated area. From this population, one hundred and twenty subjects were identified. It was felt that the greater the proportion of the administrators involved in the study, the more representative would be their opinions regarding applied biological and agricultural occupations. Thus, all administrators identified were included in the sample.

Instrumentation

Considerable library search was conducted in an effort to identify an instrument which could be used in collecting the data essential for determining the attitudes of administrators toward applied biological and agricultural occupations. No appropriate instrument was found. Thus, a list of items was developed from which the researchers refined and delimited the items to be included. These items were reviewed by consultants consisting of an extension specialist in urban development, as well as consultants in applied biological and agricultural occupations. Each item was judged on the basis of clarity, scorability and ease of response. In light of the criticisms and suggestions from the consultants, some items were revised while others were consolidated or discarded.

The final instrument (opinionnaire; Appendix II-A) consisted of 41 items. A five point scale ranging from strongly agree to strongly disagree was provided for response. The opinionnaire was designed to obtain the opinion of the administrator with a minimum expenditure of his time. Simple check-off and numerical answers were used to facilitate responses.

The opinionnaire and cover letter (Appendix II-B) with a stamped self-addressed envelope were mailed to each of the 120 administrators identified to be included in the study. A follow-up letter (Appendix II-C) was mailed to those who had not responded within two weeks after the first mailing.

Of the 120 opinionnaires sent 87 (72.5%) were completed and returned. As shown in Table II-1, a higher percentage of suburban than intercity administrators returned the opinionnaires; the percentages were 88.0 and 61.4 respectively.

Table II-1. Distribution of Population and Respondents by Location of School

Area	Number Identified	Percentage of Total Population	Number of Opinionnaires Returned	Percentage Returned
Suburban	50	41.7	44	88.0
City	70	58.3	43	61.4
TOTAL	120	100.0	87	72.5

Statistical Analysis

Appropriate analyses were used to (1) compare the attitudes of the suburban and city administrators toward the various areas of vocational education and (2) to determine the frequency with which the administrators responded to the various response categories for each item on the instrument. One-way analysis of variance (Winer 1962) was employed to compare the city and suburban administrator's attitudes while simple summations were used to obtain the frequencies.

RESULTS

The principle objective of this phase of the study was to establish a baseline of data regarding the attitude of administrators in the metropolitan area of Chicago toward vocational education with emphasis on applied biological and agricultural occupations. It was anticipated that the results of obtaining these data would allow program implementors to be cognizant of the attitudes with which they must deal in order to establish programs in applied biological and agricultural occupations.

The areas for which attitudes were obtained were 1) applied biological and agricultural occupations, 2) home economics occupations, 3) industrial oriented occupations, 4) business occupations, 5) health occupations, 6) personal and public service occupations, and 7) vocational education in general. These areas will be discussed in turn.

In order to compute a mean (average) score for each of the items a weight was given for the responses as follows:

Strongly Agree	= 1
Agree	= 2
Undecided	= 3
Disagree	= 4
Strongly Disagree	= 5

These weights are identical to those shown on the instrument included in Appendix II-A.

When the responses of the suburban and city administrators were compared, no significant differences were observed for any of the 41 items on the opinionnaire. Thus, in discussing the results, the two groups will generally be grouped as it may be assumed that they hold similar attitudes toward all areas of vocational education education for which data were collected.

The applied biological and agricultural occupations area was stressed in comparison to other areas of vocational education. It was the opinion of the researchers that some items concerning other areas should be included to give an indication of administrator attitude regarding the total vocational education scene.

Applied Biological and Agricultural Occupations

As shown in Tables II-2 and II-3 both positive and negative attitudes toward applied biological and agricultural occupations exist among the administrators of secondary schools in the metropolitan area of Chicago. Hence, the average of the responses for each item tended to be somewhere near the undecided range or a mean of three.

The response to Item 1 indicates that nearly one-third (29.5%) of the respondents felt that programs in applied biological and agricultural occupations would be of great value in their school system. About one-fourth (27.3%) were undecided while over two-fifths (43.3%) of the respondents indicated that they either disagree or strongly disagree with the statement which indicated that such programs would be of value in their school systems. Other items which indicate the administrators' evaluation of the value of programs in applied biological and agricultural occupations include 3, 26, 28, and 31. Here one-fourth (25.6%) indicated that administrating a program in agriculturally related occupations would fascinate them, nearly one-third (31.5%) indicated that they would do everything possible to initiate courses related to lawn care and maintenance, and nearly one-half (47.2%) indicated that marketing and distribution of products such as fruits and vegetables could be taught successfully in their school system. While it is conceivable that the administrators had the attitude that courses could be taught successfully, it is significant to

Table II-2. Comparison of the Attitude of City and Suburban Administrators Toward Programs in Applied Biological and Agricultural Occupations

Item No.	Item	Mean		F Ratio
		City	Suburban	
1	Programs in applied biological and agricultural occupations would be of great value in this school.	3.27	3.13	.416
2	I would oppose the offering of courses related to agricultural occupations in this school.	3.17	3.38	.441
3	Administering a program in agriculturally related occupations would fascinate me.	3.29	3.34	.831
4	Under no conditions would I get involved in programs in applied biological and agricultural occupations.	3.52	3.83	1.553
5	If additional staff were provided, I would be willing to promote programs in applied biological and agricultural occupations.	2.81	2.60	.899
7	If enough students requested to participate in agriculturally related occupations programs I would look into the possibility of including it in the curriculum.	2.12	2.05	.123
8	With some effort it is possible to make staff reallotments in order to provide a teacher for elective courses in agriculturally related occupations.	3.61	3.88	1.225
11	My present staff cannot be readjusted in order to offer courses in applied biological and agricultural occupations.	2.55	2.30	.884
13	A program in agriculturally related occupations would help improve the overall high school program.	3.08	3.18	.187
17	Programs related to applied biological and agricultural occupations are a definite threat to the overall high school program.	4.16	4.32	.790

Table II-2. (con't)

Item No.		Mean City	Mean Suburban	F Ratio
18	Properly planned and administered courses in applied biological and agricultural occupations could help in making high school learning more practical.	2.39	2.48	.216
19	A program in agriculturally related occupations could be used only if the school employs qualified teachers, or retrains present teachers.	2.04	2.17	.578
23	I will be willing to approve study leave for any of the staff members who desire additional education to prepare themselves to teach courses in applied biological and agricultural occupations.	2.89	2.17	1.305
24	A program in agriculturally related occupations would help many students become socially adjusted and useful citizens.	2.79	2.68	.355
26	Courses related to lawn care and maintenance would fulfill a need in this school and I would do everything possible to initiate them.	3.04	3.28	1.031
27	Students in general are not interested in agriculturally related subjects; therefore, this program would probably fail due to inadequate student participation.	2.56	2.45	.225
28	Training in the marketing and distribution of products such as fruits and vegetables could be taught successfully in this school system.	2.83	2.59	1.585
29	Programs in applied biological occupations would complement and reinforce subjects rather than compete with them.	2.56	2.31	1.694
30	Courses in applied biological and agricultural occupations would have many desirable features, but the disadvantages outnumber the advantages.	3.19	2.97	1.356

Table II-2. (con't)

Item No.	Item	Mean		F Ratio
		City	Suburban	
31	I would recommend a program in agriculturally related occupations to my superintendent or to the board of education if the need for such a program is ascertained.	2.60	2.45	.443
41	I would like more information regarding program development in applied biological and agricultural occupations.	2.74	2.37	1.873

Table II-3. Frequency of Responses by Items Made by City and Suburban Administrators About Programs in Applied Biological and Agricultural Occupations

Item No.	Item		Response				
			Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	Programs in applied biological and agricultural occupations would be of great value in this school.	Suburban	2	11	11	12	4
		City	1	12	13	17	5
2.	I would oppose the offering of courses related to agricultural occupations in this school.	Suburban	3	5	11	16	5
		City	7	10	9	12	10
3.	Administering a program in agriculturally related occupations would fascinate me.	Suburban	1	7	14	10	6
		City	2	12	10	18	6
4	Under no condition would I get involved in programs in applied biological and agricultural occupations.	Suburban	1	1	13	14	11
		City	6	3	10	18	11
5	If additional staff were provided, I would be willing to promote programs in applied biological and agricultural occupations.	Suburban	4	13	16	3	2
		City	3	19	13	8	4
7	If enough students requested to participate in agriculturally related occupations programs I would look into the possibility of including it in the curriculum.	Suburban	9	22	5	3	0
		City	12	28	2	5	3

Table II-3. (con't)

Item No.	Item		Response: Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
8	With some effort it is possible to make staff reallotments in order to provide a teacher for elective courses in agriculturally related occupations.	Suburban	0	6	6	15	13
		City	1	11	7	17	13
11	My present staff cannot be readjusted in order to offer courses in applied biological and agricultural occupations.	Suburban	9	18	6	6	1
		City	15	12	7	10	5
13	A program in agriculturally related occupations would help improve the overall high school program.	Suburban	0	9	19	8	4
		City	2	17	9	17	4
17	Programs related to applied biological and agricultural occupations are a definite threat to the overall high school program.	Suburban	0	0	3	21	16
		City	2	1	6	18	22
18	Properly planned and administered courses in applied biological and agricultural occupations could help in making high school learning more practical.	Suburban	2	20	15	3	0
		City	7	25	10	5	2

Table II-3. (con't)

Item No.	Item		Response: Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
19	A program in Agriculturally Related Occupations could be used only if the school employs qualified teachers, or retrains present teachers.	Suburban	9	18	10	3	0
		City	11	26	9	2	0
23	I will be willing to approve study leave for any of the staff members who desire additional education to prepare themselves to teach courses in applied biological and agricultural occupations.	Suburban	4	13	18	3	2
		City	2	17	16	8	4
24	A program in agriculturally related occupations would help many students become socially adjusted and useful citizens.	Suburban	1	14	19	4	0
		City	1	18	20	6	2
26	Courses related to lawn care and maintenance would fulfill a need in this school and I would do everything possible to initiate them.	Suburban	1	8	15	11	5
		City	2	17	14	9	7
27	Students in general are not interested in agriculturally related subjects; therefore, this program would probably fail due to inadequate student participation.	Suburban	4	17	16	3	0
		City	10	14	9	10	2

Table II-3. (con't)

Item No.	Item		Response: Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
28	Training in the marketing and distribution of products such as fruits and vegetables could be taught successfully in this school system.	Suburban	3	18	13	7	0
		City	1	20	17	6	4
29	Programs in applied biological occupations would complement and reinforce subjects rather than compete with them.	Suburban	2	24	10	2	0
		City	2	29	9	4	4
30	Courses in applied biological and agricultural occupations would have many desirable features, but the disadvantages outnumber the advantages.	Suburban	0	9	22	8	0
		City	3	9	12	22	1
31	I would recommend a program in agriculturally related occupations to my superintendent or to the board of education if the need for such a program is ascertained.	Suburban	4	20	8	5	1
		City	4	28	5	5	6
41	I would like more information regarding program development in applied biological and agricultural occupations.	Suburban	7	17	5	8	0
		City	8	19	3	11	6

note that nearly one third of the respondents indicated that courses in lawn care and maintenance would fulfill a need in their school and that they would do "everything possible to initiate them."

When asked about their willingness to support a program in applied biological and agricultural occupations from a negative point of view (items 2, 4, and 30), over one-fourth (28.4%) of the respondents indicated that they would oppose the offering of courses related to agricultural occupations, one-eighth (12.5%) indicated that under no conditions would they get involved in programs in applied biological and agricultural occupations, while nearly one-fourth (24.4%) indicated that the disadvantages of such a program outnumber the advantages. Thus, it would appear that approximately one-fourth of the respondents are opposed to offering programs in applied biological and agricultural occupations. However, nearly one-half (48.9%) indicated that they would not oppose such programs being offered in their school system.

Because the allocation of staff is a key to the offering of new programs, the researchers felt that it was important to include aspects concerning staffing in the opinionnaire. Items 5, 8, 11, 19, and 23 reflect attitudes toward staffing. Nearly one-half (47.1%) of the respondents indicated that if additional staff were provided they would be willing to promote programs in applied biological and agricultural occupations; one-fifth (20.2%) indicated that with some effort it would be possible to make staff reallotments in order to provide a teacher for elective courses in agriculturally related occupations; three-fifths (60.67%) responded that their present staff could not be readjusted in order to offer courses in applied biological and agricultural occupations; nearly three-fourths (72.7%) indicated that such programs could be offered only if the school employed qualified teachers or retained those already

qualified for such a position; and over two-fifths (41.4%) indicated that they would approve a study leave for any staff member who desired to prepare to teach courses in applied biological and agricultural occupations.

Among the reasons theorized as causes for the absence of programs in applied biological and agricultural occupations in the metropolitan area of Chicago was that administrators did not believe their students were interested in such programs. Hence, items 7 and 27 were included. While four-fifths (80.7%) of the respondents indicated that they would look into the possibility of including agriculturally related occupations in the curriculum if enough students requested such a program, less than one-fifth (17.6%) indicated that they felt that enough student interest existed to keep a program in this area from failing due to inadequate student participation.

School officials are usually concerned about the total school curriculum and how each program relates to the total program. Thus, items 13, 17, 18, 24, and 29 were included to obtain an indication of the attitudes of metropolitan Chicago school administrators toward applied biological and agricultural occupations as part of the total school program.

It was the opinion of nearly one-third (31.5%) of the respondents that a program in agriculturally related occupations would help improve their overall high school program. While a few (3.4%) indicated that such a program would be a definite threat to the overall high school program, three-fifths (60.7%) indicated that such programs could help in making high school learning more practical, two-fifths (40.0%) thought that such programs would help many students become socially adjusted and useful citizens, and two-thirds (66.3%) indicated that such programs would complement and reinforce subjects rather than compete with them.

The administrators were asked (item 41) to indicate whether or not they would like more information regarding program development in applied biological and agricultural occupations. Three-fifths (60.7%) indicated that they would like to receive information of this kind. Thus, it would appear that the administrators in the metropolitan area of Chicago are open to learning more about programs in applied biological and agricultural occupations.

Home Economics Occupations

Measures of attitudes of secondary school administrators in the metropolitan area of Chicago concerning student interest, effect on school program, the staffing situation, and need for additional information were obtained for home economics occupations. Data concerning attitudes in these areas were obtained from items 9, 15, 21, and 38 of the instrument as shown in Tables II-4 and II-5. The mean of the opinionnaire items concerning home economics education indicated that most administrators were favorable toward this area of vocational education. The mean score for the four items was only slightly over a value of two or agree on the response scale. This attitude was observed in the frequency of favorable responses in Table II-5. Nearly three-fourths (73.0%) of the respondents indicated that there were enough interested students to warrant offering a program in home economics occupations. Almost all (93.3%) reported that a program in home economics occupations would help to improve an overall high school program; approximately two-thirds (62.2%) felt that they had sufficient staff to teach courses in home economics occupations, while about three-fourths (76.8%) indicated the desire for more information regarding program development in home economics education.

Data were not collected concerning the number of schools that were offering programs in home economics occupations. Thus, it is not known how

Table II-4. Comparison of the Attitude of City and Suburban Administrators Toward Programs in Home Economics Occupations

Item No.	Item	Mean		F Ratio
		City	Suburban	
9	There are enough interested students in this school system to warrant initiating a program in home economics occupations.	2.17	2.02	.529
15	A program in some aspect of home economics occupations helps to improve an overall high school program.	1.92	1.78	.800
21	We have sufficient numbers of qualified staff to teach courses in home economics occupations.	2.49	2.61	.214
38	I would like more information regarding program development in home economics education.	2.30	2.03	1.372

Table II-5. Frequency of Responses by Items Made by City and Suburban Administrators Concerning Programs in Home Economics Occupations

Item No.	Item		Response: Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
9	There are enough interested students in this school system to warrant initiating a program in home economics occupations.	Suburban	11	19	10	1	0
		City	12	23	8	3	2
15	A program in some aspect of home economics occupations helps to improve an overall high school program.	Suburban	10	30	1	0	0
		City	14	30	2	1	2
21	We have sufficient numbers of qualified staff to teach courses in home economics occupations.	Suburban	6	18	5	10	2
		City	11	21	3	10	4
38	I would like more information regarding program development in home economics education.	Suburban	9	22	4	3	0
		City	11	21	3	6	3

many of the schools reporting a sufficient number of staff members qualified to teach home economics occupations were in fact offering programs in home economics.

Industrial Oriented Occupations

It was hypothesized that the industrial nature of the metropolitan area of Chicago would result in a favorable attitude toward programs in industrial oriented occupations. This hypothesis was supported by the data presented in Tables II-6 and II-7. City and suburban administrators did not differ significantly in their opinions concerning industrial oriented occupations as indicated by the nonsignificant F-ratio in Table II-6.

Attitudes concerning curricular offerings, qualified staff, and the desire for more information were obtained (items 10, 22, and 39 respectively). The frequencies of response to each of these items are presented in Table II-7. Here it was noted that of the respondents nearly all (95.5%) indicated that they would look into offering programs in industrial oriented occupations if the needs for the program were ascertained; two-thirds (65.6%) indicated that they had sufficient number of staff members to organize and teach courses in industrial arts, and three-fourths (75.3%) indicated that they would like more information regarding program development in industrial arts education.

Business Occupations

Business occupations, while not represented extensively on the opinionnaire, received a favorable response from the administrators on the two opinionnaire items. The responses to these items (numbers 20 and 40) are presented in Tables II-8 and II-9.

Nearly all (94.4%) of the respondents indicated that courses related to office occupations, such as stenography and secretarial work, would not consume

Table II-6. Comparison of the Attitude of City and Suburban Administrators Toward Programs in Industrial Oriented Occupations

Item No.	Item	Mean		F Ratio
		City	Suburban	
10	If the needs are ascertained for industrial occupations in this school I would be willing to look into the possibility of including it in the curriculum.	1.57	1.73	1.256
22	We have a sufficient number of qualified staff members to successfully organize and teach courses in industrial arts occupations.	2.41	2.71	1.185
39	I would like more information regarding program development in industrial arts education.	2.34	2.11	1.007

Table II-7. Frequency of Responses by Items Made by City and Suburban Administrators Concerning Programs in Industrial Oriented Occupations

Item No.	Item		Response: Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
10	If the needs are ascertained for industrial occupations in this school I would be willing to look into the possibility of including it in the curriculum.	Suburban	14	24	1	1	0
		City	24	23	1	1	0
22	We have a sufficient number of qualified staff members to successfully organize and teach courses in industrial arts occupations.	Suburban	6	19	1	11	4
		City	13	21	1	10	4
39	I would like more information regarding program development in industrial arts education.	Suburban	7	23	3	4	0
		City	10	21	4	6	3

Table II-8. Comparison of the Attitude of City and Suburban Administrators Toward Programs in Business Occupations

Item No.	Item	Mean City	Mean Suburban	F Ratio
20	Courses related to office occupations, such as stenography and secretarial work, would consume too much of the student's time which is needed for other academic areas.	4.39	4.32	.168
40	I would like more information regarding program development in distributive occupations.	2.52	2.16	2.294

Table II-9. Frequency of Responses by Items Made by City and Suburban Administrators Toward Programs in Business Occupations

Item No.	Item		Response: Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
20	Courses related to office occupations, such as stenography and secretarial work, would consume too much of the student's time which is needed for other academic areas.	Suburban	1	2	0	18	20
		City	1	0	1	24	23
40	I would like more information regarding program development in distributive occupations.	Suburban	6	23	4	4	0
		City	9	18	5	9	3

too much of the student's time needed for academic areas. Over two-thirds (69.1%) of the respondents indicated that they would like more information regarding program development in distributive occupations.

