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A Survey to Determine the Number and Types of Office Machines Used in the Ellensburg, Washington Area and Implications for the Teaching of Office Machines

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A SURVEY TO DETERMINE THE NUMBER AND TYPES OF OFFICE MACHINES USED IN THE ELLENSBURG, WASHINGTON AREA AND IMPLICATIONS FOR THE TEACHING OF OFFICE MACHINES

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CHAPTER I

INTRODUCTION

Types and models of office machines are constantly changing. Instruction on the operation of office machines in the local schools should be similar to the machines used in local businesses. It is also important to know the degree of training desired for initial employment and whether the training need will continue. Students need to be trained on machines that are in use in the local employment area.

Efficient business teachers do more than teach. They need to maintain a close contact with business organizations in order to be as well informed as possible in meeting the needs of the community and its youth. They must assist their students in learning to perform adequately when employed in business offices.

I. THE PROBLEM

Statement of the problem. This survey of randomly-selected business firms was an effort to determine the kinds of office machines being used in Ellensburg, Washington. The study was also directed towards identifying the training necessary for initial employment and the extent to which office machine training should be offered by the Ellensburg Senior High School.

Need for the study. It is impossible to prescribe a specific curricula arrangement for the office machines class which would be valid for all communities. Communities differ in size, in types of business and industry, in office employment opportunities, in the background and abilities of students, and in the degree to which the community can or will support the educational program.

Berry (2:29) stated:

> The fundamental purpose of the survey study in business education is to classify, generalize, and interpret groups of data so that proper guidance may be provided for business educators in the development of sound policies and appropriate practices in the immediate future.

A community survey creates good public relations between the school and the community and provides the teacher with valuable information useful in the classroom. A survey of this kind should help in the planning of an improved business education program for the students of Ellensburg High School. Business machines have been an important part of the business education program for many years. It is necessary that the most current and accurate data be made available so that optimum instruction will result.

Hypotheses to be tested. The business education program at Ellensburg High School, Ellensburg, Washington, is teaching the needed office machines necessary for local employment opportunities and is adequately preparing the

business students for initial office employment in the Ellensburg business community.

The significant aspects of this survey will be to determine the following: (1) type and number of machines used in business in Ellensburg, Washington, (2) training demanded by employers for employees using the machines, (3) extent of on-the-job training given by employers, (4) training of students at Ellensburg High School in the use of office machines, and (5) implications for future vocational education in the Ellensburg High School.

The types of machines and their relative use in business are undergoing constant change. The knowledge of what machines are being used in business, the degree of training demanded, and whether this demand will continue to exist is of vital importance in curriculum planning.

While many schools have very little equipment and others have a number of machines on which to train their students, it was believed that in many cases the schools were not aware of the current trends in the use of office machines by businesses. It was believed that this study would identify some of the changes needed in both the replacement of old machines and/or the purchase of new machines as well as a change in emphasis in instruction.

While it was not generally recommended that costly installations of office machines be made to give the students

training at the secondary level, it was believed that there may be some vocational training in the existing high school curriculum which should have a greater emphasis to help prepare the graduates of the business education program to a greater degree. The findings of this study should assist the Ellensburg Senior High School in determining future offerings and recommended electives.

PROCEDURES

A questionnaire (Exhibit B) was devised to solicit information from businessmen in Ellensburg, Washington.

A listing of the businesses was obtained from the classified section of the Ellensburg Telephone Directory. This media was used because it was found that a very high percentage of businesses have telephones and were in the "Yellow Page" section of the Ellensburg Telephone Directory. Each business was assigned a number in numerical order. There were a total of 212 businesses included in the population of the study.

Eight businesses were asked to participate in a pilot study which was utilized to refine the questionnaire. The firms used in the pilot study represented a retail and repair business, a bank, a private utility, a communication company, a real estate firm, a law office, a doctors' clinic, and an education office. The firms were contacted personally and

asked to fill out the questionnaire and to make any comments or criticisms. The participants of the pilot study made no suggestions for improvements of the questionnaire. All eight of the pilot studies were returned and those questionnaires were used in compiling the data.

The table "Ten Thousand Randomly Assorted Digits" (3:512-15) was used in selecting the businesses to be used in the study.

Seventy-eight of the questionnaires with a covering letter (Exhibit A) and a stamped, self-addressed reply envelope were delivered personally to the businessmen on March 19, 1968; 22 were mailed. A follow-up letter (Exhibit C) and another questionnaire were mailed on April 10, 1968, to 18 businessmen who had not returned the first questionnaire. Of the 18 follow-up questionnaires, 12 were returned.

The questionnaire returns were tabulated and the results are reported in Chapter IV.

DELIMITATIONS

This survey was restricted to 108 business firms randomly selected from those listed in the May, 1967, Ellensburg Telephone Directory.

The firms listed in the Ellensburg Telephone Directory comprised the population of the study. This directory was

the most complete listing of firms comprising the Ellensburg business community.

DEFINITION OF TERMS

Unless otherwise stated, all terms will be used in their commonly accepted definitions.

Acquaintance. When used with reference to operating a machine, this denotes the ability to use the machine for simple operations only.

Automation. The use of equipment to replace hand operations in business.

Basic skill. This refers to a skill taught as a specific ability, such as typewriting, shorthand, or office machine operation.

Business Education. The curriculum taught in the schools for the specific purpose of teaching skills and providing the knowledge necessary for employment in business offices.

Data Processing. The manipulating or changing of facts or bits of information by hand or by machine.

Mastery. This is the ability to perform a skill rapidly and accurately.

CHAPTER II

REVIEW OF THE LITERATURE

The types of business machines are constantly changing. It is important that machines taught in the local schools be correlated with machines used in local businesses. It is also important to know the degree of training demanded for initial employment and whether this demand will continue.

The personnel needs of business and government and the procedures they use in getting the work completed change as growth and technological advances take place. These changes require employers to make adjustments in their standards of performance. The high school must know what degree of training is necessary to obtain an entry position.

To determine whether today's needs of both students and the local business area are being fulfilled Maliche (20:18) stated:

> The business community should be scientifically (not haphazardly) surveyed at least every five years. Remember that technological progress is so swift these days that information quickly deteriorates. Between surveys keep in touch with business by means of advisory committees, cooperative education programs, and visits to companies. Keeping in touch with business people helps the teacher to understand what the employer wants in his employee and how the processing of information is changing in his business.

Cook and Mead (11:11) believed that there are two principles of curriculum construction: "(1) The curriculum

should serve the needs of the boys and girls who take business courses, and (2) The curriculum should serve the needs of the employing community." They propose that the vocational business education offerings in any high school must be predicted on an understanding of the needs of the youth of that community. It is the responsibility of the business department to contact the employers in their entire employing community to determine the types of entry jobs available and the requirements for those jobs. Cook and Maliche (10:12) said:

> Our society is changing too rapidly to base our curriculum upon (1) The preaching of experts--who might be living in the past, (2) A study made in some other community, or (3) A study made within your own community more than five years ago.

While automation is not exactly new to business, the incidence of automation in today's business is making it more important and of more concern to those who prepare workers to enter the office occupations. Patchen (23:193) stated:

> Data processing has been around much longer than we have. Man has always been processing data of one sort or another; only the electronic part of data processing is new today. It really creates a need for more clerical workers.

Mackay (10:373) believed that office work will involve a greater proportion of mental effort; it is more likely to occur in concentrated amounts, i.e., characterized by periodic peak loads.

David (14:331-33) believed that the secondary school business educator must educate his students in three areas: concepts of data processing, knowledge of data processing procedures and systems, and in basic office skills. A beginning worker who understands the nature and purpose of office (data processing) activities and who possesses the necessary minimum skill level becomes a valuable employee.

David (14:333) further stated:

> Few schools have local demands for keypunch operators strong enough to justify the offering of a course. Overall demand for keypunch operators in the future will decrease as more and more of the conversion of source data will become automatic. Machine training should be left to the employer or the machine manufacturer. The business teacher should concern himself with concepts of data processing, knowledge of data processing systems and procedures, and the basic office skills.