Health Occupations

As shown in Tables II-10 and II-11 a single item was included on the opinionnaire related to health occupations. Health occupations, a new concept for most secondary administrators, received a favorable response from the respondents with nearly all (92.3%) responding that they felt that offering training in occupations related to health would be appropriate in their school system.

Personal and Public Service Occupations

A single item concerning the attitude of administrators toward personal and public service occupations was included on the opinionnaire. The data resulting from the summarization of the responses are included in Tables II-12 and II-13. As was the case with health occupations, the concept of the secondary schools offering training in the personal and public service occupations is a relatively recent concept. However, nearly three-fifths (58.4%) of the respondents indicated that their school system could provide the student with training in personal and public service occupations, such as policemen, social workers, and firemen.

Table II-10. Comparison of the Attitude of City and Suburban Administrators Toward Programs in Health Occupations

Item No.	Item	Mean		F Ratio
		City	Suburban	
6	Offering training in occupations related to health would be appropriate in this school system.	1.67	1.40	2.542

Table II-11. Frequency of Responses by Items Made by City and Suburban Administrators Toward Programs in Health Occupations

Item No.	Item		Response				
			Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
6	Offering training in occupations related to health would be appropriate in this school system.	Suburban	26	12	2	0	0
		City	25	20	1	1	2

Table II-12. Comparison of the Attitude of City and Suburban Administrators Toward Programs in Personal and Public Service Occupations

Item No.	Item	Mean		F Ratio
		City	Suburban	
14	This school system could provide the student with training personal and public service, such as policemen, social workers, and firemen.	2.75	2.41	2.43

Table II-13. Frequency of Responses by Items Made by City and Suburban Administrators Concerning Programs in Personal and Public Service Occupations

Item No.	Item		Response				
			Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
14	This school system could provide the student with training in personal and public service, such as policemen, social workers, and firemen.	Suburban	6	20	8	6	1
		City	2	24	8	12	2

Vocational Education

In addition to obtaining an assessment of the attitudes of administrators toward the various specific areas of vocational education, attitudes concerning aspects of the total concept of vocational education were sought. Specific aspects sought included the overall value of vocational education, the cost of vocational education, and the addition of elective courses to the curricula.

To ascertain the attitudes of administrators toward the value of vocational education items 16, 25, and 33 were included on the opinionnaire. As shown in Tables II-14 and II-15 most administrators felt that programs in vocational education have an effect on the school, thought vocational education would work in their school and considered vocational education necessary in addition to general education.

Items 32, 34, and 35 concerned the attitudes of the administrators regarding the cost of vocational education. Here, 61.4 percent of the respondents held the attitude that the cost of administering vocational education programs was negligible when compared to the returns from the salable skills that students could develop; over one-half (53.5%) of the respondents did not consider funds to be limited for textbooks, supplies or equipment that would be necessary for the inclusion of additional vocational electives in the curriculum; and nearly seven-eights (84.1%) of the respondents indicated that their communities would not frown on spending additional money on vocational education.

In regard to additional electives (items 36 and 37), approximately one-half of the respondents had the opinion that additional electives would not increase the student-teacher ratio excessively and could be added without eliminating electives already in existence.

Table II-14. Comparison of the Attitude of City and Suburban Administrators Toward Programs in Vocational Education

Item No.	Item	Mean		F Ratio
		City	Suburban	
16	Programs in vocational occupations have little or no effect on an overall high school program.	4.35	4.37	.016
25	Vocational programs designed to prepare students for occupations is a marvelous idea, but it probably would not work in this school system.	4.02	4.18	.516
32	The cost of administering programs in vocational education are negligible when compared with the returns from the salable skills that the students would develop.	2.38	2.48	.249
33	Programs in vocational education are not necessary since the students are learning enough about vocational occupations in the general courses.	4.19	4.20	.007
34	Limited funds for textbooks, supplies and equipment will not permit the inclusion of additional electives in the curriculum.	3.46	3.18	1.528
35	Our community would frown on spending additional money on vocational-type education.	3.96	4.10	.704
36	Additional electives would increase the student-teacher ratio in the required subjects which is already too high.	2.98	3.41	3.847
37	The only way I could allow for additional electives would be to eliminate some of the present ones and this would not be accepted.	3.31	3.23	.143

Table II-15. Frequency of Responses by Items Made by City and Suburban Administrators Concerning Programs in Vocational Education

Item No.	Item		Response: Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
16	Programs in vocational occupations have little or no effect on an overall high school program.	Suburban	0	0	2	22	17
		City	1	1	1	23	23
25	Vocational programs designed to prepare students for occupations is a marvelous idea, but it probably would not work in this school system.	Suburban	2	0	2	21	15
		City	3	2	3	24	17
32	The cost of administering programs in vocational education are negligible when compared with the returns from the salable skills that the students would develop.	Suburban	4	21	8	6	1
		City	7	22	14	4	1
33	Programs in vocational education are not necessary since the students are learning enough about vocational occupations in the general courses.	Suburban	0	0	5	22	13
		City	0	2	3	27	16
34	Limited funds for textbooks, supplies and equipment will not permit the inclusion of additional electives in the curriculum.	Suburban	2	8	11	15	2
		City	2	8	9	14	5

Table II-15. (con't)

Item No.	Item		Response				
			Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
35	Our community would frown on spending additional money on vocational-type education.	Suburban	0	0	7	22	11
		City	2	1	4	31	10
36	Additional electives would increase the student-teacher ratio in the required subjects which is already too high.	Suburban	1	5	11	18	2
		City	2	14	10	19	1
37	The only way I could allow for additional electives would be to eliminate some of the present ones and this would not be accepted.	Suburban	1	8	12	17	1
		City	4	8	7	27	2

SUMMARY AND CONCLUSIONS

This section includes a summary of the procedures, reports, findings, and presents conclusions from this phase of the study.

Summary

The primary purpose of this phase of the research was to ascertain the attitudes that administrators in the metropolitan area of Chicago held toward the various areas of vocational education with emphasis on applied biological and agricultural occupations. In order to accomplish this task, an opinionnaire, developed by the researchers, was mailed to all secondary school administrators in the city of Chicago and 46 of the contiguous suburbs. Frequency counts and analyses of variance were employed to summarize and compare the attitudes held by suburban and city administrators.

Results and Discussion

A summary and discussion of the results concerning the attitudes of administrators toward the various areas of vocational education are included in this section.

Applied Biological and Agricultural Occupations. Both positive and negative attitudes were exhibited toward programs in applied biological and agricultural occupations by the administrators who responded to the opinionnaire. The researchers theorized that the primary cause for the negative attitudes was due to a misconception about the broader concept of agricultural occupations. This theory was supported by the fact that a higher percentage of the respondents indicated that they would do everything possible to initiate a course in lawn care and maintenance than thought that courses related to agriculture had value in their school system.

Another cause for the absences of programs in applied biological and agricultural occupations in the metropolitan area, which could well be confused with the misconception of the scope of agriculture is that administrators did not feel that enough students would be available to justify offering such programs. This was supported by the research which showed that while four-fifths of the administrators would look into offering programs in applied biological and agricultural occupations if enough students requested it, less than one-fifth thought that enough students were interested in agriculturally related subjects to keep a program from failing due to inadequate student participation.

In relation to the total school program, a majority of the respondents thought that courses related to agriculture could help make high school learning more practical, and that such courses would complement and reinforce academic subjects rather than compete with them.

Based on the fact that three-fifths of the respondents indicated that they would like to receive more information regarding program development in applied biological and agricultural occupations it would appear that administrators in the metropolitan area of Chicago were open to learning more about programs related to agriculture. Hence, it may be assumed that these administrators would be willing to investigate the possibility of offering programs in applied biological and agricultural occupations in their school systems. Thus, the task for the program developers is to demonstrate to the administrators that there are students interested in applied biological and agricultural occupations and to show the administrators how programs can be implemented to meet the needs of the students in the metropolitan area of Chicago.

Other Vocational Areas. Measures of the attitudes toward other vocational areas were ascertained in order to make an eyeball comparison of these areas

with the area of applied biological and agricultural occupations. While some differences in attitude were observed, the variances in attitudes would have easily been estimated to have been greater when the dearth of programs in applied biological and agricultural occupations in the metropolitan area of Chicago was considered.

Administrators held favorable attitudes toward the area of home economics occupations. They felt that enough students would be available and interested in such programs and that home economics courses would improve the overall high school program. Whether or not the administrators have a clear conception of gainful home economics was not known to the researchers.

In an industrial city such as Chicago it would appear evident that administrators would have a favorable attitude toward courses in industrial occupations. This assumption was supported by the data collected. It was noted that some administrators would not look into offering programs in industrial occupations even if the needs for such a program were ascertained. Thus, it would appear that some administrators may be anti-vocational education in their schools.

Only a small amount of data was collected for the vocational areas of business occupations, health occupations, and personal and public service occupations. Administrators in the metropolitan area of Chicago reported favorable attitudes toward each of these areas of vocational education. In regard to the new area of health occupations, administrators felt that it would be appropriate for their school to offer programs. The extent to which they were willing to support this program was not ascertained.

Vocational Education. A concern of the researchers was the attitude that administrators held toward the total area of vocational education. It was

assumed that administrators would not hold a better attitude toward the vocational area of applied biological and agricultural occupations than they held toward the total area of vocational education. Hence, the probability of adding new electives in the applied biological area is most likely to be no greater than that of any other vocational area for which equal need is shown.

The respondents had a favorable attitude toward vocational education, indicating that vocational education would (or does) work in their school and that vocational education is necessary in addition to general education. The relative importance that administrators placed on general education in contrast to vocational education was not ascertained.

The addition of any course is either an addition to a budget or must replace a course previously taught. In addition, new courses, especially vocational courses, require more equipment than typical classroom furniture; thus the researchers wished to find whether administrators felt that funds would be limited and if their communities would be displeased with the school officials if additional funds were spent on vocational-type education. A majority of the respondents indicated that funds would not be limiting and that their communities would not be displeased if more money were spent on vocational education nor did they feel that additional electives would increase the student-teacher ratio excessively. Hence, it appeared that if a need can be shown for a particular elective, most schools would be able to include such an elective without placing undue stress on their budgets.

Conclusions

Conclusions drawn from the data relate specifically to program implementation. Thus, only those conclusions that were considered to be of special

significance to applied biological and agricultural occupations program development are reported here. These conclusions are:

1. Schools in the metropolitan area of Chicago can be identified in which the administrative staff are receptive to the development of programs in applied biological and agricultural occupations.

2. Administrators in metropolitan areas of Chicago have a generally positive attitude toward the development of programs in agriculture but appear to have a misconception of the total scope of the area. Thus, the administrators will need to be enlightened by the program developer concerning the nature of these programs.

3. In contrast with other areas of vocational education, administrators do not perceive that enough students would be interested in a program in applied biological and agricultural occupations to merit offering such programs. Thus, it will be essential for the program developer to collect data regarding student interest.

4. Occupational preparation in specific areas such as lawn care and maintenance are more acceptable to the administrators in the metropolitan area of Chicago than is the total concept of applied biological and agricultural occupations.

5. In some school districts, courses in applied biological and agricultural occupations could be staffed by realloting staff members who are already in the school system.

6. Qualified staff must be provided if a majority of the school districts are to implement programs in applied biological and agricultural occupations.

7. School officials have a positive attitude toward the value of programs in applied biological and agricultural occupations.

8. Additional information regarding program development in applied biological and agricultural occupations should be supplied to the administrators in the metropolitan area of Chicago.

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BIBLIOGRAPHY

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APPENDIX II-A

OPINIONNAIRE FOR ADMINISTRATORS

OPINIONNAIRE FOR ADMINISTRATORS

Name _____ Age _____ Sex _____

Home Address _____ Telephone _____

Present Position _____ Years in Position _____

School or School District _____ Location _____

Directions. Please encircle the response which best describes your feeling towards each statement.

Code. SA = Strongly Agree A = Agree U = Undecided DA = Disagree SDA = Strongly Disagree

		SA	A	U	DA	SDA
1.	Programs in Applied Biological and Agricultural Occupations would be of great value in this school.	1	2	3	4	5
2.	I would oppose the offering of courses related to Agricultural Occupations in this school.	1	2	3	4	5
3.	Administering a program in Agriculturally Related Occupations would fascinate me.	1	2	3	4	5
4.	Under no condition would I get involved in programs in Applied Biological and Agricultural Occupations.	1	2	3	4	5
5.	If additional staff were provided, I would be willing to promote programs in Applied Biological and Agricultural Occupations.	1	2	3	4	5
6.	Offering training in occupations related to health would be appropriate in this school system.	1	2	3	4	5
7.	If enough students requested to participate in Agriculturally Related Occupations Programs I would look into the possibility of including it in the curriculum.	1	2	3	4	5
8.	With some effort it is possible to make staff reallotments in order to provide a teacher for elective courses in Agriculturally Related Occupations.	1	2	3	4	5
9.	There are enough interested students in this school system to warrant initiating a program in Home Economics Occupations.	1	2	3	4	5
10.	If the needs are ascertained for Industrial Occupations in this school I would be willing to look into the possibility of including it in the curriculum.	1	2	3	4	5
11.	My present staff cannot be readjusted in order to offer courses in Applied Biological and Agricultural Occupations.	1	2	3	4	5

		SA	A	U	DA	SDA
12.	Exploratory type electives are more valuable at this level than occupationally directed courses.	1	2	3	4	5
13.	A program in Agriculturally Related Occupations would help improve the overall high school program.	1	2	3	4	5
14.	This school system could provide the student with training in Personal and Public Service, such as policemen, social workers, and firemen.	1	2	3	4	5
15.	A program in some aspect of Home Economics Occupations helps to improve an overall high school program.	1	2	3	4	5
16.	Programs in Vocational Occupations have little or no effect on an overall high school program.	1	2	3	4	5
17.	Programs related to Applied Biological and Agricultural Occupations are a definite threat to the overall high school program.	1	2	3	4	5
18.	Properly planned and administered courses in Applied Biological and Agricultural Occupations could help in making high school learning more practical.	1	2	3	4	5
19.	A program in Agriculturally Related Occupations could be used only if the school employs qualified teachers, or retrains present teachers.	1	2	3	4	5
20.	Courses related to Office Occupations, such as stenography and secretarial work, would consume too much of the student's time which is needed for other academic areas.	1	2	3	4	5
21.	We have sufficient numbers of qualified staff to teach courses in Home Economics Occupations.	1	2	3	4	5
22.	We have a sufficient number of qualified staff members to successfully organize and teach courses in Industrial Arts Occupations.	1	2	3	4	5
23.	I will be willing to approve study leave for any of the staff members who desire additional education to prepare themselves to teach courses in Applied Biological and Agricultural Occupations.	1	2	3	4	5
24.	A program in Agriculturally Related Occupations would help many students become socially adjusted and useful citizens.	1	2	3	4	5
25.	Vocational programs designed to prepare students for occupations is a marvelous idea, but it probably would not work in this school system.	1	2	3	4	5
26.	Courses related to lawn care and maintenance would fulfill a need in this school and I would do everything possible to initiate them.	1	2	3	4	5

		SA	A	U	DA	SDA
27.	Students in general are not interested in agriculturally related subjects; therefore, this program would probably fail due to inadequate student participation.	1	2	3	4	5
28.	Training in the marketing and distribution of products such as fruits and vegetables could be taught successfully in this school system.	1	2	3	4	5
29.	Programs in Applied Biological Occupations would complement and reinforce subjects rather than compete with them.	1	2	3	4	5
30.	Courses in Applied Biological and Agricultural Occupations would have many desirable features, but the disadvantages outnumber the advantages.	1	2	3	4	5
31.	I would recommend a program in Agriculturally Related Occupations to my superintendent or to the board of education if the need for such a program is ascertained.	1	2	3	4	5
32.	The cost of administering programs in Vocational Education are negligible when compared with the returns from the salable skills that the students would develop.	1	2	3	4	5
33.	Programs in Vocational Education are not necessary since the students are learning enough about vocational occupations in the general courses.	1	2	3	4	5
34.	Limited funds for textbooks, supplies and equipment will not permit the inclusion of additional electives in the curriculum.	1	2	3	4	5
35.	Our community would frown on spending additional money on vocational-type education.	1	2	3	4	5
36.	Additional electives would increase the student-teacher ratio in the required subjects which is already too high.	1	2	3	4	5
37.	The only way I could allow for additional electives would be to eliminate some of the present ones and this would not be accepted.	1	2	3	4	5
38.	I would like more information regarding program development in Home Economics Education.	1	2	3	4	5
39.	I would like more information regarding program development in Industrial Arts Education.	1	2	3	4	5
40.	I would like more information regarding program development in Distributive Occupations.	1	2	3	4	5
41.	I would like more information regarding program development in Applied Biological and Agricultural Occupations.	1	2	3	4	5

APPENDIX II-B

COVER LETTER

The Vocational and Technical Education staff at the University of Illinois at Urbana-Champaign has initiated a project to determine the attitude of Administrators in the metropolitan area of Chicago towards Applied Biological and Agricultural Occupations and other areas of Vocational Education. Vocaional Education in Applied Biological and Agricultural Occupations is comprised of the group of related courses or units of subject matter which are organized for carrying on learning experiences concerned with preparation for or upgrading in occupations requiring knowledge and skills in agricultural subjects. Such occupations include: ornamental horticulture, forestry, greenhouse production, small animal production, animal care, lawn care and management, fruit and vegetable production, small engine care and maintenance, and home gardening.

We are asking Administrators in the representative schools to react to items on the attached opinionnaire in order to ascertain their opinions regarding their attitude towards offering various types of vocational programs with emphasis on Applied Biological and Agricultural Occupations. You may express your opinion by encircling the most appropriate response to each statement on the opinionnaire. We feel that the results of our study will be of interest to you and your school. Kindly return the completed opinionnaire in the enclosed envelope.

Sincerely,

Hollie B. Thomas, Director
Metropolitan Agriculture Programs
359 Education Building

Ali Ammadi, Staff
Franklin Jackson, Staff
William Lundell, Staff
Art Neavill, Staff

HBT:nf
Enclosures

APPENDIX II-C

FOLLOW-UP LETTER

April 13, 1971

Dear Sir:

A few weeks ago we sent you an opinionnaire requesting your response to a number of questions. We have not received your completed opinionnaire; perhaps it has been lost in the mail or misplaced.