Gibson (18:11-12) believed that electric typewriters will be the basis for capturing data. He emphasized the need for high accuracy and good proof-reading ability. He also suggested that an automatic typewriter be in the classroom. Gibson (18:12) stated:

> Any piece of data processing equipment in a classroom stimulates interest on the part of the teacher and student. Without it, it is difficult, if not impossible, to teach familiarity with such equipment, concepts, or a desire to know more about the field. Besides a typewriter with punched-paper tape or card equipment added, there are bookkeeping and accounting machines, ten-key and full-keyboard adding machines, addressing machines, and others on the market that can use or produce punched tape or cards.

Tonne (31:13) foresaw a continued need for clerical workers and believed there will be a need for more learning about clerical work in the schools. Several reasons for this are:

> First, we have found that the more automative procedures are used, the more data are made available and needed by the business community. This results in the need for more clerical workers to supply the basic data to feed into the automatic processing equipment and to utilize it after it has been processed. Second, the work connected with the utilization of data and the work resulting from increased data available creates even more need for competent clerical workers.

Tonne (31:14) made the following practical suggestions in dealing with the problem of the introduction of the automation of data processing in the school:

1. Continue to lay stress upon competency in typewriting and upon the use of the 10-key adding machine with particular stress upon accuracy. Evidence seems to indicate that most procedures for input make use of the skills developed on these machines in various combinations. Give experience in the input process in most schools, and in a few larger schools give some practice in sorting and resorting.

2. The cost of teaching electronic or integrated data processing is too expensive to be taught in the usual high school. Even punched-card data processing is quite expensive. The specific development of these skills usually must be achieved on the job or in-service programs immediately related to the job.

3. Give students a better sense of the relationships among various data so that they will be able to conceptualize the implications of one body of facts in terms of another. Some educators are inclined to think that this can be done better through a study of mathematics. Other educators think that mathematics, beyond competency in

> arithmetic, is unnecessary, but they have given no alternate means for achieving the needed awareness of relationships among data.

Boggs (4:62-63) believed that machines taught must be representative samples of those being used in the business community. He felt that the best method for determining the types of machines would be through the use of a community survey.

Shilt (28:208-9) stated:

> The major objective of the business education program is the preparation of people for competency in business. The more effectively the resources of the community are used in this program, the better prepared will graduates of business courses be for their life's work in the community. Many values can accrue to business education programs from the proper use of the resources of the community.

Cook (12:66-76) believed that we cannot follow a job analysis as the basis for developing a business program. He feels that it is not the school's responsibility of teaching everything that a business employee does on the job. There are some duties that are so simple that they require no special training, and others are so complex or require such expensive equipment that it is not possible for the school to assume this training.

Wanous (32:5-8) felt that the typical high school is not permitting the student to advance through their business studies on the basis of achievement, but rather on the basis of a rigid timetable. He stated:

> The business department should provide programs that meet the needs of all the students in the school. Longer, less extensive programs are not provided for low-achieving students. Moreover, short, more intensive programs are not provided for high achievers. Instead, one general program is provided for all students.

Forkner (17:1-9) believed that preparation for a job can no longer be measured by clock hours, semester credits, and other unrealistic standards. Each specific job skill must be analyzed in terms of the level of skill needed for initial employment. When the student has reached the specified level, he is transferred to another activity. This transfer may take place in a few weeks for some or a few months for others.

Forkner (17:1-9) further said that preparation for initial employment is only the beginning of education. Students must be prepared for change. They must be prepared for existing jobs and also psychologically prepared to continue their education to prepare for jobs that will emerge as a result of technological change.

Forkner (17:8) said:

> If we are to prepare young people for work in the space age, we must emphasize accuracy on all production work. Accuracy is a habit that can be taught. Accuracy can be developed when it is reinforced.

Martin (21:12) stated:

> A realization of the kinds of skills and knowledges currently demanded by business organizations is brought forcefully to the attention of the high school business teacher each spring as he observes graduates seeking their first jobs. The recognition of change has caused

forward looking business educators to engage in an intensive study of existing curriculums and teaching methods with a view to suggesting needed revisions.

Martin (21:14) continued:

> The rapidly changing nature of business practices and procedures is quite evident to most business teachers and administrators. In some secondary schools, however, curriculums designed to train persons for positions in this changing business world have not kept pace. The sequence of courses and the content of individual subjects which were satisfactory for the training of business employees in the 1940's and 1950's are not suited for the 1960's and 1970's. Major revisions in curricular patterns and course content are essential if the desired goals of both vocational and nonvocational business programs on the secondary level can be achieved.
>
> Knowledge of existing community resources and the manner in which they can be incorporated into classroom activities will encourage their utilization.

Eyster (15:187-200) believed that vocational business education programs have as their primary function the preparation of students for employment in business and office positions. Schools offering vocational business curriculums are a primary source of competent personnel for business firms. Business subjects preparing students for business jobs that do not exist is not vocational education, and it results in an educational loss. The schools' product both in numbers of graduates and areas of business specialization must be compatible with the personnel needs of business firms.

Eyster felt that students are served by vocational business education curriculums only to the extent that the

personnel needs of business are satisfied both in number and in area of specialization.

Eyster (15:196) stated:

> The objectives of a vocational business education curriculum are to prepare students to qualify for admission to a specific business occupation and to enable the student to make progress in the occupation after employment. Job requisites change from time to time. Close cooperative relationships should exist at all times between business and schools to assure that the content of the business subjects and the standards of performance in business schools are compatible with the needs and practices of business firms.

A study made in 1966 by Chase (9:13) pointed out the need for previous work experience with a 10-key adding machine, a rotary calculator, or a printing calculator. This was a significant factor for job success as an office machine operator. Business education departments should consider offering part-time employment opportunities for their prospective clerical workers. The study showed few full-time positions that required over four hours of office work daily.

Place (25:25-26) described Seattle's office machines course as one designed to meet the educational needs of both the brightest youngster and the slow youngster in school.

The slow learner, who needs routine skills in order to secure entry into the labor market, can, upon completing the office machines course, become a productive employee. Such routine skills as basic filing, operation of the 10-key adding machine, and the duplicating and copying machines are suited for the slow learner and oriented toward entry occupations.

Individual students learn to operate as many office machines and learn as many clerical processes as skillfully as they are able. Students may generalize and learn the basics of many machines, or they may specialize and become proficient in the use of a few.

Brady (5:8) wrote that a knowledge of the techniques of operating adding and listing, rotary and key-driven calculators, and various kinds of accounting machines will continue to be important for the clerical worker of tomorrow. Not only should he be familiar with the various operational parts of these machines, but he should also be able to select the one machine most appropriate to perform a job task. A knowledge of the problems that can be solved by each type of adding, calculating, and accounting machine is as important as the development of a high degree of operational skill.

Buchen (7:303-4) stated that:

> To offer an effective class in office machines, a teacher must know how to operate each machine efficiently that is available for class training purposes. The classroom teacher must know which machines are used in his local area most frequently; he must be able to convince the school administration that making these machines available to business students is a desirable part of their training. He must know what machines cost and the rental plans that are available; in short he must attempt to get machines in the business education department in some way, shape, or manner.

Carr (8:10-11) believed that a thorough foundation in the operation of just one machine with a real understanding of the principles involved makes it possible for a student to

operate any decimal machine. Teaching and testing in office machine instruction can be more meaningful to the student if he is taught to think and analyze what he is doing. Paper and pencil analysis will help the student to understand what is being done.

Weeks (33:53-65) felt that one of the major decisions relating to the office occupation program in the secondary schools concerns the types of office machines and equipment which should be purchased and the amount of time to be devoted to training on them. Certain criteria needs to be met to warrant expenditure of public funds for such machines and equipment and the inclusion of such training in the program.

Weeks believed that the following criteria should be considered:

1. The equipment must exist in fairly large numbers in business offices of the community or be used by relatively large numbers of workers.

2. The equipment should require skill in its operation.

3. The time required to attain a marketable skill must not be excessive.

4. The equipment must be reasonable in cost of purchase or rental.

Weeks (33:59) further stated:

> If the business education department is to meet its responsibility of training young people for work in offices, then the classroom teacher must demand that students meet realistic standards of competency in each of these areas which must be established, and these goals

and standards must be realistic and compatible with the needs of the employing business community.

Some research shows that many employers could and have trained employees to use data processing machines. Many employers say they prefer employees today with general business understandings and proper work attitudes.

Tate (29:17) said:

> Business education must be attuned to current reality and not to the past if it is to succeed. It must be sensitive and responsive to changing occupational requirements and to the needs of the students it serves. Otherwise, non-school agencies will take over the responsibility for vocational business education.

Thompson (30:161-74) had some ideas on what can be accomplished in the existing courses to better prepare students for their role in automation. He stated:

> The 'how to' of machine calculation is receiving attention today. The former stress on the manipulative skill in handling a particular piece of equipment has given way to the utilization of the equipment. A desk calculator of today is a kissing cousin to a computer. The theory that the student learns on the desk calculator will apply to the functions to be performed on the more sophisticated computers. It still takes a relatively short period of time to master the hardware, but it takes patience and understanding to master the theory for the most effective use of the equipment.

Thompson (30:161-74) concluded:

> The emphasis today is upon the development of a broad, general understanding of business data processing and a familiarity with a wide spectrum of equipment and a knowledge of the possible use of available machines. The United States Department of Employment has a slogan: 'You can't hold tomorrow's jobs with yesterday's skills.' The business teachers of America will do well to use this slogan in teaching for tomorrow's jobs.

RELATED LITERATURE ON SIMILAR STUDIES

Berry (2:4) in her study completed in 1963 found that there were eight major areas of general office activities: communicating orally, calculating, duplicating, filing, and typewriting. Sixty-two business firms participated in her study and her findings indicated the following:

1. On the whole, the initial general office employee who would be working within these areas needs no pre-employment technical training except in typewriting or key-punch machine operation should he enter into a job involving either one of these two activities.

2. Instruction, except for typewriting and key-punch operation, was provided through "over-the-shoulder" training by a co-worker and/or supervisor; rarely was it provided through a formal in-service training class.

Cook and Maliche's (10:13) study completed in 1965 utilized research techniques and 239 companies were interviewed. They found that:

1. Companies had about the same number of typewriters and adding/calculating machines.

2. Most of the adding/calculating machines were electric; most of the typewriters were manual.

3. The larger the company the greater the variety and number of office machines that were used.

4. Twenty-seven per cent of the companies had copying and duplicating machines.

5. Eighteen per cent of the companies had bookkeeping machines and approximately 14 per cent had dictating equipment.

6. Most companies did not require training on office machines prior to employment with the exception of typewriters.

7. Most companies did not administer skill-tests as a pre-requisite for hiring.

8. Approximately one-third of the companies administer some type of on-the-job training. The larger the company the more likely the employee would receive some type of on-the-job training.

Cook and Maliche recommended that no additional state and/or federal funds be allocated for the purchase of office machines with the exception of typewriters. If public funds should be expended for the acquisition of office machines, these funds should be used to rent not purchase equipment in order that the schools will not be "stuck" with obsolete equipment.

Falk's (16:46-52) study was a survey to determine the number of office machines used and the implications of automation in the teaching of office machines. This study was completed in 1965 and recommended:

1. Training should be given on both manual and electric typewriters as well as training on both pica and elite typewriters. He felt that there should be some opportunity for the student to gain experience in the use of the IBM electric typewriters and the IBM selectric typewriter.

2. Field trips should be arranged so that the student has an opportunity to become familiar with special and automatic typewriters, various photocopying machines, and automated equipment.

3. Adequate training on transcription machines was a must.

4. An acquaintance with the various types of calculators and adding machines seemed necessary because of the frequency of their reported use. Where possible, the student should be offered training on the particular makes of machine he is most likely to encounter in his area.

5. Decreased emphasis should be placed on training on the stencil duplicator; however, an acquaintanceship still seems advisable. Continue instruction on the fluid duplicator.

6. Some training on posting machines seemed urgent.

7. Some information concerning automation should be included in the terminal courses.

Benson (1:86-88) made a survey of selected businesses in South Dakota to determine the need for office machine training at the secondary level. This study completed in 1963 found that:

1. Approximately 15 per cent of all employees of a firm are engaged in office occupations.

2. The high school graduate represented about 40 per cent of all office employees.

3. More than 50 per cent of all business firms had an in-service training program.

4. The most common mathematical process machines that were being used by the majority of business firms included the 10-key adding, full-keyboard adding, key-driven calculator, rotary calculator, bookkeeping machine, and the printing calculator.

5. The photocopy and stencil duplicators were the most commonly used duplicating machines with spirit duplicator ranking next.

6. More than 80 per cent of the business firms had non-electric typewriters and more than 50 per cent had electric typewriters. More machines

were equipped with elite type than pica type regardless of model.

7. About 80 per cent of all workers operated mathematical process machines and more than 50 per cent of those operators received their terminal training at high school.

8. The majority of businessmen desired skill on the proficiency or acquaintanceship level for all machine operators of the following mathematical process machines: ten-key adding-listing, full-keyboard adding, key-driven calculator, printing calculator, rotary calculator, billing machine, bookkeeping machine, and window posting machine.

9. Operators of the stencil, spirit, and offset duplicators should possess skill on either the proficiency or acquaintanceship level.

10. Most businessmen desired the operator of the transcribing machine to possess skill on the proficiency level.

11. Most of the manual machines were being replaced by electric models.

12. An understanding of the newer data processing equipment was essential.

13. The ability of the office machine operator to understand and solve mathematical problems was paramount.

Businessmen want more workers who are completely trained. They have expressed concern that often students come to them with limited preparation and think they are qualified workers.

CHAPTER III

BUSINESS EDUCATION CURRICULUM OF THE ELLENSBURG SENIOR HIGH SCHOOL

The Business Education Department of Ellensburg Senior High School, Ellensburg, Washington, offered three main tracks for students who wanted to prepare for an office career.

Secretarial. The secretarial track was designed for those students interested in preparing for employment in office positions involving typewriting, dictation, transcription, filing, and related activities. The purpose of this track was:

1. Exploration of the vocational opportunities in the secretarial field.
2. Development of marketable skills in typewriting, dictation and transcription, filing, adding and calculating machines operation, and duplication machines operation.
3. Providing information concerning employment requirements and standards for secretarial positions.
4. Development of personal traits and related abilities essential to successful employment.

Bookkeeping. The bookkeeping track was designed for the student interested in preparing for employment in office positions as adding and calculating machine operators, bookkeepers, accountants, and related positions. The purposes were:

1. Exploration of the vocational opportunities in the field.
2. Development of marketable, initial-employment skills in typewriting, adding and calculating machine operation, bookkeeping, and records management.
3. Acquaintance with employment requirements and standards for bookkeeping and accounting positions.
4. Encourage students to continue their training after high school to prepare for advanced vocational and professional work in the field.
5. Develop techniques for applying for a position, participating in a job interview, and securing initial employment.
6. Develop the personal traits and related abilities and skills essential to successful employment.

General clerical. This track was designed for those students who are interested in office work but not in

specialization. The purposes were:

1. Exploration of vocational opportunities in clerical work.
2. Development of a marketable skill for initial employment in typewriting, duplicating processes, filing, and general recordkeeping.
3. Understanding of employment requirements and standards for clerical work.
4. Development of techniques to use in job application and interview.
5. Development of personal traits and related abilities and knowledge essential to successful initial employment.
6. Develop the personal traits and related abilities and skills essential to successful employment.

OFFICE MACHINE COURSES

The office machine offerings at Ellensburg Senior High School, Ellensburg, Washington, included:

Basic typewriting. This was a course for all students who desired skill for personal business and/or basic vocational skill. The course utilized the touch method stressing mastery of the keyboard, development of correct techniques, speed and accuracy building, and basic typewriting application.

This basic typewriting course was a two semester course and could be taken in either the 10th, 11th, or 12th grades. This course was a prerequisite for vocational typing and shorthand.

Vocational typewriting. This was a one semester course designed for students who desired a greater degree of proficiency in typewriting for vocational purposes. Emphasis was on the use of the electric typewriter; skill building; technique improvement; production typewriting; and related skills and knowledges. Training was also given in the production of masters and stencils for use on duplicating machines as well as in the operation of duplicating and copying machines. This was a one semester course and as a prerequisite requirement, the student must have received a "C" grade in Basic Typewriting or equivalent typing experience. This class was a prerequisite for Office Machines II and Stenography.