In case the first opinionnaire and information sheet were lost or misplaced, we are enclosing an additional copy, hoping that you will complete and return it to us. If you have completed and mailed the opinionnaire within the last three days, please disregard this letter.

May we thank you for your cooperation.

Sincerely,

Hollie B. Thomas, Director
Metropolitan Agriculture Programs
359 Education Building

Ali Ammadi, Staff
Franklin Jackson, Staff
William Lundell, Staff
Art Neavill, Staff

HBT:nf
Enclosures

ATTITUDES OF SUBURBAN CHICAGO TEACHERS TOWARD APPLIED BIOLOGICAL AND AGRICULTURAL OCCUPATIONS

INTRODUCTION

The importance of offering vocational programs in the high school curriculum cannot be overemphasized. It is estimated that fewer than 20 percent of the job opportunities will require a four-year college degree during the 1980's. Thus it would appear that students should have the alternative of selecting mixtures of vocational-technical and academic courses while completing their high school education.

Metropolitan areas, such as Cleveland, Boston, Miami, New York, Gary, and Los Angeles, have on-going programs in applied biological and agricultural occupations. On the other hand, schools in the metropolitan area of greater Chicago have provided little, if any, vocational or prevocational education for students with an interest in occupations in applied biological and agricultural areas.

Reports have indicated that there is a deficit of qualified personnel in applied biological and agricultural occupations in the Chicago metropolitan area. It is assumed that programs to provide training for these personnel that are reportedly needed could be offered in the high schools in the metropolitan area of greater Chicago. Thus, in this phase of the study the attitude of teachers toward starting programs in applied biological and agricultural occupations was determined in order to establish a base line of attitudes with which program implementation must start. The success of a newly implemented program will depend on the active cooperation and support of the participants. It is assumed that if the school personnel and participating students have favorable attitudes toward the offering of the programs the implementation will be smoother than if they are antagonistic toward the programs.

Definition of Problem

Since the teacher is one of the most influential change agents in the school system, his perceptions of a program will effect his contribution toward the success of the program. The idiosyncrasies of the teacher, therefore, cannot be ignored when program development is contemplated. Consequently it was imperative to:

1. Determine the attitude of teachers in identified metropolitan schools toward offering programs in applied biological and agricultural occupations as well as in other areas of vocational education.

2. Ascertain to what degree teachers in these schools are prepared to teach courses in applied biological and agricultural occupations.

3. Determine the willingness of teachers to become competent in teaching courses in applied biological and agricultural occupations.

4. Determine the willingness of teachers to teach courses in applied biological and agricultural occupations.

PROCEDURES

The procedures used to select the sample of teachers, collect the data, and the nature of the analysis are included in this section.

Research Population

As a preliminary step, all secondary schools in the city of Chicago and the 46 contiguous suburbs were identified. These schools composed the research population. The schools in the city of Chicago and the suburbs were randomly ordered in two groups. The administrators of these schools were contacted to determine their willingness and ability to cooperate. The final sample was to include the teachers in the first four schools in the city of Chicago and in the 46 contiguous suburbs who were willing and able to cooperate.

School officials in the central office of the Chicago city schools did not choose to participate with the study; thus, only the suburban school building principals were contacted. The final sample included all teachers in the first four suburban schools who were willing and able to cooperate. It was necessary to contact five schools in order to obtain the desired four who would cooperate. These four schools were:

Maine Township East High School of Park Ridge
Michael High School of Evanston
Proviso East High School of Maywood
Reavis High School of Oak Lawn

Development of the Instrument

A search was conducted to determine if opinionnaires were available for collecting the type of data desired, or which could be used as references in developing an appropriate instrument. None were found. The research team drafted one-hundred and twenty items from which the final instrument was refined.

After initial refinements and elimination of unnecessary duplications, 40 items were selected. Independent judgments of research staff members were sought to aid in instrument validation. Each item was critically analyzed to determine if the possible responses elicited were contributory to the purpose of the opinionnaire. As a part of this validation procedure each item was scrutinized and judged on the basis of clarity, applicability, scorability and ease of response. A team of research consultants composed of an extension specialist in urban development and consultants in applied biological and agricultural occupations was asked to review and evaluate the items. During this process further elimination, modification and consolidation took place.

The final instrument (Appendix III-A) consisted of 30 items covering six occupational areas. These areas included: agricultural occupations, health

occupations, industrial occupations, public service occupations, home economics occupations, and business occupations.

The instrument was divided into three parts. Parts I and II dealt with the desirability of offering various programs in the high schools and the contributions such programs could make to the improvement of the student, school and community. Part III requested that the teacher indicate his competence to teach, his willingness to become competent to teach, and his willingness to teach specified subjects. It also requested him to indicate his academic qualifications and his major and minor areas of specialization.

Collection of Data

At the time the school officials were initially contacted, procedures were established for collecting the data from the schools. All school officials preferred to distribute, collect and return the opinionnaire through the school office, rather than to have the research team mail the opinionnaire directly to the teacher. The school official, guidance counselor, vocational director, or principal who distributed the opinionnaires and cover letter (Appendix III-B) typically attached a statement concerning the fact that the school was cooperating with the study.

Of the 661 teachers who were employed by the four schools selected, 273 completed and returned the opinionnaire.

As shown in Table III-1 the various schools range in percentage of returns from 27.6 to 63.0 with an overall average of 41.3 percent.

Table III-1. Number and Percentage of Completed Returns By School

School	Number of Teachers	Number Completed and Returned	Percent Returned
Maine East High School	238	150	63.0
Michael High School	77	25	32.5
Proviso East High School	177	49	27.6
Reavis High School	169	48	28.4
TOTAL	661	273	41.3

Analysis

Frequency counts were obtained to determine the frequency of the categories for each opinion item on the instrument. Frequency counts were also employed to ascertain the number of the respondents who felt they were competent to teach various areas of applied biological and agricultural occupations as well as those who were willing to become competent and those who were willing to teach in these areas.

RESULTS

The major objectives of this phase of the study was to ascertain the attitudes teachers in the metropolitan area of Chicago held toward programs in vocational education with emphasis on applied biological and agricultural occupations. Specific responses regarding the competence to teach, willingness to become competent enough to teach, and willingness to teach courses in applied biological and agricultural occupations were sought from the teachers.

The vocational areas for which attitudes were obtained were 1) applied biological and agricultural occupations, 2) personal and public service (including gainful home economics), 3) business and office occupations, 4) health occupations, 5) industrial oriented occupations, and 6) vocational education. The responses made by all teachers were grouped and frequency counts made to determine the response pattern for the various possible responses for each item.

The area of applied biological and agricultural occupations was represented in greater detail on the opinionnaire than were other vocational areas. The researchers felt that it was important to obtain an indication of the teachers' attitude toward vocational education in general.

Applied Biological and Agricultural Occupations

Table III-2 includes the data regarding the attitude of the teachers toward applied biological and agricultural occupations. Measures of attitudes concerning the value of such a program, benefits to the student, effects on the curriculum, and willingness to participate in the implementation of programs in applied biological and agricultural occupations were obtained and will be discussed in turn.

Table III-2. Frequency of Teachers Selecting the Various Responses for Items Regarding Applied Biological and Agricultural Occupations

Number	Item N=272	Responses					
		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Total Responses
1	Courses in applied biological and agricultural occupations could be offered in this school.	27	136	53	40	16	272
2	Courses in applied biological and agricultural occupations would be too time consuming in relation to possible benefits.	19	47	84	95	23	268
3	A program in agriculturally related occupations would be very effective and rewarding to student, school and community	18	71	80	78	24	271
6	In my opinion, courses in agriculturally related occupations would make great contributions to the overall high school program.	11	73	83	76	28	271
7	Courses in applied biological and agricultural occupations should be confined to rural schools.	15	47	54	115	38	269
8	Time spent in courses related to applied biological and agricultural occupations will hinder the chance of academic achievement beyond high school.	6	15	45	152	51	269
9	I think there will be enough students interested to justify offering courses related to agricultural occupations.	6	52	114	61	38	271

Table III-2. (con't)

Item Number	Item	Responses					
		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Responses
10	Programs in applied biological and agricultural occupations if properly planned and executed could help in making the high school learning more meaningful to students.	27	158	45	33	5	268
13	Courses in related agricultural occupations would help the students in developing marketable skills.	28	59	69	91	21	268
15	I think courses in agricultural related occupations would help the students in developing marketable skills.	17	131	76	39	8	271
16	I think general science courses are providing the students with adequate information concerning related agricultural occupations, therefore, such a program is not necessary.	6	30	89	107	37	269
18	Courses in lawn care and maintenance would provide the student the opportunity of applying the theories learned in academic areas.	17	111	71	50	16	265
19	A program in agriculturally related occupations would be fine provided it does not involve me.	11	45	103	84	22	265
23	If I am not adequately qualified to teach courses I would be willing to take refresher courses.	33	81	59	57	34	264

Table III-2. (con't)

Item Number	Item N=272	Responses: Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Total Responses
24	I would be willing to work a few extra hours for the success of a program in applied biological and agricultural occupations.	11	49	90	71	44	265
25	I would be willing to take on additional responsibilities if relieved of some of my present assignments.	19	74	79	57	34	263
26	Frankly, the idea of offering courses in applied biological and agricultural occupations is good, but I am not willing to take on any additional responsibility to help implement such a program unless my salary is substantially increased.	18	46	100	63	20	247
Part II		Great	Moderate	Slight	None	Negative	
	The contributions of courses related to agricultural occupations to the overall high school program would be:	23	93	115	24	10	265
	The contribution that I would be willing to make towards the success of a program in applied biological and agricultural occupations:	7	74	87	75	12	255

Opinionnaire items 1, 2, 7, 8, 16 and Part II-1 reflect attitudes concerning the value of programs in applied biological and agricultural occupations.

Of the respondents from the various schools were grouped, it was observed that a very favorable attitude existed about the value of the vocational area of applied biological and agricultural occupations of the respondents; four-fifths (59.9%) indicated that courses in applied biological and agricultural occupations could be offered in their school. Only one-fourth (24.6%) indicated that such courses would be too time consuming in relation to possible benefits, less than one-fourth (23.0%) thought these programs should be confined to rural schools, over one-half (53.5%) disagreed with the statement that general science courses are providing students with adequate information concerning agricultural related occupations, and three-fourths (75.5%) indicated that courses related to applied biological and agricultural occupations would not hinder the chance of academic achievement beyond high school while less than one-tenth (7.8%) felt that such a program would be a detriment. In Part II of the opinionnaire where the scale of great, moderate, slight, none and negative was employed it was found that most of the respondents felt that courses related to agricultural occupations would be positive in their school. The percentages for the response categories from great to negative was 8.7, 35.9, 43.4, 9.1, and 3.8 respectively.

Opinionnaire items reflecting attitudes about benefits of a program in applied biological and agricultural occupations to the student were 3, 9, 10, and 15. As shown in Table III-2 approximately one-third of the respondents indicated that they agreed, were undecided or disagreed with the statements that a program in agriculturally related occupations would be very effective

and rewarding to the student, school and community. The percentages were 32.8, 29.5, and 37.6 respectively. Over one-third (36.5%) of the respondents felt that enough students would be interested to justify offering courses related to agriculture. An additional 43.1% were undecided about the interest of students in this regard. Over two-thirds (69.0%) of the respondents felt the programs in applied biological and agricultural occupations could help make learning more meaningful to students. About one-half (54.6%) of the respondents thought that courses in agriculturally related occupations would help the students develop marketable skills.

A reflection of the teachers' attitudes about the effect of courses in applied biological and agricultural occupations on the total school program were obtained from the data in items 6, 13, and 18. As shown in Table III-2 nearly one-third (31.0%) of the respondents indicated that they felt that courses in agriculturally related occupations would make great contributions to the overall high school program. Less than one-third (32.5%) of the respondents indicated that courses related to agricultural occupations should be handled by junior colleges, community colleges, and area schools rather than their own high school. Approximately one-half (48.3%) of the respondents reported that courses in lawn care and maintenance would provide the students the opportunity to utilize the theories learned in academic areas.

One of the keys to the development of any new program in a school system is the support that the teaching staff is willing to give, including their time. Opinionnaire items 19, 24, 26, and Part II-2 were used to reflect the teachers' attitudes toward participation in implementation of programs in applied biological and agricultural occupations. As shown in Table III-2 nearly one-half (48.3%) of the respondents indicated that offering a program

in agriculturally related occupations would be fine provided that it did not involve them. Contrary to this response however is the indication by nearly one-fourth (23.3%) of the respondents indicated they would be willing to work a few extra hours for the success of a program in applied biological and agricultural occupations; one-third (33.6%) indicated they would take on additional responsibilities to help implement such programs. When asked to indicate the contribution they would be willing to make toward the success of a program in applied biological and agricultural occupations, a positive reaction was obtained. Here, using the scale of great, moderate, slight, none, and negative, the percentage of responses was 2.7, 29.0, 34.1, 29.4, and 4.7 respectively. Thus, approximately two-thirds of the respondents were willing to put some effort into seeing that such a program was a success.

The teachers were asked to rank eleven areas of applied biological and agricultural occupations in order of their preference to be included in a program of applied biological and agricultural occupations in their school. These areas were: 1) horticulture, 2) agricultural mechanics, 3) agricultural supply, 4) turf management, 5) greenhouse production, 6) nursery management, 7) small animal production, 8) parks and forestry management, 9) soil conservation, 10) animal science, and 11) environmental quality. Data concerning these ranks are included in Table III-3.

Nearly two-fifths (38.9%) of the respondents indicated their first choice as environmental quality. Other areas receiving a substantial number of first place ranks were parks and forestry management, horticulture, soil conservation, and turf management. The percentage of the respondents who ranked these areas as the most desirable of the eleven areas were 7.4, 7.0, 6.3, and 4.8 respectively. Those areas most frequently indicated as the

Table III-3. Frequency of Ranks Given by Teachers to Various Courses in Applied Biological and Agricultural Occupations

Subjects N=270	Ranks										
	1	2	3	4	5	6	7	8	9	10	11
Horticulture	19	14	20	18	25	20	9	8	16	6	6
Agricultural Mechanics	4	2	2	12	10	16	16	18	33	18	
Agricultural Supply	1	5	7	2	10	14	20	20	27	31	
Turf Management	13	11	17	9	18	18	16	14	11	8	1
Greenhouse Production	7	21	25	23	19	13	11	17	13	8	3
Nursery Management	11	17	24	16	26	16	20	11	10	6	3
Small Animal Production	1	3	9	15	19	12	15	16	17	15	1
Parks and Forestry Management	20	34	36	27	16	14	4	8	2	5	3
Soil Conservation	17	49	20	12	18	23	10	8	7	3	5
Animal Science	8	9	18	21	8	8	16	14	18	14	13
Environmental Quality	105	25	19	7	6	8	8	4	2	6	

respondents' second choice were soil conservation, parks and forestry management, environmental quality, greenhouse production, nursery management, and horticulture, the respective percentages being 18.1, 12.6, 9.3, 7.8, and 7.0.

Areas of applied biological and agricultural occupations receiving relatively few first or second place ranks included agricultural supply, small animal production, agricultural mechanics, and animal science. Consequently, these areas also received a disproportionately high number of low ranks.

Table III-4 includes data regarding the teachers' feelings about their competence in the various areas of agriculture listed, as well as their willingness to become competent and their willingness to teach these areas. For each of the eleven areas of agriculture listed, some teachers indicated that they were competent to teach in the various areas. The highest frequency of teachers indicated having competence in teaching environmental quality, while animal science and agricultural mechanics ranked second and third.

When asked if they were willing to become competent in teaching the various areas of applied biological and agricultural occupations, 10 percent or more of the respondents indicated that they were willing to become competent in the areas of horticulture, turf management, greenhouse production, nursery management, parks and forestry management, soil conservation, and animal science. Nearly one-third (29.6%) of the respondents indicated that they were willing to become competent in teaching courses in environmental quality, an area which is related to applied biological and agricultural occupations as well as to other vocational areas.

Fewer respondents were willing to teach the various areas of applied biological and agricultural occupations than were willing to become competent to teach the respective areas. Thus, it would appear that some teachers have

Table III-4. Frequency of Teachers' Responses Regarding Attitudes Toward Being Competent, Willingness to Become Competent, and Willingness to Teach Various Courses in Applied Biological and Agricultural Occupations

	Competent		Number not Responding	Willing to become Competent		Number not Responding	Willing to Teach		Number not Responding
	Yes	No		Yes	No		Yes	No	
Horticulture	6	211	53	30	168	72	16	186	78
Agricultural Mechanics	9	205	56	19	181	70	12	186	72
Agricultural Supply	3	211	56	13	185	72	5	193	72
Turf Management	6	208	56	27	174	69	16	183	71
Greenhouse Production	5	208	55	30	169	71	18	181	72
Nursery Management	2	210	58	28	171	71	13	183	74
Small Animal Production	3	211	56	21	175	74	17	181	72
Parks and Forestry Management	5	209	56	49	159	62	28	172	70
Soil Conservation	6	207	57	47	156	67	26	174	70
Animal Science	10	203	57	29	165	76	19	178	73
Environmental Quality	17	199	54	80	126	44	54	158	68

a personal interest in these areas but would not like to teach them. Over five percent of the respondents were willing to teach in the areas of horticulture, turf management, greenhouse production, small animal production, parks and forestry management, soil conservation, animal science, and environmental quality.

Personal and Public Service Occupations

Attitudes of the respondents concerning personal and public service occupations were measured by opinionnaire items 4, 5, 14, 21, and Part II-4. These items emphasized the gainful home economics occupations area in personal and public service occupations.

The data in Table III-5 shows that the respondents had a favorable attitude toward the area of personal and public service occupations. Over three-fourths (78.6%) of the respondents did not have the attitude that home economics occupations should be handled by junior colleges, community colleges or area schools rather than by their high schools.

Over four-fifths (82.7%) of the respondents thought that courses in home economics occupations would help the student develop marketable skills and nearly two-thirds (62.8%) felt that home economics occupations would make a tremendous contribution to the overall high school program. Three-fifths (60.9%) of the respondents indicated that program providing training for policemen, social workers, and firemen would involve parents and improve public relations between the school and community.

The rating scale of great, moderate, slight, none, and negative was employed to ascertain the respondents' attitude toward the contribution of courses related to home economics occupations. The percentages of responses given for each of these scale points were 36.8, 44.9, 15.5, 2.3, and 0.4 respectively.