Senior academic typewritng. This was a one semester class open only to seniors who desired adequate skill for personal business and college use. This course was given on a pass/fail basis. Emphasis was on learning the keyboard, the operation of the machine, and application of such skill in the production of manuscripts, personal business letters, and other forms of personal typing.

Office machines I. This was a course for students who were interested in working with adding and calculating machines. The course included a review of basic mathematics used in business; business forms; data processing; operation of adding-calculating machines; application of skill and knowledge to the solution of a variety of business projects. This was a one semester course.

Office machines II. This was a one semester course for students interested in pre-vocational or vocational work in office occupations. The class work covered machine transcription techniques; filing; business correspondence; office organization and procedures, and duplicating processes. A pre-requisite of this course was a "C" grade in vocational typing.

The office machine inventory at Ellensburg Senior High School (Exhibit D) shows the office machines available for classroom use.

CHAPTER IV

RESULTS OF THE SURVEY

A total of 108 questionnaires were distributed to businesses of Ellensburg, Washington. Eight questionnaires comprising the pilot study were tabulated in the total response. One hundred questionnaires were distributed together with a covering letter and a stamped, self-addressed envelope. Seventy-eight were handed personally to businessmen and the remaining 22 were mailed. Of these 100, 82 were returned. In April, 1968, a follow-up letter and questionnaire were mailed to 18 businessmen. Twelve of these questionnaires were completed and returned. A total of 102 questionnaires were used in the tabulations. A 92.73 per cent return was received and tabulated.

The information in the left-hand columns of the tables was arranged in alphabetical order. No effort was made to report the data in a frequency distribution.

Table I shows the types of 102 business firms surveyed in Ellensburg, Washington.

TABLE I

TYPES OF 102 BUSINESS FIRMS SURVEYED IN ELLENSBURG, WASHINGTON

Type of Business	Total by Type	Per Cent of Total
Agriculture	12	11.8
Banks, Insurance, Real Estate	15	14.7
Construction	2	1.9
Education	13	12.7
Manufacturing	1	1.0
Personal Service	5	4.9
Professional Service	14	13.7
Public Service	16	15.7
Transportation, Public Utility, and Communication	7	6.9
Wholesale and Retail Business	16	15.7
No Identity	1	1.0
Totals	102	100.0

Sixteen business firms, or 15.7 per cent, of the respondents were in public health; 16, or 15.7 per cent, were in wholesale and retail establishments; 15, or 14.7 per cent, were engaged in banking, insurance, and real estate; 14, or 13.7 per cent, provided professional services; 13, or 12.7 per cent were educational institutions; 12, or 11.8 per cent provided agriculture services; 7, or 6.9 per cent, were in the transportation, public utility, and communication category; 5, or 4.9 per cent, provided personal services; 2, or 1.9 per cent, were in the construction business; 1, or

1 per cent, was in manufacturing; and 1 respondent did not identify the type of his business.

Table II shows the number of full-time employees using office machines of the 102 Ellensburg, Washington, business firms surveyed.

TABLE II

NUMBER OF FULL-TIME EMPLOYEES USING OFFICE MACHINES IN 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Type of Business	Number of Employees					
	1 to 2	3 to 5	5 to 10	10 to 15	15 to 20	more than 20
Agriculture	12					
Banks, Insurance, Real Estate	10	3	1		1	
Construction	2					
Education	4	4	3		2	
Manufacturing	1					
Personal Service	3	1	1			
Professional Service	7	2	5			
Public Service	4	7	3	1		1
Transportation, Public Utility and Communication	4		1	1		1
Wholesale & Retail	13	3				
Not Identified	1					
Totals	61	20	14	2	3	2

Of the full-time employees using office machines, 61, or 59.8 per cent, employed 2 or less persons; 20 business firms, or 19.6 per cent, employed from 3 to 5 persons; 14, or 13.7 per cent, employed from 5 to 10 persons; 2, or 2 per

cent, employed from 10 to 15 employees; 3, or 2.9 per cent, employed from 15 to 20 persons; and only 2, or 2 per cent, employed more than 20 persons.

The results of the survey also revealed that there were a total of 381 full-time employees reported using office equipment in the 102 Ellensburg, Washington, firms reporting, and 99 part-time employees. Thirty-nine, or 39.4 per cent, of the total part-time employees were employed by an educational institution.

Table III shows the sex and number of office employees using the various kinds of office machines as reported by the 102 Ellensburg, Washington, business firms surveyed. Some of the employees used more than one machine.

TABLE III

SEX AND NUMBER OF EMPLOYEES USING OFFICE MACHINES IN 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

	Female Operators	Male Operators	Combined Total	Per Cent of Total
Adding & Calculators	226	144	370	30.5
Billing-Bookkeeping	55	13	68	5.6
Computers	5	7	12	1.0
Photocopying	147	53	200	16.5
Data Processing	10	6	16	1.3
Dictating-Transcribing	71	24	95	7.8
Duplicators	50	18	68	5.6
Typewriters	306	78	384	31.7
Totals	870	343	1213	100.0

Those businesses reporting, indicated a combined total of 1,213 operators of office machines. Of this amount, 870 operators, or 72 per cent, were females, and 343, or 28 per cent, were males.

Table III also shows that the typewriter was the most widely-used office machine. The businesses indicated that 384 operators, or 31.7 per cent, used the typewriter, and of these, 306, or 80 per cent, were females and 78, or 20 per cent, were males. There were 370 operators, or 30.5 per cent, who used adding machines and calculators, and of these, 226, or 61 per cent, were females and 144, or 39 per cent, were males. Operators using photocopying machines numbered 200, or 16.5 per cent, and of this amount, 147, or 73.5 per cent, were females and 53, or 26.5 per cent, were males. Ninety-five operators, or 7.8 per cent, used dictating and transcribing machines and of this amount, 71, or 74.7 per cent, were females and 24, or 25.3 per cent, were males. There were 68, or 5.6 per cent, who operated duplicating machines and of this amount, 50, or 73.5 per cent, were females and 18, or 26.5 per cent, were males. Sixty-eight, or 5.6 per cent, of the operators used billing and bookkeeping machines and of this amount, 55, or 80.9 per cent, were females and 13, or 19.1 per cent, were males. Sixteen operators, or 1.3 per cent, used data processing equipment and of these operators, 10, or 62.5 per cent, were females

and 6, or 37.5 per cent, were males. There were 12 operators, or 1 per cent, who used computers and of these, 4, or 41.7 per cent, were females and 7, or 58.3 per cent were males.

KINDS OF OFFICE MACHINES USED IN ELLENSBURG, WASHINGTON

Typewriting. Table IV reveals the quantity and manufacturers of typewriters, and whether the typewriters were manual or electric machines.

TABLE IV

QUANTITY AND MANUFACTURER OF MANUAL AND ELECTRIC TYPEWRITERS USED IN 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Manufacturer	Electrics	Manuals	Total Electrics & Manuals	Per Cent of Electrics and Manuals
Facit	3	1	4	1.2
IBM	114	0	114	32.6
Olympia	11	29	40	11.4
Remington Rand	9	40	49	14.0
Royal	8	79	87	24.9
Smith-Corona	12	13	25	7.1
Underwood	2	17	19	5.4
Other	10	2	12	3.4
Totals	169	181	350	100.0

Of the total typewriters reported, 169, or 48 per cent, were electric typewriters and 181, or 52 per cent, were manual machines. Of the electric typewriters, 114, or 61.5 per cent were IBM (International Business Machines). Royal accounted for the most manual typewriters, 79, or 43.6 per cent.

Of the combined total of electric and manual typewriters, IBM represented the largest total with 114 reported, or 32.6 per cent; Royal with 87, or 24.9 per cent; Remington Rand with 49, or 14 per cent; Olympia with 40, or 11.4 per cent; Smith-Corona with 25, or 7.1 per cent; Underwood with 19, or 5.4 per cent; Facit with 4, or 1.2 per cent; and 12, or 3.4 per cent, classified as "other brands."

Table V identifies the quantity and manufacturer of typewriters having elite or pica type used in Ellensburg, Washington.

Of the 317 typewriters identified in Table V, 208 or 66 per cent, had elite type and 109, or 34 per cent, had pica type. The IBM had the largest number of typewriters with elite type with 76, or 36.5 per cent; Royal with 42, or 20.2 per cent; Remington with 37, or 17.8 per cent; Olympia with 20, or 9.6 per cent; Underwood with 11, or 5.3 per cent; Smith Corona with 10, or 4.8 per cent; and the "other" makes with 9, or 4.3 per cent of the total machines.

TABLE V

QUANTITY AND MANUFACTURER OF TYPEWRITERS HAVING ELITE OR PICA TYPE USED IN 102 ELLENSBURG, WASHINGTON, FIRMS

Manufacturer	Elite	Per Cent of Elite	Pica	Per Cent of Pica
Facit	3	1.5	1	.9
IBM	76	36.5	37	34.0
Olympia	20	9.6	15	13.8
Remington Rand	37	17.8	10	9.2
Royal	42	20.2	25	22.9
Smith Corona	10	4.8	13	11.9
Underwood	11	5.3	7	6.4
Other	9	4.3	1	.9
Totals	208	100.0	109	100.0

There were 109 pica type machines reported in the survey. Of this total 37, or 34 per cent were IBM; 25, or 22.9 per cent, were Royal; 15 or 13.8 per cent were Olympia; 13, or 11.9 per cent, were Smith Corona; 10, or 9.2 per cent, were Remington Rand; 7, or 6.4 per cent, were Underwood; 1, or .9 per cent, were Facit; and 1, or .9 per cent, were classified as "other brands" of typewriters.

The IBM typewriters are of three models--the Executive, the Selectric, and the Standard.

Table VI shows three models of the 114, IBM typewriters reported. Of this total, 83, or 72.8 per cent, were Standard; 20, or 17.5 per cent, were Selectric; and 11, or 9.7 per cent, were Executive IBM typewriters.

TABLE VI

QUANTITY AND MODELS OF IBM TYPEWRITERS USED IN 102 ELLENSBURG, WASHINGTON, FIRMS

Models	Quantity	Per Cent of Total
Executive	11	9.7
Selectric	20	17.5
Standard	83	72.8
Totals	114	100.0

Table VII details the special typewriters found in the 102 Ellensburg business offices included in this study.

TABLE VII

QUANTITY AND NAMES OF SPECIAL TYPEWRITERS USED BY 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Description	Quantity	Per Cent of Total
Autotypist	1	9.1
Flexowriter	0	.0
Justowriter	3	27.3
Varityper	2	18.2
Magnetic Tape Selectric	1	9.1
Other	4	36.3
Totals	11	100.0

There were only 11 special typewriters identified in this survey. Three were Justowriters which comprised 27.3 per cent; 2, or 18.2 per cent, were Varitypers; 1, or 9.1 per cent, was an IBM Magnetic Tape Selectric. Four, or 36.3 per cent, "others" were reported. There were no Flexowriters reported.

Dictating and transcribing machines. Table VIII portrays the number and types of dictating and transcribing machines being used in the Ellensburg, Washington, area.

TABLE VIII

QUANTITY AND MANUFACTURER OF DICTATING AND TRANSCRIBING MACHINES USED IN 102 ELLENSBURG, WASHINGTON, FIRMS

Manufacturer	Quantity	Per Cent of Total
Audograph	0	.0
Dictaphone	39	49.4
Ediphone	0	.0
IBM Executary	6	7.6
Norelco	8	10.1
Soundscriber	0	.0
Voicewriter	0	.0
Webcor	0	.0
Stenorette	19	24.0
Other	7	8.9
Totals	79	100.0

The Dictaphone dictating and transcribing machine was the most popular of any dictating and transcribing machine reported in this study. Of the 79 dictating and transcription machines reported, 39, or 49.4 per cent were Dictaphone followed by Stenorette with 19, or 24 per cent; Norelco with 8 reported, or 10.1 per cent; the IBM Executary accounted for 6 machines, or 7.6 per cent; and there were 7, or 8.9 per cent, "other" machines used by Ellensburg, Washington, businesses.

Duplicating processes. Table IX shows the duplicating processes used by Ellensburg businessmen responding to this survey.

TABLE IX

DUPLICATING PROCESSES, QUANTITY AND TYPES OF DUPLICATING MACHINES USED IN 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Process	Electric	Manual	Combined Total	Per Cent of Total
Fluid Process	7	9	16	42.1
Stencil Process	16	4	20	52.6
Offset Process	2	0	2	5.3
Totals	25	13	38	100.0

The stencil process is the most widely used method of duplicating. There were 20 stencil process machines, or 52.6 per cent; 16 fluid process machines, or 42.1 per cent; and 2 offset process machines, or 5.3 per cent, of the total duplicating machines reported. Of the total machines, 25, or 65.8 per cent, were electric, and 13, or 34.2 per cent, were manually operated.

Table X shows the quantity and manufacturer of the fluid process duplicating machines used by Ellensburg, Washington, businessmen.

TABLE X

QUANTITY AND MANUFACTURER OF THE FLUID PROCESS DUPLICATING MACHINES USED IN 102 ELLENSBURG, WASHINGTON, FIRMS

Manufacturer	Electric	Manual	Combined Total	Per Cent of Total
Addressoprint	0	1	1	6.25
Copy-right	1	0	1	6.25
Ditto	3	2	5	31.25
Standard	3	5	8	50.00
Zypowriter	0	1	1	6.25
Totals	7	9	16	100.00

There were 16 fluid duplicators. The most common fluid duplicator was the Standard with 8 reported, or 50 per cent; 5, or 31.25 per cent, were Ditto machines; 1, or 6.25

per cent, was Addressoprint; 1, or 6.25 per cent, was Copyright, and 1, or 6.25 per cent, was a Zypowriter. Of the total number of fluid duplicators, 9, or 56.3 per cent were manually operated, and 7, or 43.7 per cent were electrically operated machines.

Table XI reports the quantity and manufacturer of the stencil process duplicating machine. There were 20 stencil process machines reported. Sixteen, or 75 per cent, were electric and 4, or 25 per cent, were manually operated. A. B. Dick Mimeograph accounted for 9 machines, or 45 per cent; 9, or 45 per cent were Gestetner; 1, or 5 per cent, was a Printo-matic stencil duplicating machine; and 1, or 5 per cent, was a Gestafex machine.

TABLE XI

QUANTITY AND MANUFACTURER OF THE STENCIL PROCESS DUPLICATING MACHINES USED IN 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Manufacturer	Electric	Manual	Combined Total	Per Cent of Total
A. B. Dick Mimeograph	6	3	9	45
Gestafex	1	0	1	5
Gestetner	8	1	9	45
Printo-matic	1	0	1	5
Totals	16	4	20	100

The offset process duplicating machines reported by the businessmen in this survey are shown in Table XII. There was only 1 Multigraph and 1 Multililth offset process duplicator reported by the 102 Ellensburg, Washington, business firms surveyed.

TABLE XII

QUANTITY AND MANUFACTURER OF THE OFFSET PROCESS DUPLICATING MACHINES USED IN 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Manufacturer	Quantity	Per Cent
Multigraph	1	50
Multililth	1	50
Totals	2	100

Photocopying machines. Table XIII shows that 73 photocopying machines were reported by the businesses of Ellensburg, Washington.

Thermofax accounted for 25, or 34.2 per cent; Bruning for 9, or 12.3 per cent; Verifax for 9, or 12.3 per cent, Zerox with 8, or 11 per cent; Savin with 8, or 11 per cent; Apeco with 5, or 6.9 per cent; A. B. Dick with 3, or 4.1 per cent; Ozlide with 3, or 4.1 per cent, and "other" had 3, or

4.1 per cent, of the photocopying machines reported in this survey.