Table III-5. Frequency of Teachers Selecting the Various Responses for Items Regarding Personal and Public Service Occupations

Item Number	Item N=272	Responses: Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Number of Responses
4	Courses related to home economics occupations should be handled by junior colleges, community colleges, or area vocational schools, rather than by this high school.	5	22	31	119	94	271
5	I think courses in home economics occupations would help the student in developing marketable skills.	68	157	25	17	5	272
14	A program in personal and public service such as training policemen, social workers and firemen would involve the parents in the school work, and improve public relations between the school and the community.	42	120	73	27	5	268
21	Courses in home economics occupations would make a tremendous contribution to the overall high school program.	51	118	65	30	5	269

Part III		Great	Moderate	Slight	None	Negative	Number of Responses
29	The contributions of courses related to home economics occupations to the overall high school program is or would be:	95	116	40	6	1	272

Health Occupations

The data regarding the single item included on the opinionnaire designed to measure attitudes concerning health occupations are included in Table III-6. Over four-fifths (82.7%) did not agree with the statement which indicated that offering courses in health occupations would reduce the quality of the overall school program. Although few conclusions can be drawn from this single item it appears that the teachers do not feel that such courses would be detrimental to their school program.

Industrial Occupations

An item concerning the willingness of the respondents to spend a few extra hours for the success of a program in industrial arts was included in the opinionnaire. Table III-7 shows that slightly less than one-third (31.2%) of the respondents indicated willingness to spend some time to insure the success of an industrial occupations program. Thus a slightly higher percentage of the respondents were willing to spend time to assist with industrial occupations than were willing to assist with programs in applied biological and agricultural occupations, the percentages being 32.2 and 23.33 respectively.

Business and Office Occupations

The respondents attitude toward business and office occupations was sampled with opinionnaire items 17 and 22. Item 17 related to both business occupations and applied biological occupations. As shown in Table III-8 the respondents reported a favorable attitude toward courses in marketing, such as advertising and marketing of fruit and vegetables as well as courses in office occupations such as stenographic and secretarial work. Percentages of positive responses for these areas was 52.0 and 62.8 respectively. Since many of the applied biological and agricultural occupations require a knowledge of business it would appear reasonable to include business courses already in

Table III-6. Frequency of Teachers Selecting the Various Responses for Items Regarding Health Occupations

Item Number	Item N=272	Responses					
		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Number of Responses
11	Inclusion of courses in Health Occupations will reduce the quality of the overall high school program.	4	12	31	146	78	268

Table III-7. Frequency of Teachers Selecting the Various Responses for Items Regarding Industrial Occupations

Item Number	Item N=272	Responses					
		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Number of Responses
12	I would be willing to work a few extra hours for the success of a program in Industrial Occupations.	24	59	71	70	42	266

Table III-8. Frequency of Teachers Selecting the Various Responses for Items Regarding Business, Marketing and Management Occupations

Item Number	Item N=272	Responses					
		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Number of Responses
17	Courses in marketing such as advertising, marketing of fruits and vegetables, could be successfully taught in this school.	22	118	78	34	17	269
22	Courses in office occupations such as stenographic and secretarial work should be offered in this school.	51	118	65	30	5	269

existence in a curriculum designed to prepare students for occupations related to agricultural business.

Vocational Education

Data for the single opinionnaire item used to sample the attitude toward vocational education in general is reported in Table III-9. One-half (50.4%) of the respondents indicated that they were willing to accept different responsibilities while one-fourth (27.9%) indicated that they would not.

It was noted upon review of this opinionnaire item that a degree of ambiguity existed since it does not state that the additional responsibilities would be in vocational education.

Table III-9. Frequency of Teachers Selecting the Various Responses for Items Regarding Vocational Education

Item Number	Item N=272	Responses					
		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Number of Responses
20	Frankly, the idea of teaching vocational education may be good but I am not willing to take on any different responsibilities.	16	57	57	96	36	262

SUMMARY, DISCUSSION AND CONCLUSIONS

Presented in this section are a summary of the procedures, discussion of results, and conclusions drawn from the findings.

Summary

The principal purpose of this phase of the research was to determine the attitudes of teachers in the suburban area of Chicago toward vocational education with emphasis on the area of applied biological and agricultural occupations. In addition, for the area of applied biological and agricultural occupations, the teachers' conception of their competence to teach, willingness to become competent, and willingness to teach were sought.

In order to obtain a random sample of teachers, schools in the 46 suburbs contiguous to the city of Chicago were randomly ordered. The schools thus ordered were contacted. Five schools were contacted in order to obtain the cooperation of four schools. The final sample included all teachers from these four schools.

Frequency counts were employed to summarize the data regarding the attitudes of the teachers. Data were collected by employing an instrument developed specifically for that purpose.

Results and Discussion

Presented in this section are the summary and discussion of the results of the analysis of the data concerning the attitudes that teachers in the suburban area of Chicago held toward vocational education with emphasis on applied biological and agricultural occupations.

Applied Biological and Agricultural Occupations. The attitude of the teachers toward applied biological and agricultural occupations was very favorable. The respondents indicated that such programs would be of value to their overall school program. Less than one-tenth of the respondents felt that including a program of applied biological and agricultural occupations in the school curriculum would be a detriment to the total program.

In general, the teachers were undecided as to whether or not enough students would be interested in such a program to justify its establishment. A majority of the respondents did, however, feel that courses in applied biological and agricultural occupations would be beneficial to the students and could make learning more meaningful to students as well as help them develop marketable skills.

Approximately one-fourth of the respondents indicated that they would be willing to contribute some effort to help establish a program in applied biological and agricultural occupations. Nearly two-thirds of the respondents indicated that they would be willing to contribute some effort into seeing that such a program was a success.

Areas of applied biological and agricultural occupations felt to be most beneficial in their school included the areas of environmental quality, parks and forestry management, horticulture, soil conservation, turf management, greenhouse production, and nursery management. Areas which the teachers did not feel were appropriate included agricultural supply, small animal production, agricultural mechanics, and animal science.

When the teachers' competence to teach, willingness to become competent to teach, and willingness to teach the various areas of applied biological and agricultural occupations were considered, it was found that some of the

respondents felt that they were competent to teach in each of the various areas. The higher frequencies were in the area of agricultural mechanics, animal science, and environmental quality. Although fewer respondents indicated they would be willing to teach these courses than indicated a willingness to become competent to teach them, it appeared that an adequate number of staff members could be identified who would be willing to teach in each of the areas included on the opinionnaire. If administrators were willing to make changes in staff loads, adequate numbers of staff could be shifted to implement programs in applied biological and agricultural occupations in the suburban schools. It would be anticipated that in-service education would be helpful for teachers making such a change.

Other Vocational Areas. The teachers' attitudes toward applied biological and agricultural occupations compared favorably with their attitudes toward the other vocational areas. It was noted that fewer respondents were willing to give of their time to assist in insuring the success of programs in applied biological and agricultural programs than were willing to assist with industrial arts programs. This, however, may have been the result of the presence of industrial arts teachers and the absence of teachers in the applied biological areas among the respondents.

Conclusions

Although the research reported teachers' attitudes toward the various areas of vocational education, the conclusions made were focused on program development in applied biological and agricultural occupations. These conclusions are:

1. Teachers in the suburban area of Chicago have a favorable attitude toward the offering of programs in applied biological and agricultural occupations in their schools.

2. Teachers have the necessary positive attitudes toward the contribution applied biological and agricultural occupations would make to their school curriculum.

3. Many teachers have the attitude that not enough students are interested in applied biological and agricultural occupations to merit offering programs; thus, the teachers need to be made aware of the student interest in the total area.

4. A significant number of teachers are willing to assist in the implementation of programs in applied biological and agricultural occupations.

5. A sufficient number of teachers are competent in the various areas of applied biological and agricultural occupations or are willing to become competent in this area. Thus, it appears that if qualified teachers cannot be hired, teachers within the school system could be shifted to teach courses in applied biological and agricultural occupations.

6. Teachers appeared to feel that the areas of applied biological and agricultural occupations related to the environment, e.g., soil conservation and parks and forestry management, would be the most desirable to offer in their school.

7. Although it appeared that the attitude toward vocational areas of applied biological and agricultural occupations received a slightly poorer rating than for other vocational areas, the researchers were pleasantly surprised at the amount of positive response. Hence, optimism was created by the results.

APPENDIX III-A

OPINIONNAIRE FOR TEACHERS

OPINIONNAIRE FOR TEACHERS

Name _____ Age_____ Sex _____

Home Address_____ Telephone _____

Present Position _____ Length of Time in Position _____

Name of School _____ Location _____

Subject/Subjects Tesching _____

Directions. Please encircle the response which best describes your feelings towards each statement.

Code. SA = Strongly Agree U = Undecided DA = Disagree
A = Agree SDA = Strongly Disagree

	SA	A	U	DA	SDA
1. Courses in Applied Biological and Agricultural Occupations could be offered in this school.	1	2	3	4	5
2. Courses in Applied Biological and Agricultural Occupations would be too time consuming in relation to possible benefits.	1	2	3	4	5
3. A program in agriculturally related occupations would be very effective and rewarding to student, school and community.	1	2	3	4	5
4. Courses related to [illegible] should be handled by junior colleges or community colleges, or area vocational schools, rather than by this high school.	1	2	3	4	5
5. I think courses in Home Economics Occupations would help the student in developing marketable skills.	1	2	3	4	5
6. In my opinion, courses in agriculturally related occupations would make great contributions to the overall high school program.	1	2	3	4	5
7. Courses in Applied Biological and Agricultural Occupations should be confined to rural schools.	1	2	3	4	5
8. Time spent in courses related to Applied Biological and Agriculture Occupations will hinder the chance of academic achievement beyond high school.	1	2	3	4	5

		SA	A	U	DA	SDA
9.	I think there will be enough students interested to justify offering courses related to agricultural occupations.	1	2	3	4	5
10.	Programs in Applied Biological and Agricultural Occupations if properly planned and executed could help in making the high school learning more meaningful to students.	1	2	3	4	5
11.	Inclusion of courses in Health Occupations will reduce the quality of the overall high school program.	1	2	3	4	5
12.	I would be willing to work a few extra hours for the success of a program in Industrial Arts.	1	2	3	4	5
13.	Courses in related agricultural occupations should be handled by junior colleges, community colleges and area agricultural schools rather than by this high school.	1	2	3	4	5
14.	A program in Personal and Public Service such as training policemen, social workers and firemen would involve the parents in the school work, and improve public relations between the school and the community.	1	2	3	4	5
15.	I think courses in Agricultural related occupations would help the students in developing marketable skills.	1	2	3	4	5
16.	I think general science courses are providing the students with adequate information concerning related agricultural occupations, therefore, such a program is not necessary.	1	2	3	4	5
17.	Courses in marketing such as advertising, marketing of fruit and vegetables, could be successfully taught in this school.	1	2	3	4	5
18.	Courses in lawn care and maintenance would provide the student the opportunity of applying the theories learned in academic areas.	1	2	3	4	5
19.	A program in agriculturally related occupations would be fine provided it does not involve me.	1	2	3	4	5
20.	Frankly, the idea of teaching vocational education may be good but I am not willing to take on any different responsibilities.	1	2	3	4	5

		SA	A	U	DA	SDA
21.	Courses in Home Economics Occupations would make a tremendous contribution to the overall high school program.	1	2	3	4	5
22.	Courses in Office Occupations such as stenographic and secretarial work should be offered in this school.	1	2	3	4	5
23.	If I am not adequately qualified to teach courses I would be willing to take refresher courses.	1	2	3	4	5
24.	I would be willing to work a few extra hours for the success of a program in Applied Biological and Agricultural Occupations.	1	2	3	4	5
25.	I would be willing to take on additional responsibilities if relieved of some of my present assignments.	1	2	3	4	5
26.	Frankly, the idea of offering courses in Applied Biological and Agricultural Occupations is good, but I am not willing to take on any additional responsibility to help implement such a program unless my salary is substantially increased.	1	2	3	4	5

Please make comments:

Part II

Please encircle the response which is most appropriate for each of the following statements.

1. The contributions of courses related to agricultural occupations to the overall high school program would be:

    a. great
    b. moderate
    c. slight
    d. none
    e. negative

2. The contribution that I would be willing to make towards the success of a program in Applied Biological and Agricultural Occupations:

    a. great
    b. moderate
    c. slight
    d. none
    e. negative

3. The courses in Applied Biological and Agricultural Occupations that I would like to have included in the program may be ranked as follows: (Please rank from most important to least important).

    _____horticulture _____agricultural mechanics _____agricultural supply

    _____turf management _____greenhouse production _____nursery management

    _____small animal production _____parks and forestry management _____soil

    conservation _____animal science _____environmental quality.

    Please list and rank others: _____

    _____

    _____

4. The contribution of courses related to Home Economics Occupations to the overall high school program is or would be:

    a. great
    b. moderate
    c. slight
    d. none
    e. negative

Please check the following blanks indicating your feeling towards being involved in the teaching of the following subjects by indicating (A) your competence in the area, (B) your willingness to become competent in the area, and (C) your willingness to teach in the area.

Subjects	A Competent Yes	A Competent No	B Willing to become competent Yes	B Willing to become competent No	C Willing to teach Yes	C Willing to teach No
Horticulture	___	___	___	___	___	___
Agricultural Mechanics	___	___	___	___	___	___
Agricultural Supply	___	___	___	___	___	___
Turf Management	___	___	___	___	___	___
Greenhouse Production	___	___	___	___	___	___
Nursery Management	___	___	___	___	___	___
Small Animal Production	___	___	___	___	___	___
Parks and Forestry Management	___	___	___	___	___	___
Soil Conservation	___	___	___	___	___	___
Animal Science	___	___	___	___	___	___
Environmental Quality	___	___	___	___	___	___

If you have checked "yes" in column C, please complete the following:

1. Encircle the academic certificate or degree that you have earned and write your major/minor in the blanks provided.

   a. Provisional certificate _____

   b. B.S., B.A.--Major _____ Minor _____

   c. M.S., M.A.--Major _____ Minor _____

   d. Advanced Certificate _____

   e. Doctorate--Major _____ Minor _____

APPENDIX III-B

COVER LETTER

February 1, 1971

Dear Teacher:

The Vocational and Technical Education staff at the University of Illinois at Urbana-Champaign has initiated a project to determine the attitude of Teachers in the metropolitan area of Chicago towards Applied Biological and Agricultural Occupations and other areas of Vocational Education. Vocational Education in Applied Biological and Agricultural Occupations is comprised of the group of related courses or units of subject matter which are organized for carrying on learning experiences concerned with preparation for or upgrading in occupations requiring knowledge and skills in agricultural subjects. Such occupations include: ornamental horticulture, forestry, greenhouse production, small animal production, animal care, lawn care and management, fruit and vegetable production, small engine care and maintenance, and home gardening.

Your school has been selected as a representative school of the greater metropolitan Chicago area. We are asking teachers in the representative school to react to items on the attached opinionnaire in order to ascertain their opinions regarding the desirability of offering various types of vocational programs with emphasis on Applied Biological and Agricultural Occupations. You may express your opinion by encircling the most appropriate response to each statement on the opinionnaire. We feel that the results of our study will be of interest to you and your school.

Please note that the information from the opinionnaire will be used in assisting us in planning programs in Applied Biological and Agricultural Occupations in the metropolitan area of Chicago. Kindly return the completed opinionnaire in the enclosed envelope.

Sincerely,

Hollie B. Thomas, Director
Metropolitan Agriculture Programs
359 Education Building

Ali Ammadi, Staff
Franklin Jackson, Staff
William Lundell, Staff
Art Neavill, Staff

HBT:nf
Enclosures

VOCATIONAL INTEREST OF STUDENTS IN THE SUBURBAN AREA OF CHICAGO

INTRODUCTION

Students, their interests, their concerns, and their happiness should be the focus and basic concern of any research or innovation in education. The basic premise on which the Metropolitan Agricultural Project (MAP) originated was the belief that many youngsters in the Chicago metropolitan area would enjoy careers where creativity rather than routine is valued and where helping living things grow is often the focus. Thus, the project researchers were interested in determining the interests of students in the metropolitan area of Chicago in applied biological and agricultural occupations.

This project extended beyond the scope of detecting student interests in applied biological and agricultural occupations to include a survey of an array of occupations for which vocational education has been offered. It was anticipated that upon understanding the interests of the students, the research team would be in a better position to assess the value of the resources which a program in applied biological and agricultural occupations can avail to a suburban student population in comparison to other vocational areas.

It is often assumed that there is no value in offering a program in applied biological and agricultural occupations in a metropolitan area because of the limited job market in these occupations. The job opportunity research done by the researchers has proven this assumption to be fallacious. The question of whether a program should be offered is largely dependent on the interests of the students. This phase of the study is intended to ascertain the interests of the students.

PROCEDURES

Included in this section are the procedures for instrumentation, identification of the population, selection of the sample and data analysis.

Instrumentation

The Career Interest Inventory (CII), developed concurrently with but not as part of the project, was employed to measure student interest in five areas of vocational education: 1) applied biological and agricultural occupations, 2) business, marketing and management occupations, 3) industrial oriented occupations, 4) health occupations, and 5) personal and public service occupations. A total of 58 scales were included in the instrument.

Validity. The instrument has face validity based on the fact that each scale described representative activities involved in a particular occupation as described in an Occupational Code Book. (1970)

Reliability. The internal consistency of the scales is reported in Table IV-1. This reliability measure shows that most scales are highly consistent with the range of r's being from .42 to .96. Of the 58 scales, 42 or 72.41 percent had internal consistency coefficients of .70 or greater. Based on a low N of 249 these scales appeared to be highly consistent.

Population and sample

The population consisted of ninth-grade students from that part of the suburban area included in the 46 suburbs contiguous to the city of Chicago. A random sample was obtained by randomly ordering the schools and contacting them in order until four cooperating schools were secured. Five schools were contacted in order to obtain the four cooperating schools. A random sample of approximately 60 ninth grade students was obtained from each school. The instrument was administered to the students during school hours, thus assuring participation.

Data Analysis

Scale scores were obtained for each of the 58 scales included in the instrument for each student in the sample by summing the responses such that

Table IV-1. Internal Consistency Coefficients of the CII Scales

Area	Scale	Number of Items	Coefficient
Applied Biological and Agricultural	Animal Science	11	.87
	Plant Science	6	.80
	Farm Mechanics	3	.88
	Agricultural Mechanics	9	.92
	Agricultural Business Management	5	.86
	Agricultural Supply and Services	7	.88
	Agricultural Products	5	.58
	Ornamental Horticulture	11	.84
	Agricultural Resources	4	.69
	Forestry	6	.82
Business Marketing and Management	Business Marketing	5	.67
	Advertising Services	2	.47
	Apparel and Accessories	2	.75
	Automotive	3	.76
	Finance and Credit	2	.49
	Food Distribution	3	.76
	Food Services	2	.42
	General Merchandising	2	.45
	Hardware	2	.56
	Home Furnishing	2	.67
	Industrial Marketing	2	.77
	Insurance	2	.80
	Real Estate	3	.69
	Recreation and Tourism	4	.61
	Transportation	2	.64
	Office Occupations	5	.77
	Business Data Processing	4	.86
	Filing and Clerical	3	.48
	Information and Communication	8	.89
Industrial Oriented	Auto Services	9	.87
	Metal Work	9	.93
	Auto Body	6	.91
	Auto Mechanics	6	.96
	Auto Technology	4	.86
	Carpentry Trades	5	.80
	Electrical Work	5	.92
	Heavy Equipment	3	.85
	Concrete Work	5	.87
	Painting and Decorating	6	.83
	Plumbing	7	.91
	Graphic Occupations	7	.72
	Maritime Occupations	4	.86

Table IV-1. (Con't)

Area	Scale	Number of Items	Coefficient
Health Occupations	Dental Assistant	5	.85
	Nursing	8	.82
	Other Health Related	9	.84
Personal and Public Service	Forestry	2	.66
	Recrestion	3	.61
	Water	3	.81
	Air	2	.75
	Hotel and Lodging	2	.90
	Law Enforcement	9	.81
	Recreation and Tourism	4	.57
	Firemenship	4	.86
	Child Care	7	.94
	Clothing Management	7	.93
	Food Management	7	.93
	Home Furnishings	6	.83
	Institutional Home Management	7	.82

if a student expressed a liking for a particular job, he received a high score. Thus the weighting of the inventory items was:

strongly like = 4

like = 3

dislike = 2

strongly dislike = 1

which is the reverse of the scale that appears on the instrument presented in Appendix A.

In order to be able to make a comparison between scales on the Inventory, a mean item score was obtained by dividing each raw scale score by the number of items on the respective scale. Percentages of students with a mean item score greater than 3 (like) 2 to 3, and less than 2 (dislike) were computed and are included in this report.

RESULTS

The major objective of this phase of the study was to determine the attitude of students in the metropolitan area of Chicago toward vocational education. More specifically the researchers wished to ascertain if students in the metropolitan area of Chicago were interested in jobs related to applied biological and agricultural occupations. It was thought necessary to measure interest in other areas of vocational education as a base line with which the students' interest in applied biological and agricultural occupations could be compared.

Presentation of the results is based on the area of vocational education for which data were collected. These areas are discussed in turn.

Applied Biological and Agricultural Occupations

The ten scales for applied biological and agricultural occupations included 63 items. Items included on the various scales are shown in Appendix IV-B.

Student interest in the various areas of applied biological and agricultural occupations is shown in Table IV-2. Students expressed the greatest interest in the area of animal science. Here 30.11 percent of the respondents had a mean scale score greater than 3.0. Fourteen percent of the respondents indicated an interest in agricultural business management, 12.45% indicated an interest in agricultural mechanics; 11.65% in plant science; 10.84% in agricultural resources; 10.44% in forestry. Areas of specialization in which less than ten percent of the students indicated an interest were ornamental horticulture, agricultural mechanics, agricultural products, and agricultural supply and service, the percentage being 7.63; 5.62; 2.81; and 2.41, respectively.

Business and Office Occupations

Student interest in business and office occupations was strong for most areas of specialization included on the CII. These data are presented in Table IV-3. Areas in which more than 30 percent of the students had a mean item score greater than 3.0 were advertising services, apparel and accessories, and business data processing. Areas of specialization in which from 20 to 30 percent of the students had a mean item score greater than 3.0 were finance and credit, general merchandising, recreation and tourism, office occupations, and filing and clerical. Included in the range of 10 to 20 percent were business marketing, automotive, food service, home furnishings, industrial marketing, insurance, real estate, and information and communications. Areas of specialization for which less than ten percent of the respondents had a mean score of greater than 3.0 were food distribution, hardware, and transportation.

Table IV-2. Frequency and Percentage for the Various Levels of Student Interest by Specialization in Applied Biological and Agricultural Occupations

Specialization N=249	Like		Undecided		Dislike	
	F	%	F	%	F	%
Animal Science	75	30.11	106	42.57	68	27.31
Plant Science	29	11.65	87	34.94	133	53.41
Farm Mechanics	31	12.45	41	16.47	177	71.08
Agricultural Mechanics	14	5.62	73	29.32	162	65.06
Agricultural Business Management	36	14.46	78	31.33	135	54.21
Agricultural Supply and Service	6	2.41	62	24.90	181	72.69
Agricultural Products	7	2.81	79	31.73	163	65.46
Ornamental Horticulture	19	7.63	106	42.57	124	49.80
Agricultural Resources	27	10.84	139	55.82	83	33.33
Forestry	26	10.44	100	40.16	123	49.40

Table IV-3. Frequency and Percentage of the Various Levels of Student Interest by Specialization in Business and Office Occupations

Specialization N = 249	Like		Undecided		Dislike	
	F	%	F	%	F	%
Business Marketing	48	19.28	96	38.55	105	42.17
Advertising Services	86	34.54	59	23.70	104	41.76
Apparel and Accessories	100	40.16	36	14.46	113	45.38
Automotive	44	17.67	54	21.69	151	60.64
Finance and Credit	51	20.48	68	27.31	130	52.21
Food Distribution	19	7.63	161	64.66	69	27.71
Food Services	39	15.66	54	21.69	156	62.65
General Merchandising	55	22.09	70	28.11	124	49.80
Hardware	24	9.64	48	19.28	177	71.08
Home Furnishings	47	18.88	49	19.68	153	61.44
Industrial Marketing	38	15.26	39	15.66	172	69.07
Insurance	30	12.05	25	10.04	194	77.91
Real Estate	46	18.47	75	30.12	128	51.41
Recreation and Tourism	50	20.08	117	46.99	82	32.93
Transportation	19	7.64	40	16.06	190	76.30
Office Occupations	50	20.08	112	44.98	87	34.94
Business Data Processing	87	34.94	85	34.14	77	30.92
Filing and Clerical	60	24.10	79	31.73	110	44.17
Information and Communications	36	14.46	104	41.77	109	43.77

Industrial Oriented Occupations

Indigenous to the area of Chicago from which the sample of students was taken are a large amount of industrial plants as well as a high population density and thus a high density of automobiles. Hence it would appear that students in the area would be familiar with the type of work done within the industrial plants and with the persons who provide the automotive services and repair.

The data in Table IV-4 do not, however, indicate a higher student interest in the various areas of industrial oriented occupations than for other areas of vocational education. In one area more than one-fifth of the students indicated that they had an interest which exceeded the 3.01 (like) mean cut-off point. This area was auto technology with 26.10 percent of the students indicating that they liked the activities in this occupation.

Occupations in which one-tenth to one-fifth of the students indicated that they liked were maritime occupations (17.27%); auto mechanics (16.87%); auto body (14.88%); painting and decorating (13.65%); graphic occupations (12.45%). Occupations that less than one-tenth of the students indicated that they liked were electrical work, heavy equipment, carpentry trades, concrete work, metal work, auto services, and plumbing. The percentages were 9.64, 9.64; 8.44; 7.22; 6.02, 5.22, and 2.01, respectively.

Health Occupations

The vocational area of health occupations was not included as extensively on the CII as were other vocational areas. Many health occupations areas were represented by only one item. These one-item scales were collapsed into a single scale and are presented as other health related occupations.

In general for the three scales of dental, nursing, and other health related, a significant number of students indicated that they liked the

Table IV-4. Frequency and Percentage of the Various Levels of Student Interest by Specialization in Industrial Oriented Occupations

Specialization N=249	Like		Undecided		Dislike	
	F	%	F	%	F	%
Auto Services	13	5.22	86	34.54	150	60.24
Metal Work	15	6.02	62	24.90	172	69.08
Auto Body	37	14.88	55	22.09	157	63.05
Auto Mechanics	42	16.87	55	22.09	152	61.04
Auto Technology	65	26.10	64	25.70	120	48.20
Carpentry Trades	21	8.44	78	31.32	150	60.24
Electrical Work	24	9.64	50	20.08	175	70.28
Heavy Equipment	24	9.64	40	16.06	185	74.30
Concrete Work	18	7.22	57	22.90	174	69.88
Painting and Decorating	34	13.65	99	39.76	116	46.59
Plumbing	5	2.01	38	15.26	206	82.73
Graphic Occupations	31	12.45	130	52.21	88	35.34
Maritime Occupations	43	17.27	77	30.92	129	51.81

activities included in these occupations. As shown in Table IV-5, 20.50 percent of the students liked the activities included in the nursing scale, 15.26 percent liked the activities included in the other health related scale, and 11.25 percent liked the activities included on the dental scale.

Personal and Public Service Occupations

Scales were included on the instrument which were representative of the broad personal and public services occupational areas of ecology, recreation, police training, firemanship training, and home economics. Numerous students expressed a liking for the activities in each of the areas. As shown in Table IV-6, over one-half (53.42%) of the students liked the activities that relate to occupations dealing with air. Over one-third of the students liked the activities that were included on the occupational scales of water (38.96%); child care (38.96%); and hotel and lodging (37.35%). Occupational areas for which more than one-fourth but less than one-third of the students expressed a liking included forest (30.12%) and recreation (29.72%). Occupational areas for which more than one-tenth but less than one-fourth of the students expressed a liking for food management (23.70%); recreation and tourism (21.69%); home furnishing (20.48%); clothing management (18.47%); firemanship training (14.86%); and law enforcement (13.25%). Less than one-tenth (7.24%) of the students indicated a liking for the activities included on the institutional home management scale.

SUMMARY AND CONCLUSIONS

Presented in this section are a summary of the procedures, discussion of results, and conclusions relating to the vocational interests of ninth-grade suburban students.

Table IV-5. Frequency and Percentage of the Various Levels of Student Interest by Specialization in Health Occupations

Specialization N=249	Like		Undecided		Dislike	
	F	%	F	%	F	%
Dental	28	11.25	69	27.71	152	61.04
Nursing	51	20.50	92	36.95	96	38.55
Other Health Related	38	15.26	103	41.37	108	43.37

Table IV-6. Frequency and Percentage for the Various Levels of Student Interest by Specialization in Personal and Public Service Occupations

Specialization N=249	Like		Undecided		Dislike	
	F	%	F	%	F	%
Forest	75	30.12	52	20.88	122	49.00
Recreation	74	29.72	100	40.16	75	30.12
Water	97	38.96	73	29.32	79	31.72
Air	133	53.42	52	20.88	64	25.70
Hotel and Lodging	93	37.35	17	6.83	139	55.82
Law Enforcement	33	13.25	101	40.56	115	46.19
Recreation and Tourism	54	21.69	119	47.79	76	30.52
Firemenship Training	37	14.86	86	34.54	126	50.60
Child Care	97	38.96	70	28.11	82	52.93
Clothing Management	46	18.47	63	25.31	140	56.22
Food Management	59	23.70	75	30.12	115	46.18
Home Furnishings	51	20.48	90	36.15	108	43.37
Institutional Home Management	18	7.24	101	40.56	130	52.20

Summary

The primary purpose of this phase of the research was to ascertain the vocational interest of ninth-grade students in the suburban area of Chicago. Although the focus of the study was on the area of applied biological and agricultural occupations, it was thought necessary to ascertain the students' interest in all areas of vocational education in order to determine the relative interest in applied biological and agricultural occupations.

A random sample was obtained by randomly ordering the schools located in the 46 suburbs contiguous to Chicago, contacting the schools in order of random assignment until four cooperating schools were identified, and randomly sampling approximately 60 ninth-grade students from each school.

An instrument developed concurrently with but not as part of the project was employed to measure interest in five areas of vocational education. Frequency counts and percentages were calculated to summarize the data. Visual comparisons are made among the levels of interest for the various areas of vocational interest.

Results and discussion

Because the major concern of the study was to determine if adequate student interest existed in the suburban area of Chicago to merit the implementation of programs in applied biological and agricultural occupations, results of all areas are discussed in relation to applied biological and agricultural occupations.

In the area of applied biological and agricultural occupations, students expressed the greatest interest in animal science, agricultural business management, agricultural mechanics, plant science, agricultural resources, and forestry. More than ten percent of the students expressed interest in each

of these occupational areas. More than three-fifths of the students were interested in animal science. Considering the size of the schools in the population area, a pool of ten percent or more of students expressing interest in a particular occupational area appears to be ample from which to draw for program implementation.

When the level of student interest was compared visually the areas of applied biological and agricultural occupations compared favorably with industrial oriented occupations and health occupations. The greatest amount of interest was expressed in the areas of business and office occupations and personal and public service occupations. Since the data were not analyzed by sex, only speculations can be made about sex differences. It appeared that occupational areas in which female students might have greater interest were also those in which the greatest number of total students expressed interest. Some of these areas include apparel and accessories and child care.

Conclusions

Conclusions made focus on the feasibility of offering programs in applied biological and agricultural occupations. The relative interest exhibited for other vocational areas was considered in making these conclusions. Conclusions regarding the feasibility of developing programs in applied biological and agricultural occupations in the suburban area of Chicago include:

1. An adequate number of students expressed interest in the areas of animal science, agricultural business management, agricultural mechanics, agricultural resources and forestry to merit the implementation of a program in applied biological and agricultural occupations.

2. Student interest in the occupational areas included in applied biological and agricultural occupations compared favorably with industrial oriented occupations and health occupations, but not with business and office occupations or personal and public service occupations.

3. Interest in the occupational areas in personal and public service that are closely related to applied biological and agricultural occupations such as forest, air, water, and recreation were very high. Thus the possibility of establishing programs in these areas concurrently with applied biological and agricultural occupations allowing for common courses appears appropriate.

4. The development and implementation of a wide spectrum of options in applied biological and agricultural occupations to meet the student interest can best be accomplished by developing courses which are common to the several areas and providing specialized courses as needed.

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BIBLIOGRAPHY

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APPENDIX IV-A

ITEMS INCLUDED ON SCALES OF THE

CAREER INTEREST INVENTORY

ITEMS INCLUDED ON SCALES OF THE
CAREER INTEREST INVENTORY

Scale	Item	
Animal Science	23.	Care for sick animals.
	25.	Visit a pet hospital.
	60.	Train a horse.
	85.	Milk a dairy cow.
	188.	Raise white mice.
	201.	Own a baby chicken.
	258.	Feed a puppy.
Plant Science	10.	Spray fruit trees.
	69.	Study about insects.
	92.	Grow farm crops.
	111.	Plant trees.
	213.	Pick vegetables from a garden.
	275.	Grow vegetables.
Farm Mechanics	127.	Repair farm equipment.
	190.	Drive a tractor.
	194.	Adjust farm machinery.
Ag. Mechanics	2.	Tune a tractor engine.
	53.	Build a barn.
	121.	Prevent soil from washing away.
	185.	Fix a small gas engine.
	206.	Repair a corn planter.
	237.	Weld on farm machinery.
	255.	Fix a lawn mower.
	257.	Help repair a farm building.
	270.	Wire a barn for electricity.
Farm Bus. Management	21.	Buy supplies for a farm.
	62.	Operate a farm.
	93.	Plan what to raise on a farm.
	145.	Loan money to farmers.
	212.	Own a farm.
Ag. Supply & Services	76.	Take soil samples.
	84.	Sell farm chemicals.
	96.	Sell farm supplies.
	133.	Apply chemicals to crops.
	135.	Mix fertilizer.
	208.	Sell feed.
	282.	Sell farm machinery.

Scale	Item	
Ag. Products	79.	Grade tobacco.
	110.	Test milk.
	117.	Mix feed for animals.
	250.	Inspect meat products.
	266.	Visit a cotton processing plant.
O. H.	12.	Operate a riding lawn mower.
	14.	Figure where to plant trees.
	89.	Transplant flowers.
	107.	Work in a greenhouse.
	141.	Grow flowers.
	156.	Sell flowers.
	164.	Work in a flower shop.
	178.	Repair damaged trees.
	205.	Cut a hedge.
	215.	Trim trees.
	246.	Seed a lawn.
Ag. Resources	57.	Work in a fish hatchery.
	80.	Raise game birds.
	140.	Raise fish.
	169.	Protect wild animals.
Forest	7.	Study the use of forest lands.
	106.	Help a forest ranger.
	120.	Study the use of wood.
	128.	Mark trees to be cut into lumber.
	197.	Grow Christmas trees.
	210.	Help manage a forest.
Child Care	20.	Watch small children.
	35.	Take care of babies.
	101.	Read stories to children.
	109.	Feed small children.
	114.	Supervise children's games.
	150.	Help children talk correctly.
	195.	Learn how children grow.
Clothing Management	18.	Learn about cloth.
	27.	Design dresses.
	71.	Press clothes.
	87.	Remove stains from cloth.
	119.	Select clothing colors.
	228.	Figure cost in buying clothing.
	229.	Sew a dress.

Scale	Item	
Food Management	46.	Decorate a dinner table.
	86.	Manage a cafeteria.
	94.	Serve meals.
	95.	Set a table properly.
	115.	Prepare meals for people on special diets.
	144.	Bake pies.
	218.	Set a table for meals.
Home Furnishings	5.	Fix household equipment.
	22.	Make curtains.
	59.	Match colors in a room.
	155.	Choose floor coverings for a house.
	189.	Select furniture for a house.
	199.	Arrange lighting for a room.
Inst. Home Management, etc.	31.	Wash dishes.
	36.	Plan a family budget.
	131.	Help elderly people.
	196.	Operate a nursing home.
	200.	Clean floors.
	230.	Make beds.
	279.	Check hotel rooms for cleanliness.
Metal Working	3.	Make items from metals.
	43.	Sharpen tools.
	118.	Work in a steel mill.
	134.	Saw metal.
	151.	Bend hot metals.
	153.	Grind metals.
	161.	Weld metals.
	204.	Cut metals with a torch.
	207.	Drill holes in metal.
Auto Services	1.	Pump gasoline.
	4.	Test a battery.
	8.	Install a car muffler.
	28.	Grease a car.
	175.	Drive a tow truck.
	232.	Sell oil products.
	245.	Fix a flat tire.
	261.	Wash a car.
	276.	Change oil in a car.
Auto Body	16.	Replace car windshields.
	29.	Paint a car.
	122.	Figure the cost of repairing a damaged car.
	129.	Prepare cars for painting.
	147.	Repair a wrecked car.
	182.	Replace a car fender.

Scale	Item	
Auto Mech. Work	54.	Work on an engine.
	68.	Repair car generator.
	81.	Check engine RPM.
	165.	Repair a car transmission.
	238.	Use engine testing equipment.
Auto Technology	65.	Test car brakes.
	139.	Try out new types of cars.
	222.	Find out why a car won't start.
	251.	Test new kinds of engines.
Carpentry	49.	Repair a roof.
	74.	Use a power drill.
	90.	Saw a board.
	163.	Drive nails in wood.
	253.	Build a house.
Electrical Work	177.	Test electrical wiring for defects.
	214.	Put electric wire in a house.
	256.	Figure cost of wiring a house.
	273.	Hang an electrical light.
	280.	Splice electrical wires.
Heavy Equipment	63.	Drive a concrete truck.
	158.	Operate a crane.
	269.	Operate a bulldozer.
Cement Work	137.	Build a fireplace.
	166.	Mix concrete.
	170.	Build a concrete block wall.
	180.	Pour a concrete walk.
	183.	Finish a concrete floor.
Painting & Decorating Jobs	146.	Finish woodwork.
	198.	Mix paint colors.
	248.	Help hang wallpaper.
	262.	Prepare wall for painting.
	265.	Paint a room.
	271.	Clean painting tools.
Plumbing Jobs	26.	Lay drain tiles.
	64.	Cut pipes.
	97.	Connect copper pipes.
	113.	Connect sink to drains.
	154.	Repair faucets.
	160.	Replace water pipes.
	274.	Connect sewer pipes.