TABLE XIII

QUANTITY AND MANUFACTURER OF THE PHOTOCOPYING MACHINES USED IN 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Manufacturer	Quantity	Per Cent
A. B. Dick	3	4.1
Apeco	5	6.9
Bruning	9	12.3
Ozlide	3	4.1
Savin	8	11.0
Thermofax	25	34.2
Verifax	9	12.3
Zerox	8	11.0
Other	3	4.1
Totals	73	100.0

Miscellaneous equipment. Table XIV lists the number and kinds of miscellaneous equipment reported by the various business firms at Ellensburg, Washington, who responded to this questionnaire.

The check writer accounted for 31, or 33.7 per cent; the postage machine 20, or 21.7 per cent; 15, or 16.3 per cent, were addressing machines; 9, or 9.8 per cent, were folding machines; 8, or 8.7 per cent were microfilm equipment; 5, or 5.4 per cent, were automatic letter openers;

collators accounted for 3, or 3.3 per cent, of the machines, and there was 1 letter sealer.

TABLE XIV

QUANTITY AND TYPES OF MISCELLANEOUS EQUIPMENT USED IN 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Names	Total	Per Cent
Addressing Machines	15	16.3
Folding Machines	9	9.8
Collators	3	3.3
Micro-film Equipment	8	8.7
Postage Machines	20	21.7
Check Writer	31	33.7
Letter Openers (Automatic)	5	5.4
Letter Sealers	1	1.1
Totals	92	100.0

Adding machines and calculators. The quantity, type, and manufacturers of 10-key adding-listing machines used by Ellensburg, Washington, business firms are shown in Table XV.

Of the 10-key adding-listing machines, 139, or 82.3 per cent of the machines were electric, and 30, or 17.7 per cent, were manually operated. The Burroughs 10-key adding-listing machine accounted for 36, or 21.3 per cent; the Monroe, 31, or 18.3 per cent; the Victor Comptometer, 23, or 13.6 per cent; Olivetti Underwood, 22, or 13 per cent;

Remington Rand, 21, or 12.4 per cent; Facit Odhner, 9, or 5 per cent; Marchant, 5, or 3 per cent; Friden, 1, or .6 per cent; and "other" machines 21, or 12.5 per cent, of the total 10-key adding-listing machines reported in this survey.

TABLE XV

QUANTITY, TYPE, AND MANUFACTURER OF 10-KEY ADDING-LISTING MACHINES USED IN 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Manufacturer	Electric	Manual	Combined Quantity	Per Cent of Total
Burroughs	32	4	36	21.3
Facit Odhner	9	0	9	5.3
Friden	1	0	1	.6
Marchant	3	2	5	3.0
Monroe	28	3	31	18.3
Olivetti Underwood	13	9	22	13.0
Remington Rand	19	2	21	12.4
Victor Comptometer	20	3	23	13.6
Other	14	7	21	12.5
Totals	139	30	169	100.0

Table XVI shows the quantity, type, and manufacturers of full keyboard adding-listing machines used in the Ellensburg, Washington, business area.

The full keyboard adding-listing machines as reported in this survey were predominately electric. Sixty-six, or 79.5 per cent, were electric, and 17, or 20.5 per cent, of the machines were manually operated. Of the combined total

of 83 machines, 50, or 60.2 per cent, were Burroughs; 9, or 10.9 per cent, were Victor; 7, or 8.5 per cent, were National Cash Register; 6, or 7.2 per cent, were Monroe; 5, or 6 per cent, were Remington Rand; 4, or 4.8 per cent, were Olivetti Underwood; and 2, or 2.4 per cent, were "other" machines.

TABLE XVI

QUANTITY, TYPE, AND MANUFACTURERS OF FULL KEYBOARD ADDING-LISTING MACHINES USED IN 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Manufacturer	Electric	Manual	Combined Total	Per Cent of Total
Burroughs	42	8	50	60.2
Monroe	6	0	6	7.2
National Cash Register	7	0	7	8.5
Olivetti Underwood	3	1	4	4.8
Remington Rand	2	3	5	6.0
Victor	5	4	9	10.9
Other	1	1	2	2.4
Totals	66	17	83	100.0

Table XVII indicates the kinds of calculators used by Ellensburg, Washington, business firms and also how many were electric or manual machines.

Electrically operated calculators represented 90 machines, or 96.6 per cent, and 3, or 3.4 per cent, were manually operated. Rotary calculators accounted for 55

machines, or 59.1 per cent; the printing calculator, 26 machines, or 28 per cent; and the key-driven calculator, 12, or 12.9 per cent of the total calculators reported in this survey.

TABLE XVII

QUANTITY, TYPE, AND KINDS OF CALCULATORS USED IN 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Kinds of Calculator	Electric	Manual	Combined Quantity	Per Cent of Total
Rotary Calculator	54	1	55	59.1
Key-Driven Calculator	10	2	12	12.9
Printing Calculator	26	0	26	28.0
Totals	90	3	93	100.0

Table XVIII shows the quantity, type, and manufacturer of rotary calculators that were reported by the business firms.

There was only 1 rotary calculator that was manually operated of the 55 reported. The Monroe Rotary Calculator accounted for 19, or 34.5 per cent; the Marchant, 16, or 29.1 per cent; the Friden, 15, or 27.3 per cent; and "other" rotary machines 5, or 9.1 per cent, of the total reported by

Ellensburg, Washington businesses. There were no Facit Rotary Calculators.

TABLE XVIII

QUANTITY AND MANUFACTURER OF THE ROTARY CALCULATORS USED IN 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Manufacturer	Electric	Manual	Total	Per Cent
Facit	0	0	0	.0
Friden	15	0	15	27.3
Marchant	16	0	16	29.1
Monroe	18	1	19	34.5
Other	5	0	5	9.1
Totals	54	1	55	100.0

Table XIX lists the manufacturer, type, and quantity of key-driven calculators as reported by 102 Ellensburg, Washington, business firms.

TABLE XIX

QUANTITY AND MANUFACTURER OF KEY-DRIVEN CALCULATORS USED IN 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Manufacturer	Electric	Manual	Total	Per Cent
Burroughs	4	0	4	33
Comptometer	0	0	0	0
Other	6	2	8	67
Totals	10	2	12	100

The Burroughs Key-Driven Calculator accounted for 4, or 33 per cent, and "other" key-driven calculators numbered 8, or 67 per cent, of the total reported. There were no Comptometers. Ten, or 83.3 per cent, of the machines were electric and 2, or 16.7 per cent, were manually operated.

Table XX indicates the quantity and manufacturers of the printing calculator.

TABLE XX

QUANTITY AND MANUFACTURER OF PRINTING CALCULATORS USED IN 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Manufacturer	Total Machines	Per Cent of Total
Marchant	5	19.2
Monroe	6	23.1
Olivetti Underwood	11	42.3
Remington Rand	4	15.4
Totals	26	100.0

Olivetti Underwood accounted for 11, or 42.3 per cent of the printing calculators; Monroe 6, or 23.1 per cent; Marchant, 5, or 19.2 per cent; and Remington Rand, 4, or 15.4 per cent of the total machines. The printing calculators were all electric.

Data processing equipment. A picture of the data processing equipment as reported by Ellensburg business firms is provided in Table XXI.

TABLE XXI

QUANTITY, KINDS, AND MANUFACTURER OF DATA PROCESSING EQUIPMENT USED IN THE 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Kinds	IBM	Remington Rand	Other Brands	Combined Total	Per Cent of Total
Accounting Machine	2	2	13	17	50.0
Interpreter	2	0	0	2	5.9
Key Punch	7	0	0	7	20.7
Reproducer	1	0	0	1	2.9
Sorter	2	0	1	3	8.8
Summary Punch	1	0	0	1	2.9
Verifier	0	0	0	0	.0
Other	1	0	2	3	8.8
Totals	16	2	16	34	100.0

Of the 34 data processing machines reported, 17, or 50 per cent were accounting machines; the key punch machine totaled 7, or 20.7 per cent. There were 3 sorters, 8.8 per cent; 2 interpreters, 5.9 per cent; 1 reproducer, 2.9 per cent, 1 summary punch, 2.9 per cent, and 3, 8.8 per cent, of "other" data processing equipment.

Table XXI also shows that of these 34 data processing machines, 16, or 47 per cent, were IBM; 2, or 6 per cent,

were Remington Rand, and 16, or 47 per cent, were classified as "other" manufacturer.