Scale	Item	
Graphic Arts	40.	Run a printing press.
	41.	Develop film.
	44.	Design book covers.
	99.	Cut paper.
	187.	Put cover on books.
	202.	Take pictures.
	267.	Work in a printing shop.
Maritime Occupations	70.	Learn about various kinds of boats.
	108.	Work on a lifeboat.
	173.	Work on a tugboat.
	193.	Be a boat engine mechanic.
Business Marketing	56.	Write sales tickets.
	162.	Handle customer complaints.
	216.	Operate a cash register.
	239.	Talk to customers.
	249.	Count items in a store.
Advertising Services	45.	Build displays.
	124.	Work in an advertising firm.
Apparel and Acc.	112.	Sell clothes.
	167.	Model clothes.
Automotive	78.	Sell auto supplies.
	143.	Rent cars to people.
	209.	Own a gas station.
Finance and Credit	100.	Be a bank cashier.
	243.	Work in a loan agency.
Food Distribution	17.	Carry out groceries.
	192.	Sack groceries.
	219.	Sell fruits or vegetables.
Food Services	224.	Sell supplies to restaurants.
	268.	Be a waiter or waitress.
General Merchandise	38.	Manage a store.
	181.	Drive a delivery truck.
Hardware, etc.	226.	Sell lawn and garden equipment.
	277.	Work in a hardware store.
Home Furnishings	220.	Work in a furniture store.
	234.	Sell household equipment.

Scale	Item	
Industrial Marketing	221.	Be a traveling salesman.
	223.	Be a salesman for a large company.
Insurance	235.	Sell insurance.
	272.	Adjust insurance claims.
Real Estate	58.	Manage an apartment house.
	176.	Sell houses for people.
	247.	Buy and sell buildings.
Recreation & Tourism	19.	Sell books.
	217.	Work in a camera shop.
	231.	Sell sporting goods.
	252.	Sell musical instruments.
Transportation	168.	Ship packages.
	264.	Work in a warehouse.
Office Occupations	15.	Keep business records.
	34.	Supervise office girls.
	126.	Send out bills for a business.
	132.	Keep records.
	241.	Write numbers neatly.
Business Data Processing	33.	Operate a computer.
	55.	Punch computer cards.
	82.	Program a computer.
	191.	Read computer results.
Filing, Office Machines, etc.	11.	File letters.
	130.	Operate a duplicating machine.
	149.	File records.
Information & Communications	30.	Work at a telephone switchboard.
	32.	Work at an information desk.
	39.	Prepare packages for mail.
	42.	Deliver office mail.
	102.	Write business letters.
	172.	Sort mail.
	174.	Answer office telephones.
	233.	Type letters.
Dental	61.	Examine children's teeth.
	75.	Talk about care of teeth.
	136.	Help a dentist.
	159.	Make false teeth.
	211.	Take x-rays of teeth.

Scale	Item	
Nursing	6.	Keep medical records.
	50.	Bandage an injured person.
	72.	Be a nurse
	103.	Take blood samples.
	104.	Give medicine to patients.
	186.	Listen to person's heart beat.
	263.	Take sick person's temperature.
	278.	Assist a doctor during an operation.
Other Health Related	51.	Test people's eyes for defects.
	66.	Put clean sheets on hospital beds.
	88.	Take x-rays of bones.
	91.	Give hearing tests.
	142.	Help mentally ill people.
	157.	Care for sick people at their home.
	179.	Fit eye glasses.
	225.	Clean hospital equipment.
	244.	Test blood samples.
Forests	52.	Help fight forest fires.
	227.	Watch for forest fires.
Recreation	13.	Be a hunting and fishing guide.
	24.	Be a park manager.
	281.	Help in a summer camp.
Water	105.	Help prepare water for drinking.
	236.	Help keep community water clean.
	240.	Learn about "water pollution".
Air	47.	Enforce laws to keep air clean.
	67.	Test air for pollution.
Hotel and Lodge	138.	Be a hotel desk clerk.
	152.	Work at a motel desk.
Law Enforcement	73.	Be a state policeman.
	83.	Supervise people on probation.
	98.	Be a detective.
	123.	Work for the city.
	125.	Direct traffic.
	148.	Be a policeman.
	184.	Operate a police radar.
	203.	Testify in court.
	242.	Work in a crime laboratory.

Scale	Item	
Recreation & Tourism	9.	Be a lifeguard.
	37.	Manage a golf course.
	254.	Work in a bowling alley.
	260.	Be a tour guide.
Fireman Training	48.	Be a fireman.
	77.	Drive a fire truck.
	116.	Help prevent fires.
	171.	Fight fires.

APPENDIX IV-B

THE CAREER INTEREST INVENTORY

THE CAREER INTEREST INVENTORY
by Hollie B. Thomas

Name _____ Sex _____Male _____Female Race_____

School _____ City _____ Date _____

What is the occupation of your father (guardian)? _____

What is the occupation of your mother (guardian)? _____

Do you plan to take vocational subjects in high school? _____yes _____no.

What job do you want to have after you finish school? _____
(Please specify)

INSTRUCTIONS

The purpose of this inventory is to provide you with an opportunity to express your opinion about certain jobs or activities. The results of this survey may be helpful in your future course or career planning. The value of this information will be dependent upon the true expression of your opinion. There are no right or wrong answers. Please answer each item the way you truly feel about it; not the way you think it should be answered.

On the following pages you will find a series of jobs and activities. You are asked to express your feelings about how much or how little you would like to do each job or activity even though you might not have done it.

Before answering the items, read each statement carefully and circle 1, 2, 3, or 4 as below.

1 - if you strongly like the job.

2 - if you like the job.

3 - if you dislike the job.

4 - if you strongly dislike the job.

Do not omit any statement. Circle only one number for each item.

Example: Sell tickets in a movie theater.

If you strongly like the job circle 1. (1) 2 3 4

If you like the job circle 2. 1 (2) 3 4

If you dislike the job circle 3. 1 2 (3) 4

If you strongly dislike the job circle 4 1 2 3 (4)

		Strongly Like	Like	Dislike	Strongly Dislike
1.	Pump gasoline.	1	2	3	4
2.	Tune a tractor engine.	1	2	3	4
3.	Make items from metals.	1	2	3	4
4.	Test a battery.	1	2	3	4
5.	Fix household equipment.	1	2	3	4
6.	Keep medical records.	1	2	3	4
7.	Study the use of forest lands.	1	2	3	4
8.	Install a car muffler.	1	2	3	4
9.	Be a lifeguard.	1	2	3	4
10.	Spray fruit trees.	1	2	3	4
11.	File letters.	1	2	3	4
12.	Operate a riding lawn mower.	1	2	3	4
13.	Be a hunting or fishing guide.	1	2	3	4
14.	Figure where to plant trees.	1	2	3	4
15.	Keep business records.	1	2	3	4
16.	Replace car windshields.	1	2	3	4
17.	Carry out groceries.	1	2	3	4
18.	Learn about cloth.	1	2	3	4
19.	Sell books.	1	2	3	4
20.	Watch small children.	1	2	3	4
21.	Buy supplies for a farm.	1	2	3	4
22.	Make curtains.	1	2	3	4
23.	Care for sick animals.	1	2	3	4
24.	Be a park manager.	1	2	3	4
25.	Visit a pet hospital.	1	2	3	4
26.	Lay drain tiles.	1	2	3	4
27.	Design dresses.	1	2	3	4
28.	Grease a car.	1	2	3	4
29.	Paint a car.	1	2	3	4
30.	Work at a telephone switchboard.	1	2	3	4
31.	Wash dishes.	1	2	3	4
32.	Work at an information desk.	1	2	3	4
33.	Operate a computer.	1	2	3	4
34.	Supervise office girls.	1	2	3	4
35.	Take care of babies.	1	2	3	4
36.	Plan a family budget.	1	2	3	4
37.	Manage a golf course.	1	2	3	4
38.	Manage a store.	1	2	3	4
39.	Prepare packages for mail.	1	2	3	4
40.	Run a printing press.	1	2	3	4
41.	Develop film.	1	2	3	4
42.	Deliver office mail.	1	2	3	4
43.	Sharpen tools.	1	2	3	4

		Strongly Like	Like	Dislike	Strongly Dislike
44.	Design book covers.	1	2	3	4
45.	Build displays.	1	2	3	4
46.	Decorate a dinner table.	1	2	3	4
47.	Enforce laws to keep air clean.	1	2	3	4
48.	Be a fireman.	1	2	3	4
49.	Repair a roof.	1	2	3	4
50.	Bandage an injured person.	1	2	3	4
51.	Test people's eyes for defects.	1	2	3	4
52.	Help fight forest fires.	1	2	3	4
53.	Build a barn.	1	2	3	4
54.	Work on an engine.	1	2	3	4
55.	Punch computer cards.	1	2	3	4
56.	Write sales tickets.	1	2	3	4
57.	Work in a fish hatchery.	1	2	3	4
58.	Manage an apartment house.	1	2	3	4
59.	Match colors in a room.	1	2	3	4
60.	Train a horse.	1	2	3	4
61.	Examine children's teeth.	1	2	3	4
62.	Operate a farm.	1	2	3	4
63.	Drive a concrete truck.	1	2	3	4
64.	Cut pipes.	1	2	3	4
65.	Test car brakes.	1	2	3	4
66.	Put clean sheets on hospital beds.	1	2	3	4
67.	Test air for pollution.	1	2	3	4
68.	Repair car generator.	1	2	3	4
69.	Study about insects.	1	2	3	4
70.	Learn about various kinds of boats.	1	2	3	4
71.	Press clothes.	1	2	3	4
72.	Be a nurse.	1	2	3	4
73.	Be a state policeman.	1	2	3	4
74.	Use a power drill.	1	2	3	4
75.	Talk about care of teeth.	1	2	3	4
76.	Take soil samples.	1	2	3	4
77.	Drive a fire truck.	1	2	3	4
78.	Sell auto supplies.	1	2	3	4
79.	Grade tobacco.	1	2	3	4
80.	Raise game birds.	1	2	3	4
81.	Check engine RPM.	1	2	3	4
82.	Program a computer.	1	2	3	4
83.	Supervise people on probation.	1	2	3	4
84.	Sell farm chemicals.	1	2	3	4
85.	Milk a dairy cow.	1	2	3	4
86.	Manage a cafeteria.	1	2	3	4

		Strongly Like	Like	Dislike	Strongly Dislike
87.	Remove stains from cloth.	1	2	3	4
88.	Take x-rays of bones.	1	2	3	4
89.	Transplant flowers.	1	2	3	4
90.	Saw a board.	1	2	3	4
91.	Give hearing tests.	1	2	3	4
92.	Grow farm crops.	1	2	3	4
93.	Plan what to raise on a farm.	1	2	3	4
94.	Serve meals.	1	2	3	4
95.	Set a table properly.	1	2	3	4
96.	Sell farm supplies.	1	2	3	4
97.	Connect copper pipes.	1	2	3	4
98.	Be a detective.	1	2	3	4
99.	Cut paper.	1	2	3	4
100.	Be a bank cashier.	1	2	3	4
101.	Read stories to children.	1	2	3	4
102.	Write business letters.	1	2	3	4
103.	Take blood samples.	1	2	3	4
104.	Give medicine to patients.	1	2	3	4
105.	Help prepare water for drinking.	1	2	3	4
106.	Help a forest ranger.	1	2	3	4
107.	Work in a greenhouse.	1	2	3	4
108.	Work on a lifeboat.	1	2	3	4
109.	Feed small children.	1	2	3	4
110.	Test milk.	1	2	3	4
111.	Plant trees.	1	2	3	4
112.	Sell clothes.	1	2	3	4
113.	Connect sink to drains.	1	2	3	4
114.	Supervise children's games.	1	2	3	4
115.	Prepare meals for people on special diets.	1	2	3	4
116.	Help prevent fires.	1	2	3	4
117.	Mix feed for animals.	1	2	3	4
118.	Work in a steel mill.	1	2	3	4
119.	Select clothing colors.	1	2	3	4
120.	Study the use of wood.	1	2	3	4
121.	Prevent soil from washing away.	1	2	3	4
122.	Figure the cost of repairing a damaged car.	1	2	3	4
123.	Work for the city.	1	2	3	4
124.	Work in an advertising firm.	1	2	3	4
125.	Direct traffic.	1	2	3	4
126.	Send out bills for a business.	1	2	3	4
127.	Repair farm equipment.	1	2	3	4
128.	Mark trees to be cut into lumber.	1	2	3	4
129.	Prepare cars for painting.	1	2	3	4

		Strongly Like	Like	Dislike	Strongly Dislike
130.	Operate a duplicating machine.	1	2	3	4
131.	Help elderly people.	1	2	3	4
132.	Keep records.	1	2	3	4
133.	Apply chemicals to crops.	1	2	3	4
134.	Saw metal.	1	2	3	4
135.	Mix fertilizer.	1	2	3	4
136.	Help a dentist.	1	2	3	4
137.	Build a fireplace.	1	2	3	4
138.	Be a hotel desk clerk.	1	2	3	4
139.	Try out new types of cars.	1	2	3	4
140.	Raise fish.	1	2	3	4
141.	Grow flowers.	1	2	3	4
142.	Help mentally ill people.	1	2	3	4
143.	Rent cars to people.	1	2	3	4
144.	Bake pies.	1	2	3	4
145.	Loan money to farmers.	1	2	3	4
146.	Finish woodwork.	1	2	3	4
147.	Repair a wrecked car.	1	2	3	4
148.	Be a policeman.	1	2	3	4
149.	File records.	1	2	3	4
150.	Help children talk correctly.	1	2	3	4
151.	Bend hot metals.	1	2	3	4
152.	Work at a motel desk.	1	2	3	4
153.	Grind metals.	1	2	3	4
154.	Repair faucets.	1	2	3	4
155.	Choose floor coverings for a house.	1	2	3	4
156.	Sell flowers.	1	2	3	4
157.	Care for sick people at their home.	1	2	3	4
158.	Operate a crane.	1	2	3	4
159.	Make false teeth.	1	2	3	4
160.	Replace water pipes.	1	2	3	4
161.	Weld metals.	1	2	3	4
162.	Handle customer complaints.	1	2	3	4
163.	Drive nails in wood.	1	2	3	4
164.	Work in a flower shop.	1	2	3	4
165.	Repair a car transmission.	1	2	3	4
166.	Mix concrete.	1	2	3	4
167.	Model clothes.	1	2	3	4
168.	Ship packages.	1	2	3	4
169.	Protect wild animals.	1	2	3	4
170.	Build a concrete block wall.	1	2	3	4
171.	Fight fires.	1	2	3	4
172.	Sort mail.	1	2	3	4

		Strongly Like	Like	Dislike	Strongly Dislike
173.	Work on a tugboat.	1	2	3	4
174.	Answer office telephones.	1	2	3	4
175.	Drive a tow truck.	1	2	3	4
176.	Sell houses for people.	1	2	3	4
177.	Test electrical wiring for defects.	1	2	3	4
178.	Repair damaged trees.	1	2	3	4
179.	Fit eye glasses.	1	2	3	4
180.	Pour a concrete walk.	1	2	3	4
181.	Drive a delivery truck.	1	2	3	4
182.	Replace a car fender.	1	2	3	4
183.	Finish a concrete floor.	1	2	3	4
184.	Operate a police radar.	1	2	3	4
185.	Fix a small gas engine.	1	2	3	4
186.	Listen to a person's heart beat.	1	2	3	4
187.	Put cover on books.	1	2	3	4
188.	Raise white mice.	1	2	3	4
189.	Select furniture for a house.	1	2	3	4
190.	Drive a tractor.	1	2	3	4
191.	Read computer results.	1	2	3	4
192.	Sack groceries.	1	2	3	4
193.	Be a boat engine mechanic.	1	2	3	4
194.	Adjust farm machinery.	1	2	3	4
195.	Learn how children grow.	1	2	3	4
196.	Operate a nursing home.	1	2	3	4
197.	Grow Christmas trees.	1	2	3	4
198.	Mix paint colors.	1	2	3	4
199.	Arrange lighting for a room.	1	2	3	4
200.	Clean floors.	1	2	3	4
201.	Own a baby chicken.	1	2	3	4
202.	Take pictures.	1	2	3	4
203.	Testify in court.	1	2	3	4
204.	Cut metals with a torch.	1	2	3	4
205.	Cut a hedge.	1	2	3	4
206.	Repair a corn planter.	1	2	3	4
207.	Drill holes in metal.	1	2	3	4
208.	Sell feed.	1	2	3	4
209.	Own a gas station.	1	2	3	4
210.	Help manage a forest.	1	2	3	4
211.	Take x-rays of teeth.	1	2	3	4
212.	Own a farm.	1	2	3	4
213.	Pick vegetables from a garden.	1	2	3	4
214.	Put electric wire in a home.	1	2	3	4
215.	Trim trees.	1	2	3	4

		Strongly Like	Like	Dislike	Strongly Dislike
216.	Operate a cash register.	1	2	3	4
217.	Work in a camera shop.	1	2	3	4
218.	Set a table for meals.	1	2	3	4
219.	Sell fruits or vegetables.	1	2	3	4
220.	Work in a furniture store.	1	2	3	4
221.	Be a traveling salesman.	1	2	3	4
222.	Find out why a car won't start.	1	2	3	4
223.	Be a salesman for a large company.	1	2	3	4
224.	Sell supplies to restaurants.	1	2	3	4
225.	Clean hospital equipment.	1	2	3	4
226.	Sell lawn and garden equipment.	1	2	3	4
227.	Watch for forest fires.	1	2	3	4
228.	Figure cost in buying clothing.	1	2	3	4
229.	Sew a dress.	1	2	3	4
230.	Make beds.	1	2	3	4
231.	Sell sporting goods.	1	2	3	4
232.	Sell oil products.	1	2	3	4
233.	Type letters.	1	2	3	4
234.	Sell household equipment.	1	2	3	4
235.	Sell insurance.	1	2	3	4
236.	Help keep community water clean.	1	2	3	4
237.	Weld on farm machinery.	1	2	3	4
238.	Use engine testing equipment.	1	2	3	4
239.	Talk to customers.	1	2	3	4
240.	Learn about "water pollution".	1	2	3	4
241.	Write numbers neatly.	1	2	3	4
242.	Work in a crime laboratory.	1	2	3	4
243.	Work in a loan agency.	1	2	3	4
244.	Test blood samples.	1	2	3	4
245.	Fix a flat tire.	1	2	3	4
246.	Seed a lawn.	1	2	3	4
247.	Buy and sell buildings.	1	2	3	4
248.	Help hang wallpaper.	1	2	3	4
249.	Count items in a store.	1	2	3	4
250.	Inspect meat products.	1	2	3	4
251.	Test new kinds of engines.	1	2	3	4
252.	Sell musical instruments.	1	2	3	4
253.	Build a house.	1	2	3	4
254.	Work in a bowling alley.	1	2	3	4
255.	Fix a lawn mower.	1	2	3	4
256.	Figure cost of wiring a house.	1	2	3	4
257.	Help repair a farm building.	1	2	3	4
258.	Feed a puppy.	1	2	3	4

		Strongly Like	Like	Dislike	Strongly Dislike
259.	Check spark plugs in a car.	1	2	3	4
260.	Be a tour guide.	1	2	3	4
261.	Wash a car.	1	2	3	4
262.	Prepare wall for painting.	1	2	3	4
263.	Take sick person's temperature.	1	2	3	4
264.	Work in a warehouse.	1	2	3	4
265.	Paint a room.	1	2	3	4
266.	Visit a cotton processing plant.	1	2	3	4
267.	Work in a printing shop.	1	2	3	4
268.	Be a waiter or a waitress.	1	2	3	4
269.	Operate a bulldozer.	1	2	3	4
270.	Wire a barn for electricity.	1	2	3	4
271.	Clean painting tools.	1	2	3	4
272.	Adjust insurance claims.	1	2	3	4
273.	Hang an electrical light.	1	2	3	4
274.	Connect sewer pipes.	1	2	3	4
275.	Grow vegetables.	1	2	3	4
276.	Change oil in a car.	1	2	3	4
277.	Work in a hardware store.	1	2	3	4
278.	Assist a doctor during an operation.	1	2	3	4
279.	Check hotel rooms for cleanliness.	1	2	3	4
280.	Splice electrical wires.	1	2	3	4
281.	Help in a summer camp.	1	2	3	4
282.	Sell farm machinery.	1	2	3	4

EMPLOYMENT OPPORTUNITIES IN APPLIED BIOLOGICAL AND AGRICULTURAL OCCUPATIONS IN THE METROPOLITAN AREA OF CHICAGO

INTRODUCTION

In order to determine the feasibility of developing programs in any vocational area, the employment opportunities should be ascertained. If training is to be offered the graduates from the program will expect to be able to obtain employment in the area for which training was received. Thus, this phase of the project was designed to ascertain the employment opportunities in applied biological and agricultural occupations in the metropolitan area of Chicago. This information when coupled with student interest will assist the program developers in designing career programs in applied biological and agricultural occupations that will meet both the needs of the students and the employment needs of the various agriculturally related industries.

DESIGN AND PROCEDURES

This phase of the study was designed to determine present and future manpower needs in the various areas of applied biological and agricultural occupations in the metropolitan area of Chicago. Collection of data was by a mailed questionnaire.

Identification of the Population

The population for the study was delimited to include the agricultural business in the city of Chicago and 46 of the contiguous suburbs. These suburbs were:

Alsip
Bedford Park
Bellwood
Berkeley
Berwyn
Blue Island
Bridgeview
Broadview
Brookfield
Chicago Ridge
Cicero
Elmwood Park
Evanston
Evergreen Park

Forest Park	Northlake
Forest View	North Riverside
Franklin Park	Oaklawn
Harwood Heights	Oak Park
Hillside	Park Ridge
Hodgkins	Riverdale
Justice	River Forest
LaGrange	River Grove
LaGrange Park	Riverside
Lincolnwood	Rosemont
Lyons	Schiller Park
Maywood	Skokie
Melrose Park	Stickney
Morton Grove	Summit
Niles	Westchester
Norridge	Wilmette

All of the project area was located in Cook County.

Agricultural businesses were defined as those businesses which require knowledge and skills related to agriculture. Businesses fitting this definition were grouped into nine areas. These were:

1. Animal care
2. Animal health care (veterinary)
3. Arboriculture
4. Floriculture
5. Golf course related
6. Landscaping
7. Nurseries and lawn care centers
8. Small engine sales and service
9. Recreation

In order to maximize the number of employers identified, contacts were made with trade and business associations, state agencies, and persons within the industries. Directories from the chamber of commerce as well as the telephone company were also utilized.

The sample. A stratified random sample was obtained such that each area of applied biological and agricultural occupations was represented by 20 percent of those identified except in those cases where 20 percent was not equal to or greater than twenty. Thus, cases where fewer than 100 employers were identified a higher percentage of the identified population was selected.

Collection of Data

The instruments used in the employer survey (Appendix V-A) was developed by the researchers for use in this study. The instruments were designed to furnish information about the number of persons employed, vacancies, additions and turnovers in the next five years, years of education desired, new employees hired during the year prior to the study and general information concerning the employers' evaluation of high school training related to their business. Similar forms were employed for the nine areas of applied biological and agricultural occupations with only the job titles being changed. Job titles were identified by utilizing the expertise of the research staff members and validated by telephone interviews with a sample of Chicago employees not included in the random sample.

The instrument and cover letter (Appendix V-B) with a stamped self-addressed envelope were mailed to each employer in the sample. Follow-up letters (Appendix V-C) were mailed to the nonrespondents at the end of two weeks and again at the end of four weeks following the original mailing.

Analysis of Data

The data regarding employment opportunities were analyzed by summing the number of employment opportunities in each job title and projecting these data to the total population. In projecting the data from the sample to estimate the total job opportunities in the population the following formula was employed to obtain an adjusted population:

$$\text{Adjusted Population} = \left[1 - \left(\frac{\text{Number of no forwarding addresses}}{\text{Sample Size}}\right) - \left(\frac{\text{Number of Respondents Out of Business}}{\text{Number of Respondents}}\right)\right] \text{(Total Population)}$$

The number of current jobs and job opportunities was calculated by taking a constant derived by dividing the adjusted population by the number of usable

returns received times the sum of the data for each of the job titles. This can be represented by the formula:

$$\text{Projected Opportunity} = \left(\frac{\text{Adjusted Population}}{\text{Number of Usable Returns}}\right) \text{(Number of Jobs reported by Respondents)}$$

Frequency counts and percentages were employed to summarize the data for the general information, e.g. the employees evaluation of high school training related to their area of business.

RESULTS

Results of this phase of the study are presented in two divisions: 1) employment opportunities in applied biological and agricultural occupations and 2) the employers' attitudes toward occupational preparation of high school students in their area of specialization. Employment opportunities are presented for the areas of 1) animal care, 2) animal health care (veterinarian), 3) arborist, 4) floriculture, 5) golf course related 6) landscaping, 7) nursery, 8) recreational areas, and 9) small engine repair.

Employment Opportunities

The employment data concerning the number of persons, employment, vacancies, turnover, and education desired for each of the nine occupational areas are presented in turn.

Animal Care. Data concerning the employment opportunities in the area of animal care are presented in Table V-1. Vacancies were reported in the jobs of groomer, pet salesman, and miscellaneous. When a projection was made to estimate the number of jobs that would be available in the total population the number of full time vacancies that were available was 12, 12, and zero respectively, while 210, 124, and 12 part-time job vacancies were estimated to exist in the same job titles. When the number of vacancies the employers estimated were considered it was observed that many of the employers were unable or unwilling to estimate the number of vacancies that they would have during the next five years. Many of the questionnaires were returned with question marks in the response column indicating turnover while other employers wrote statements regarding their inability to estimate how many employers would be needed due to turnover. Thus, the employment opportunity estimates made are probably less than what will exist during the five years following the survey.

Table V-1. Employment Opportunities in Animal Care

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Manager	22	2	272	25					18	10	223	124	12	
2. Receptionist	4	4	49	49					1		12		12	
3. Bookkeeper	8	2	99	25									16	
4. Kennel Keeper	25	21	309	260					12		149		12	11
5. Groomer	13	301	161	3725	1	17	12	210	32	24	396	297	12	11
6. Pet Salesman	7	300	87	3712	1	10	12	124	10	1	124	12	12	12
7. Clerks	2		25											
8. Technicians	3		37											
9. Secretaries	11		136											
10. Drivers	5	2	62	25										
11. Stockman	7	2	87	25					1		12			
12. Miscellaneous	5		62			1		12					12	
TOTAL	112	634	1386	7846	2	28	24	346	74	35	916	433		

Even with these limitations the total five year turnover in the area of animal care for the total population was estimated to be 916 full-time jobs and 433 part-time jobs. These jobs were in the areas of groomer, pet salesman, manager, kennel keeper, receptionist and stockman. The respective estimated number of full-time jobs turnovers in these areas were 396, 124, 223, 149, 12, and 12, while the respective number of part-time positions for the same job titles was 297, 12, 124, 0, 0, and 0.

Education for these positions was typically listed as 12 years. Here an average of the number of years of education desired for a particular job title was averaged for those who responded to this section of the questionnaire.

Animal Health Care. The survey of veterinarians to ascertain the number of job opportunities available in their establishments at the time of the study and those projected for the next five years yielded the data reported in Table V-2. At the time of the study vacancies existed in the job titles of receptionist, kennel keeper, veterinarian's assistant, maintenance man, and groomer. The full-time vacancies for these jobs numbered 2, 1, 2, 1, and 1 respectively. When projected to the total population the job vacancies numbered 14, 7, 14, 7, and 7. Part-time vacancies existed for the job titles of receptionist, kennel keeper, veterinarian's assistant, and maintenance man; the respective numbers being 3, 3, 1, and 1 in the sample and 20, 20, 7, and 7 when projected to the population.

Veterinarians appeared to be better able to estimate the rate of turnover than many businessmen in other areas of applied biological and agriculture occupations. Here the respective numbers of projected turnovers for the job titles of receptionist, keenel keeper, laboratory technician, veterinarian's assistant, maintenance man, bookkeeper, and groomer were 149, 128, 7, 68, 61,

Table V-2. Employment Opportunities in Animal Health Care

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Receptionist	13	34	88	230	2	3	14	20	22	63	149	426	12	11
2. Kennel Keeper	13	42	88	284	1	3	7	20	19	83	128	561	12	12
3. Laboratory Technician	2	42	14	284					1	6	7	41	14	
4. Veterinarian's Assistant	9	11	61	74	2	1	14	7	10	14	68	95	12	12
5. Maintenance Man	8		54		1	1	7	7	9	77	61	521	10.5	10
6. Bookkeeper	2	1	14	7					1		7			
7. Groomer					1		7			20		135		
	47	130	319	879	7	8	49	54	62	263	420	1779		

7, and 0 full-time positions and 426, 561, 41, 95, 521, 0 and 135 part-time jobs.

Arborist Culture. Shown in Table V-3 are those data gleaned by the survey of arborists. The response of this group was low and incomplete; thus the data were not considered to be valid for turnover. The vacancies for the job titles of trimmer, topper, baller and ropeman were considered to be valid. Full-time vacancies reported by respondents for these titles numbered 5, 5, 2, and 0 while part-time vacancies numbered 0, 1, 0, and 1 respectively. Projected to represent the total population the vacancies for the same job titles were respectively 38, 38, 15, and 0 full-time and 8, 0, 0, and 8 part-time jobs. Thus a projected total of 91 full-time and 16 part-time vacancies existed at the time of the survey.

Projected turnover will not be discussed here due to the problems encountered in data collections in this area.

Floriculture. The sample for the area of floriculture included persons in retail floriculture. This industry by nature and by tradition has been primarily operated by families who hire only a minimal number of employees. Thus, for the persons desiring to work extensively in this business usually find it necessary to buy into the operation. Possibilities for entrepreneurship were not investigated in this study. The data in Table V-4 show that some vacancies, both full and part-time, did exist. Vacancies included three designers, one deliveryman, one gardener, and three laborers. Projected to the total population the respective job vacancies that could be expected for these job titles were 36, 12, 12, and 36 respectively.

Full-time vacancies due to job turnovers and additions for the next five years were expected to exist for the job titles of manager, designer,

Table V-3. Employment Opportunities in Arboriculture

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Manager	8	1	61	8						2		15	14	
2. Supervisor	12		91						2		15		14	
3. Groundsman	7	9	53	68					12	10	91	76	12	
4. Ropeman	10		76			1		8					11	
5. Climber	9		68		5	1	38	8	5		38		11	
6. Trimmer	9	1	68	8	5		38						11	
7. Topper	1		8										12	
8. Baller		3		23	2		15							
9. Operator	16	33	121	250										
10. Laborer	3	2	23	15										
11. Landscaper	10	18	76	136										
12. Mechanic	1		8											
TOTAL	86	67	653	508	12	2	91	16	19	12	144	91		

Table V-4. Employment Opportunities in Floriculture

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Manager	29	1	346	12					4	4	48	48		
2. Designer	41	14	489	167	3		36		9	4	107	48		
3. Salesman	35	12	417	143					4	12	48	143		
4. Deliveryman	25	32	298	382	1		12		7	5	83	60		
5. Bookkeeper	10		119											
6. Special Event Coordinator														
7. Greenhouse Maintenance	4		48											
8. Key Punch Operator	3		36			12		143	2		24			
9. Gardeners	91		1085		1		12		12		143			
10. Laborers	30		358		3		36		10		119			
11. Special Event Helper	2	13	24	155										
12. General Worker	2	2	24	24										
TOTAL	272	74	3244	883	8	12	96	143	48	25	572	299		

salesman, deliveryman, key punch operator, gardener, and laborer. The respective numbers of vacancies for the employees in the sample being 4, 9, 4, 7, 2, 12, and 10. Projected to the total population this represents 48 managers, 107 designers, 48 salesmen, 83 deliverymen, 24 key punch operators, 143 gardeners, and 119 laborers. Numbers of part-time vacancies estimated to exist in the five years following the survey for the positions of manager, designer, salesman, deliveryman, were 4, 4, 12, and 5 respectively. Projected to estimate the turnover in the total population, the respective number of job vacancies the next five years after the study for these job titles would be estimated to be 48, 48, 143, and 60.

Golf Course Related Occupations. With the estimates of only nine golf course superintendents in the population area, it is apparent that the population area included only a fraction of the golf courses in the greater Chicago area. Even with these limitations, vacancies did exist for both full-time and part-time jobs. A full-time assistant superintendent, greenskeeper and two technicians were needed by those golf course establishments in the sample. Projections to the total population indicated an estimated 2, 2, and 4 positions available for these occupations. These data appear in Table V-5.

Part-time job vacancies were reported for the job titles of greenstender, mechanic, laborer, and technicians, the respective numbers of vacancies being 2, 3, 5, and 4. Projected to the total population the estimated jobs in the same titles was 4, 6, 9, and 7.

Turnovers in full-time positions due to resignations, retirements, and additions were expected by the respondents in the job of superintendent, assistant superintendents, greenskeeper, mechanic, laborer, equipment operator, and technician, the respective number of positions being 6, 4, 2, 1, 6, and 2.

Table V-5. Employment Opportunities in Golf Course Related Occupations

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Superintendent	5		9		1		2		6		11			
2. Ass't. Superintendent	1		2		1		2		4		7			
3. Greenskeeper	3		6		1		2		2		4			
4. Greenstender	2	10	4	19		2		4		32		59		
5. Mechanic	2		4			3		6	1	24	2	45		
6. Laborer	6	9	11	17		5		9	6	20	11	37		
7. Equipment Operator	4	3	7	6					2	6	4	11		
8. Technician	3	10	6	19	2	4	4	7	6	28	11	52		
TOTAL	26	32	49	61	4	14	8	26	27	110	50	204		

Projected to estimate the total number of turnovers in the total population for the same occupations the number of turnovers would be 11, 7, 4, 2, 11, 4, and 11 respectively. Estimated turnovers for the part-time positions of greenstender, mechanic laborer, equipment operator, and technician numbered 32, 24, 02, 6, and 28 respectively for the sample and 59, 45, 37, 11, and 52 for the total population.

Landscaping. The area of landscaping is similar to golf course related occupations in that the researchers anticipate that the greater opportunity for landscaping would be in the developing suburban area rather than the part of the city which is already well developed. The study area was the latter. Due to a low percentage of returned questionnaires the projection factor for this area is quite large and allows for the possibility of greater error in projecting from the sample to the population.

As shown in Table V-6, vacancies in full-time jobs reported by the respondents were in the area of planter and sodder, general worker, and ground man. Projected to the total population it was estimated that 20 planters and sodders, 40 general workers, and 40 ground men were needed at the time of the study. In addition, part-time employees were needed for the job of landscape architect, planter and sodder, and ground man. Here the respective positions that were estimated to exist in the population was 20, 80, 20, 40, and 40 respectively.

Respondents from the landscaping industry estimated that vacancies would exist during the five years following the survey in all of the job titles listed on the survey. Projected to the total population vacancies for the full-time positions of landscape architect, landscape consultant, planter and sodder, specialist, landscape draftsman, bookkeeper, receptionist, general

Table V-6. Employment Opportunities in Landscaping

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Landscape Architect	4	1	80	20		1		20	8	3	159	60	15	12
2. Landscape Consultant	2	1	40	20					2		40		16	12
3. Planter and Sodder	10	7	199	139	1	4	20	80	10	12	199	239		12
4. Specialist	1	1	20	20					1		20			12
5. Landscape Draftsman						1		20	12		239			12
6. Bookkeeper	6	2	119	40					2	1	40	20	14	12
7. Receptionist	3	1	60	20					2	10	40	199		12
8. General Worker	1	3	20	60	2	2	40	40	10	4	199	80		
9. Tree Climber	3	1	60	20					2		40		12	12
10. Ground Man	2		40		2	2	40	40	8	5	159	99	12	12
11. Tree Expert	2		40						2		40		16	
TOTAL	34	17	678	339	5	10	100	200	59	35	1175	697		

worker, tree climber, ground men, and tree expert numbered 159, 40, 199, 20, 239, 40, 40, 199, 40, 195, and 40 respectively. Part-time positions for the same job titles were estimated to be 60, 0, 239, 0, 0, 20, 199, 80, 0, 99, and 0. Thus, a total of 1175 full-time positions and 697 part-time positions were estimated to be available during the five years following the study.

Nursery and Lawn Care. It was estimated, as shown in Table V-7, that 1566 full-time and 1046 part-time employees were employed by nursery and lawn care centers in the population area. In addition to those employed, a projected 65 full-time and 109 part-time salesmen were needed. Positions also existed for deliveryman with the estimated number being 33 full-time and 44 part-time. Part-time positions also existed for the titles of manager, nursery worker, foreman and mechanic. The projected number of vacancies in these titles was 44, 22, 11, and 11 respectively. A projected 22 consultants, 11 managers, 109 deliverymen, 1633 nursery workers and 54 mechanics were estimated to be needed in full-time positions to fill vacancies due to turnover during the five years following the study; while an estimated 152 deliverymen, 152 nursery workers, and 109 mechanics were estimated to be needed in part-time positions for the same time period.