TRAINING NECESSARY FOR OPERATING OFFICE MACHINES IN ELLENSBURG, WASHINGTON

On-the-job instruction. It was felt important to determine how many business firms in Ellensburg, Washington, gave on-the-job instruction and on what kinds of machines this instruction was given. Table XXII shows how the Ellensburg business firms responded to the question of on-the-job instruction.

TABLE XXII

ON-THE-JOB INSTRUCTION GIVEN BY 48 OF THE 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Type of Machine	No. of Times Reported	Per Cent
Adding Machine	5	10.3
Autotypist	1	2.1
Bookkeeping Machines	15	31.2
Data Processing	3	6.3
Dictating-Transcribing	3	6.3
Duplicators	3	6.3
Justowriter	1	2.1
Key Punch Machine	1	2.1
Photocopying Machines	15	31.2
Selectric Typewriter	1	2.1
Totals	48	100.0

Forty-eight respondents indicated they did give on-the-job instruction on the following machines. Fifteen, or 31.2 per cent, gave training on the copy machine; 15, or 31.2 per cent, gave training on bookkeeping machines; 5, or 10.3 per cent, provided instruction on adding machines; 3, or 6.3 per cent, trained on data processing equipment; 3, or 6.3 per cent, instructed on the use of duplicating equipment, 3, or 6.3 per cent, provided instruction on dictating and transcribing machines; 1, or 2.1 per cent, trained employees on the use of the autotypist, 1, or 2.1 per cent, gave instruction on the use of the selectric typewriter, and 1 business, or 2.1 per cent, gave on-the-job instruction on a key punch machine. It is significant to note that two machines, the photocopying machine and the bookkeeping machine, accounted for 62.4 per cent of all the on-the-job instruction reported in this survey.

Ninety-eight respondents answered the question relating to the problem of hiring competent help to operate their office machines. Eighteen, or 18.4 per cent, stated they had had a problem hiring competent personnel, while 80, or 81.6 per cent, of the respondents said they did not have any problem hiring individuals to operate office machines.

Office machine training. Ninety-eight business firms stated where they felt specialized training on office equipment should be provided. Table XXIII shows their opinions as to where this training should be provided.

TABLE XXIII

SPECIALIZED TRAINING ON OFFICE MACHINES SHOULD BE PROVIDED BY THE FOLLOWING INSTITUTIONS AS INDICATED BY 98 OF THE 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Kind of Institution	No. of Times Reported	Per Cent
Business College	56	27.3
Community College	22	10.7
Four-Year College	19	9.3
High School	69	33.7
Technical School	21	10.2
On-the-Job	18	8.8
Totals	205	100.0

Some of the respondents checked more than one institution where office machine training should be provided. Sixty-nine, or 33.7 per cent, business firms felt that specialized training should be provided by the secondary school; 56, or 27.3 per cent, felt it should be offered in business college; 21, or 10.2 per cent, felt it should be offered in a technical school; 19, or 9.3 per cent, felt it should be in the four-year college; and 18, or 8.8 per cent, thought it should be offered as on-the-job training.

Table XXIV shows the courses considered by 102 Ellensburg, Washington, business firms to be most helpful for students graduating from high school in securing an office position.

The business firms were asked to indicate those courses which should be offered in high school, and which might be most helpful in preparing a student for his or her initial office job. They were asked to rank them in importance from 1 (first choice) through 5 (fifth choice). After these had been tabulated, they were weighted by assigning 5 points for a ranking of 1, 4 points for a ranking of 2, 3 points for a ranking of 3, 2 points for a ranking of 4, and 1 point for a ranking of 5. The results of the ranking, weighting, and per cent of weighting are shown in Table XXIV.

It is significant to note that typewriting placed first with 377 weighted points, or 27.3 per cent, of the total of 1,384 weighted points; business English received 194 points, or 14 per cent; office machines with 163 points, or 11.8 per cent; general business with 111 points, or 8 per cent, business arithmetic with 104 points, or 7.5 per cent; office practice, 99 points, or 7.2 per cent; shorthand, 76 points, or 5.4 per cent; filing, 68 points, or 4.9 per cent; and distributive education, with 1 point, or .1 per cent of the total weighted points.

TABLE XXIV

COURSES CONSIDERED BY 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS TO BE MOST HELPFUL FOR STUDENTS GRADUATING FROM HIGH SCHOOL IN SECURING AN OFFICE POSITION

Subject	First Choice	Second Choice	Third Choice	Fourth Choice	Fifth Choice	*Weighted Combined Total	Weighted Per Cent of Total
Bookkeeping	13	15	13	8	11	191	13.8
Business Arithmetic	2	10	10	8	8	104	7.5
Business English	10	15	15	15	9	194	14.0
Distributive Education					1	1	.1
Filing	1	4	5	11	10	68	4.9
General Business	8	4	6	6	25	111	8.0
Office Machines	4	17	12	11	17	163	11.8
Office Practice	3	5	15	7	5	99	7.2
Shorthand		8	6	11	4	76	5.4
Typewriting	54	12	11	10	6	377	27.3
Totals	95	90	93	87	96	1384	100.0

*WEIGHTED SCALE:

First Choice, assigned weight of 5 points.
Second Choice, assigned weight of 4 points.
Third Choice, assigned weight of 3 points.
Fourth Choice, assigned weight of 2 points.
Fifth Choice, assigned weight of 1 point.

Eight of the respondents did not rate the subjects in order of importance but checked the ones they felt most important. The following subjects were checked the number of times indicated for importance.

Bookkeeping	6
Business Arithmetic	2
Business English	3
Distributive Education	1
Filing	1
General Business	4
Handwriting	1
Office Machines	4
Office Practice	5
Shorthand	3
Spelling	2
Typewriting	8

Three respondents indicated a need for training in telephone usage and 1 felt that business manners were most important. Exhibit E, contains the unedited "remarks" made on the questionnaires by the respondents.

Ninety-four business firms indicated where their employees received specialized training on office machines. Some of the business firms stated that their employees received their training in more than 1 institution.

Table XXV shows the institutions that provided training for office machine employees within the 102 Ellensburg, Washington, business firms surveyed. High school provided training for the largest amount of employees with 49, or 37.7 per cent; business college came next with 29, or 22.3 per cent; on-the-job training, 22, or 16.9 per cent;

four-year college, 17, or 13.1 per cent; the community college, 9, or 6.9 per cent; and the technical school, 4, or 3.1 per cent of the total reported.

TABLE XXV

INSTITUTIONS THAT PROVIDED SPECIALIZED TRAINING ON OFFICE MACHINES FOR EMPLOYEES AS INDICATED BY 94 OF 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Institution	No. of Times Training Reported	Per Cent
Business College	29	22.3
Community College	9	6.9
Four-Year College	17	13.1
High School	49	37.7
Technical School	4	3.1
On-the-Job	22	16.9
Totals	130	100.0

Office machine experience prior to employment. One hundred Ellensburg, Washington, business firms surveyed indicated whether they did or did not require office machine experience on some machines prior to employment. Most of the respondents indicated they wanted pre-employment experience on several machines.

Table XXVI shows how the businessmen felt about office machine experience.

TABLE XXVI

OFFICE MACHINE EXPERIENCE NECESSARY PRIOR TO EMPLOYMENT AS INDICATED BY 100 OF 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS SURVEYED

Type of Office Machine	Prior Experience Required	Prior Experience Not Required
Adding-Calculators	19	29
Billing-Bookkeeping	15	16
Computers	4	14
Data Processing Equipment	2	15
Dictating-Transcribing	11	15
Duplicators	4	20
Photocopying Machines	2	26
Typewriters	53	18
Totals	110	153

Fifty-three businessmen indicated that prior experience was necessary on the typewriter, 18 said it was unnecessary. Nineteen businessmen felt that prior experience was necessary for employment as an adding machine and calculator operator, 29 said it was unnecessary. Fifteen business firms indicated a need for prior experience on billing-bookkeeping machines and 16 did not feel this experience was necessary. Eleven business firms wanted experience on transcribing machines and 15 felt it was unnecessary. Four businesses indicated a need for experience on the computer and 14 felt it was unnecessary. Four respondents indicated

a need for experience on the duplicators and 20 said it was unnecessary. Two firms indicated a need for experience on the photocopying machine and 26 said it was unnecessary. Two business firms wanted employees with experience on data processing equipment and 15 said it was unnecessary.