Recreation. Although a complete study of the occupations in the recreational areas was conducted and data reported in Table V-8 the discussion will be concerned with the job titles of park superintendents, animal keeper, park maintenance, park naturalist. From the list of full-time vacancies, one each was reported for the job titles of animal keeper and park maintenance. Projected to the population it was estimated that nine jobs existed in each of these positions. Part-time vacancies were reported for the position of park superintendent and park maintenance, numbering 6 and 20 respectively. Projected

Table V-7. Employment Opportunities in Nursery and Lawn Care

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Consultant	2		22						2		22		14	
2. Manager	20	5	217	54		4		44	1		11		13.5	13
3. Salesman	30	27	326	294	6	10	65	109					12	12
4. Bookkeeper	9	2	98	22									13	
5. Delivery Man	17	11	185	120	3	4	33	44	10	14	109	152	12	12
6. Nursery Worker	31	36	337	391		2		22	15	14	163	152	10	10
7. Foreman	24	1	261	11		1		11					12	12
8. Mechanic	5	2	54	22		1		11	5	10	54	109	10	10
9. Stockman	1	4	11	44										
10. Cashier	2	4	22	44										
11. Maintenance Man	2	4	22	44									11	11
12. Accountant	1		11										18	18
TOTAL	144	96	1566	1046	9	22	98	241	33	38	359	413		

Table V-8. Employment Opportunities in Recreation

	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Park Superintendent	16		147			6		55	11	8	101	74	16	16
2. Animal Keeper	124	12	1143	111	1		9						12	12
3. Architect	2		18						1		9		16	
4. Park Maintenance	1200	41	11,060	378	1	20	9	184	96	32	885	295	12	
5. Recreation Supt.	98	300	903	2765	8	19	74	175	24	118	221	1088	16	
6. Park Naturalist	9	7	83	65									12	
7. Crafts Instructor	53	32	489	295	2	4	18	37	3	11	28	101	12	
8. Physical Ed. Inst.	3	12	28	111		2		18	5	16	46	147	16	15
9. Recreational Leader	3	356	28	3281		2		18	3	815	28	7512	16	14
10. Music Instructor		12		111						3		28	14	13.3
11. Drama Instructor	3		28			1		9		12		111	12	11.5
12. Specialist		10		92		10		92		10		92	16	
TOTAL	1511	782	13,927	7209	12	64	110	588	143	1025	1318	9448		

to estimate the total population, vacancies in these two job titles were estimated to be 55 and 184 respectively.

Turnover estimates for the next five years for the job titles under consideration were 11 full-time and 8 part-time park superintendents and 96 full-time and 32 part-time park maintenance men. Projected to the total population this would be a turnover of 101 full-time and 74 part-time park superintendents while 885 full-time and 295 part-time park maintenance men would be needed.

Small Engine Repair. Small gas engine repair is an area frequently claimed by both industrial oriented occupations instructors and instructors of agricultural occupations. Thus, information obtained by the survey of this area will likely be of interest to instructors in both of these instructional areas.

As shown in Table V-9 vacancies existed only for the jobs of mechanic and salesman. Full-time vacancies reported by the respondents number two in each job title, thus, the projected vacancies was 16 for each title. Part-time vacancies numbered 3 mechanics and 1 salesman for the sample and 24 and 8 respectively when projected to the total population.

Projected turnover for the total population was estimated at 16 full-time and 40 part-time mechanics, 8 full-time and 8 part-time partsmen.

It should be noted that opportunities for entrepreneurship cannot be estimated here.

Employees Hired During Past Year. Because it was felt that employers knew better what they had done than what they would be doing they were asked to indicate the total number of employees they had hired during the past year. These data, reported in Table V-10, indicate that in addition to the

Table V-9. Employment Opportunities in Small Engine Repair

Job Title	Present Employment		Projected Employment		Present Vacancies		Projected Vacancies		Turnover Next 5 Years		Projected Turnover		Education Desired	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
1. Mechanics	12	8	97	64	2	3	16	24	2	5	16	40	12	11
2. Parts Manager	2		16										12	11
3. Set-up Man	2	5	16	40									12	11
4. Salesman	12	13	97	105	2	1	16	8	1	1	8	8	12	11
5. Deliveryman	8	6	64	48										
6. Parts Man	4		32							48		386		
7. Manager	1		8											
TOTAL	41	32	330	257	4	4	32	32	3	54	24	434		

Table V-10. Number of Employees Hired During the Year Prior to the Study by the Employers in the Various Areas of Applied Biological and Agricultural Occupations

Area	Number Reported by Respondents		Number When Projected To Total Population	
	Full-Time	Part-Time	Full-Time	Part-Time
Aboriculture	48	23	363	174
Animal Care	32	16	396	198
Animal Health Care	23	55	155	372
Floriculture	25	38	298	453
Golf Course Related	3	52	6	97
Landscaping	7	14	139	278
Nursery and Lawn Care	39	49	424	533
Recreation	30	34	277	313
Small Engine Repair	16	22	129	177
TOTAL	223	303	2187	2594

Table V-11. Influence of Applicants' Specific High School Training Related to Prospective Employment on Employers' Selection of Employees

Area	Percentage Indicating Training Would Influence Selection	Percentage Indicating Training Would Not Influence Selection
Animal Care	75.00	25.00
Animal Health Care	93.33	6.67
Aborist	80.00	20.00
Floriculture	100.00	0.00
Golf Course Related	100.00	0.00
Landscaping	100.00	0.00
Nursery and Lawn Care	83.33	16.67
Recreation	89.48	10.52
Small Engine Repair	100.00	0.00

vacancies existing at the time of the survey 2187 full-time and 2595 part-time employees were estimated to have been hired by the total population of employers during the year prior to the study. In declining order of estimates full-time employees hired by the total population the areas ranked 1) nursery and lawn care, 2) animal care, 3) aboriculture, 4) floriculture, 5) recreation, 6) animal health care, 7) landscaping, 8) small engine repair, and 9) golf course related.

Value of Training

The employers of the various areas were asked to indicate whether or not specific high school training related to their business would influence their selection of potential employees. As shown in Table V-11 a preponderence of the employers indicated that such training would in fact be an influence in their selection of employees. All of the employers in floriculture, golf course related, landscaping, and small gasoline engine repair indicated that specific high school training related to the prospective employment would influence their selection of a potential employee. Employees in the animal care (kennels, etc.) area were the least likely to respond that such training would influence their selection. Here one-fourth (25.0%) indicated that specific high school training would not effect their hiring choice.

Specific High School Training. Employers were asked to indicate whether or not they would hire a new high school graduate who had had specific training related to the prospective employment if they had a job vacancy. As shown in Table V-12 all of the respondents in the areas of animal health care, aboriculture, golf course related, landscaping and small engine repair indicated the affirmative. The employment area with the highest percentage of respondents who indicated they would not hire a recent high school graduate was the area

Table V-12. Percentage of Employers Who Would and Would Not Hire a New High School Graduate With Specific Training Related to the Prospective Employment

Area	Would	Would Not
Animal Care	92.86	7.14
Animal Health Care	100.00	0.0
Aboriculture	100.00	0.0
Floriculture	90.63	9.37
Golf Course Related	100.00	0.0
Landscaping	100.00	0.0
Nursery and Lawn Care	85.71	14.29
Recreation	89.47	10.53
Small Engine Repair	100.00	0.0

of nursery and lawn care. Here, however, only one in seven employers indicated the negative.

These data tend to support the premise that occupational education in specific areas of applied biological and agriculture would be of value to young men and women seeking jobs in these areas. However, some employers may not hire anyone below a specific age, therefore excluding recent high school graduates, whether with or without training.

SUMMARY, DISCUSSION, AND CONCLUSIONS

Presented in this section are a summary of procedures, discussion of results, and conclusions relating to the employment opportunities in applied biological and agricultural occupations in a portion of the greater Chicago area.

Summary

The primary purpose of this phase of the research was to ascertain the employment opportunities in the area of applied biological and agricultural occupations in the metropolitan area of Chicago. The purported objective of the study was to assist program developers in designing career programs in applied biological and agricultural occupations to meet both the needs of the students and the various phases of the applied biological and agricultural occupations industries.

The population area included the city of Chicago and 46 of the contiguous suburbs. The areas of applied biological and agricultural occupations identified to be surveyed included animal care, animal health care, aboriculture, floriculture, golf course related, landscaping, nursery and lawn care, small engine sales and service, and recreation. The populations were identified by utilizing various association directories, as well as the telephone directory.

A random sample was obtained such that each occupational area was represented by 20 percent of those identified, unless the 20 percent was not equal to 20. Thus, a sample of at least 20 employers was obtained for all areas. A questionnaire designed specifically for use in the study along with a cover letter was mailed to each of the employers included in the sample.

The data were analyzed by summing the number of job opportunities in each job title and projecting the data from the sample to estimate the total job opportunities in the population. Data concerning attitudes of the employers were analyzed by obtaining frequency counts and computing percentages.

Discussion

Data from a mailed questionnaire can rarely be considered as reliable as data collected from an interview. When employment opportunities surveys are conducted by mail the estimates of five year turn-over are frequently left blank while on the other hand when surveys are conducted by personal interviews the employer may be forced into making a projection when he has no knowledge of the rate of turn over in his business. Thus, the results especially for five year projections of this survey should be interpreted as being below the actual need rather than being inflated. Many employers placed question marks in the columns asking for five year projections of the number of employees needed. The number of vacancies at the time of the survey as well as the number of employees hired during the past year can be considered as being fairly reliable.

Information regarding opportunities for occupations related to the care of animals were obtained from veterinarians, pet care kennels, and pet sales businesses. As shown in Table V-13, when the job opportunities were combined

for animal care and animal health care 73 full-time jobs and 400 part-time jobs were estimated vacant at the time of the survey. At a time when unemployment was high this appeared to be a large number of jobs. Vacancies estimated to exist during the five years following the survey numbered 1336 full-time and 2512 part-time. These findings were substantiated by the fact that an estimated 551 full-time and 570 part-time employees had been hired during the year prior to the study. Thus, the estimated number of full-time employees needed during the five years following the survey may be low while the number of part-time employees appears to be approximately accurate if a straight line of demand can be assumed.

It has also been called to the researcher's attention that the research hospitals in the Chicago area employ a large number of persons to care for laboratory animals and have difficulty hiring and retaining persons in these positions. Data were not collected from this source of job opportunities.

Data regarding job opportunities related to the care and sales of plants were obtained by a surveying, aborists, floriculturists, golf course superintendents, landscapers, and nurserymen. A summary of these data are presented in Table V-14. Projections were based on a formula based on sample size and total population; thus, the employment opportunities were an estimate based on number of vacancies and estimated turnover reported by the respondents in the sample.

Here the estimated number of vacancies that existed at the time of the survey was 393 full-time and 418 part-time. The projected turnover for the five years following the survey was 2300 full-time and 1704 part-time employees. Assuming a straight line of employment needs, this figure is low when it is compared to the number of new hires during the year prior to time of the study.

Table V-13. Summary of Projected Employment Opportunities and Projected Number of New Hires During the Year Preceding the Study in Occupations Related to Animals

Area	Projected Employment		Projected Vacancies		Projected Turn-over		Projected Number New Hires in Past Year	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Animal Health Care (Veterinarians)	319	879	49	54	420	1779	396	198
Animal Care	1386	7846	24	346	916	773	155	372
TOTAL	1705	8725	73	400	1336	2512	551	570

Table V-14. Summary of Projected Employment Opportunities and Projected Number of New Hires During the Year Preceding the Study in Occupations Related to Plants

Area	Projected Employment		Projected Vacancies		Projected Turn-over		Projected Number New Hires in Past Year	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
Aboriculture	653	508	91	16	144	91	363	174
Floriculture	3244	882	96	143	572	299	298	453
Golf Course Related	49	61	8	26	50	204	6	97
Landscaping	678	339	100	200	1175	697	139	278
Nursery Related Occupations	1566	1046	98	33	359	413	424	533
TOTAL	6190	1836	393	418	2300	1704	1230	1535

Based on the 1230 full-time and 1535 part-time employees hired, 6150 full-time and 7675 part-time employees will be needed to fill vacancies for the population of employees identified as operating businesses related to the growing, caring and selling of plants. This discrepancy can be accounted for by the number of employers that indicated that they were unable to guess how many new employees they would need for the five year period following the survey.

It should be noted here that the population area did not include new suburbs where the greatest amount of landscaping would occur nor did it include the area in which most of the golf courses are located. Thus, if students from the city are willing to relocate in these areas it is probable that a greater number of jobs could be found.

The area of recreation surveyed included a variety of jobs unrelated to applied biology and agriculture. However, for park maintenance alone 9 full-time and 184 part-time jobs were estimated to exist in the total population. Turnovers for the five years following the survey for the same job titles were estimated at 885 full-time and 295 part-time. Although a description of these employment opportunities was not obtained, it was assumed that much of the park maintenance would be related to the care of trees, shrubs, and grass. Thus, many of these jobs could well be filled by individuals trained in similar programs as would be required for jobs listed under plant related occupations.

An area for which training is sometimes offered in agricultural mechanics is that of small gasoline engine repair. Thus, a survey of the job opportunities in small gasoline engine repair was included in the total survey of job opportunities in applied biological and agricultural occupations. The results of this survey indicated that only a few persons were needed both at the time

of the survey and the projected turnover for the five years following the survey. The greatest projected need was for part-time parts men and full- and part-time mechanics. It would appear that the need identified here could be met by the industrial oriented auto mechanics students and the distributive education students.

The question of the value of specific high school training to becoming employed in an occupation in the areas surveyed received a resounding "yes" that such preparation would influence the employee's selection of new employees. While not unanimous, most employers indicated that some preference would be given to the students with such training. In addition, only a slightly higher percentage of the respondents indicated that they would hire recent high school graduates. Thus, it was assumed that some employers would not hire a recent high school graduate with or without specific training related to the prospective employment. It was also assumed that the percentage of employers who would hire recent high school graduates with specific training would have been greater if the employers who would not hire recent high school graduates would have been excluded.

Conclusions

Conclusions drawn from the survey of job opportunities in the various areas of applied biological and agricultural occupations relate to the feasibility of developing programs for the preparation of young men and women for these occupations. These conclusions are:

1. Ample job opportunities exist in the city of Chicago and the 46 surrounding suburbs to merit the implementation of vocational programs in applied biological and agricultural occupations.

2. Employers in business in the are of applied biological and agricultural occupations prefer individuals who have had specific high school training related to the job.

3. Two major areas of applied biological and agricultural occupations were identified with commonalities such that students could be grouped for instruction: occupations relating to plants and those relating to animals. Specific courses could be offered in addition to the courses in common. Thus, only two new curricula would be necessary. In addition specific training could be offered through on-the-job instruction in the many part-time jobs identified.

4. The researchers undoubtedly failed to identify all businesses in which specific training in applied biological and agricultural occupations would be an asset both in getting the job and performing the task required after obtaining the job. School districts will need to make an indepth study of their communities to determine the employment opportunities as well as the opportunities for employment for on-the-job training through cooperative vocational education. These surveys can best be conducted through face-to-face interviews with the employers.

5. The number of individuals hired during the year prior to the study was a better indicator of future employment opportunities than was the estimate of turnover during the five years following the survey.

6. Future surveys to ascertain the employment opportunities should be accomplished through face-to-face interviews.

APPENDIX V-A

EXAMPLE SURVEY FORM

University of Illinois

Survey of Employment Opportunities
FLORICULTURE

Firm Name_____ Telephone_____ Ext._____

Address_____ City_____ State_____ Zip_____

****

INSTRUCTIONS: 1. Below is a listing of various job titles which may be appropriate to your business. Please add other titles that may apply and disregard those listed areas that do not apply.

2. After reviewing the example please place the correct number in each square as it applies to your business.

****

*Key Punch Refer Col	Job Titles	Present No. Employed		Present Vacancies		Additions-Turnovers Next 5 Yrs		Years of Educ Desired	
		Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time
	EXAMPLE: Deliveryman	1	3	0	1	2	15	12	11
10-25	Manager								
26-41	Designer								
42-57	Salesman								
58-73	Deliveryman								
10-25	Bookkeeper								
26-41	Special Events Cons.								
42-57	Greenhouse Maintenance								
58-73									
10-25									
26-41									
42-57									
58-73									

		Full Time	Part Time
10-13	How many new employees have you hired during the past year?		
14-17	On the average how long (in months) does it take you to fill a vacancy?		

18 Would specific high school training relative to your business influence your selection of potential employees? . . . . . Yes___ No___

19 If you had a vacancy would you hire a new high school graduate who has had specific training related to your business? . . . . . Yes___ No___

PERSON PROVIDING THIS INFORMATION:

Name_____ Position_____ Date_____

COMMENTS:

*Disregard the Key Punch Reference Column when filling out this questionnaire, it is for computer use only.

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APPENDIX V-B

COVER LETTERS

April 6, 1971

Dear Sir:

The University of Illinois needs your help. We are engaged in a research project to determine occupational interests of students in the Chicago vicinity and to determine if their interests are realistic in relation to the job market.

As a result of this study we hope the schools in the Chicago area will develop occupational programs that will better serve the needs of the students and your industry. Information that we receive will be used only for statistical purposes. Your occupational needs will not be advertised as we are not a placement bureau.

To make this research worthwhile we need information that only you can provide. Would you please take a few minutes and complete the enclosed questionnaire and return it in the envelope provided? It would be helpful to our research if the information could be returned by Thursday, April 15, 1971.

Sincerely,

Hollie B. Thomas, Director
Metropolitan Agriculture Programs
359 Education Building

Ali Ammadi, Staff
Franklin Jackson, Staff
William Lundell, Staff
Art Neavill, Staff

HBT:nf
Enclosures

April 21, 1971

Dear Sirs:

We have not received your completed employment opportunities questionnaire sent to you on April 6. Perhaps it has been lost in the mail or misplaced. We apologize for our poor timing in sending the questionnaire during the income tax and Easter season.

As was mentioned in a previous correspondence, the Vocational and Technical Education Department is engaged in a study to determine if there is a need for trained individuals in your industry. The study will be of little value in proposing new occupational programs if we are unable to determine the occupational employment needs. Only you can provide this information that is vital to our program and hopefully beneficial to you in the future.

If you have not already mailed the questionnaire, please take a few minutes and complete the enclosed questionnaire and return it in the envelope provided.

Thank you very much for your cooperation and time.

Sincerely,

Hollie B. Thomas, Director
Metropolitan Agriculture Programs
359 Education Building

Ali Ammadi, Staff
Franklin Jackson, Staff
William Lundell, Staff
Art Neavill, Staff

HBT:nf
Enclosures

May 12, 1971

Dear Sirs:

Your assistance is needed!! We have not received your response about employment opportunities in your business.

We, in the Vocational and Technical Education Department, Agricultural Education Division, are attempting to correlate industrial needs with needs for new types of vocational programs in the Chicago metropolitan schools. All of the information which you provide will be held in confidence and used only for statistical purposes. Your efforts to complete the enclosed form will be greatly appreciated and hopefully beneficial to yourself and others in the industry.

Thank you very much for your time and cooperation.

Sincerely,

Hollie B. Thomas, Director
359 Education Building

Ali Ammadi, Staff
Franklin Jackson, Staff
William Lundell, Staff
Art Neavill, Staff

HBT:nf
Enclosure