Office machine training prior to employment. One hundred Ellensburg, Washington, business firms of the 102 surveyed indicated whether they did or did not require training on office machines before employment and on which machines. Most of the respondents checked more than one machine.

TABLE XXVII

OFFICE MACHINE TRAINING NECESSARY PRIOR TO EMPLOYMENT AS INDICATED BY 100 OF 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS SURVEYED

Type of Office Machine	Prior Training Required	Prior Training Not Required
Adding-Calculators	27	28
Billing-Bookkeeping	20	15
Computers	4	14
Data Processing Equipment	6	13
Dictating-Transcribing	9	15
Duplicators	8	20
Photocopying Machines	3	32
Typewriters	78	5
Totals	155	142

Table XXVII describes how Ellensburg, Washington, business firms felt about office machine training that was necessary prior to employment. Seventy-eight businesses indicated that training on the typewriter was necessary before employment, only 5 said it was not. Twenty-seven business firms wanted trained adding and calculator machine operators, 28 said training was unnecessary. Twenty businesses said that training on billing-bookkeeping machines was necessary, 14 thought it was unnecessary. Nine businessmen felt that training was necessary on the dictating-transcribing machines and 20 thought it was unnecessary. Eight respondents said that training was necessary on duplicators, 20 thought that prior training was unnecessary. Six businessmen wanted trained employees for data processing equipment, 13 said it was unnecessary. Four thought training was needed on computers, 14 said it was unnecessary. Only three businesses indicated a need for training on photocopying machines, 32 said this training was unnecessary prior to employment.

Future requirements for office machine operators. Table XXVIII shows how 99 business firms have forecast their future office machine operator staff requirements.

TABLE XXVIII

PROJECTED FORECAST OF FUTURE STAFF OF EMPLOYEES USING OFFICE MACHINES AS INDICATED BY 99 OF 102 ELLENSBURG, WASHINGTON, BUSINESS FIRMS

Type of Machine	Increase in No. Machine Operators	Decrease in No. Machine Operators	Same No. Machine Operators
Adding-Calculators	8	2	55
Billing-Bookkeeping	1	3	38
Computers	2	2	23
Data Processing	2	1	20
Dictating-Transcribing	5	1	23
Duplicating Machines	4	1	36
Photocopying	6	1	32
Typewriters	12	1	77
Totals	40	12	304

For the most part, Ellensburg businesses intend to keep the same number of employees that use office machines. There were 358 indications of the projected use of office machines in the future. Three hundred and four, or 85.3 per cent, of the total were indications that the use of office machine operators would remain the same. Forty, or 11.3 per cent, showed an expected increase in the use of office machine operators and 12, or 3.4 per cent, stated a decrease in the employment of office machine operators.

CHAPTER V

I. SUMMARY

This study was undertaken in an attempt to determine the number and types of office machines used in the Ellensburg, Washington, business community. In addition, an attempt was made to identify training and experience necessary for initial employment and the extent to which office machine training should be offered in the local secondary school. It is important that students are trained on machines in use in the local employment area.

A review of the literature offered insight into the trends found by business educators and businessmen in the United States. One of the best ways to determine the requirements of a local employment area is to conduct a survey to determine the trends and developments at the local level.

The assistance of 108 businessmen selected randomly from a population of 212 business firms of various types and sizes in the Ellensburg area was solicited to furnish the survey data. A total of 102 business firms completed and returned a questionnaire for a return of 92.73 per cent. All parts of the questionnaire were not completed by all respondents.

The number of employees using office equipment in each of the businesses was determined. It was found that 59.8 per cent of the surveyed firms employ 2 or fewer individuals, 19.6 per cent employ from 3 to 5 individuals, 14 per cent employ from 5 to 10, 3 per cent employ from 15 to 20, and 2 per cent employ 20 individuals who use office machines.

It was also found that 15.7 per cent of the firms were engaged in public service, 15.7 per cent were in wholesale and retail businesses, 14.7 per cent in banking, real estate, and insurance, 13.7 per cent provided professional services, 12.7 per cent were educational institutions, 11.8 per cent provided agriculture services, 6.9 per cent were in transportation, public utility and communication, 4.9 per cent provided personal services, 1.9 per cent were in construction and 1 per cent manufacturing. Those individuals answering the questionnaire indicated there were 381 full-time employees using office equipment and 99 part-time employees. Seventy-two per cent of the employees were females and 28 per cent were males.

Of the total typewriters reported, 52 per cent were manual and 48 per cent were electric machines. Also, 66 per cent of the typewriters had elite type and 34 per cent had pica type. IBM represented the largest number of

typewriters used with 32.6 per cent reported. Royal accounted for 24.9 per cent.

There were only 11 special typewriters reported by businesses in the Ellensburg, Washington, area. Seventy-nine dictating and transcribing machines were reported. The Dictaphone machine comprised 49.4 per cent of those machines and Stenorette accounted for 24 per cent of the dictating and transcribing machines. There were 73 photocopying machines reported by Ellensburg, Washington, businessmen. Thirty-four per cent were Thermofax machines.

Fifty per cent of the fluid duplicators were Standard and 31.25 per cent were Ditto machines. Fifty-six and three-tenths per cent of the machines were manually operated. Seventy-five per cent of the stencil process machines were electric. A. B. Dick Mimeograph accounted for 45 per cent and Gestetner for 45 per cent of the total machines reported. There were two offset process machines reported.

There were 92 machines reported as miscellaneous equipment. Thirty-three per cent of these machines were check writers, 22 per cent were postage machines, and 16 per cent were addressing machines.

Of the 169 10-key adding-listing machines, 82.3 per cent were electric machines and 17.7 per cent were manually operated. The Burroughs machine accounted for 21.3 per cent of the total reported, Monroe, 18.3 per cent, Victor

Comptometer, 13.6 per cent, Olivetti-Underwood, 13 per cent, and Remington Rand, 12.4 per cent of the 10-key adding-listing machines. There were 83 full keyboard adding-listing machines reported and of this amount, 79.5 per cent were electric and 20.5 per cent were manually operated. Also, 60.2 per cent of these machines were Burroughs full keyboard adding-listing machines.

There were 93 calculators reported by respondents to this survey. The rotary calculator accounted for 59.1 per cent, the printing calculator, 28 per cent, and the key-driven calculator, 12.9 per cent of the total calculators in use. Electrically operated calculators represented 96.6 per cent of the machines. Of the rotary calculators, 34.5 per cent were Monroe, 29.1 per cent were Marchant, and 27.3 per cent were Friden machines. Thirty-three per cent of the key-driven calculators were Burroughs and the balance were classified as "other" machines. The greatest number of printing calculators were Olivetti Underwood with 42.3 per cent of the machines.

Fifty per cent of the data processing equipment were accounting machines, 20.7 per cent were key punch machines, 8.8 per cent were sorters, 5.9 per cent of the total were interpreters, 2.9 per cent were reproducers, 2.9 per cent were summary punches, and 8.8 per cent were listed as "other" data processing equipment.

It was found from this survey of selected Ellensburg, Washington, businesses that the most widely used machine was the typewriter followed by the adding machine and calculators, the photocopying machines, and the transcribing and dictating machines in that order. Forty-eight businesses reported they gave some on-the-job instruction. Photocopying machines and the bookkeeping machines accounted for 62.4 per cent of all on-the-job instruction. Eighty-one and six-tenths per cent of the Ellensburg businesses indicated they did not have any problem in hiring competent help.

Results of this survey showed that 33.7 per cent of the businesses in Ellensburg, Washington, felt that specialized training should be offered in the high school and 27.3 per cent also felt that business college was the place for office machine training. The courses offered in high school that the respondents felt would help prospective employees most were: typewriting, 27.3 per cent; business English, 14 per cent, bookkeeping, 13.8 per cent, and office machines, 11.8 per cent. High schools provided pre-employment training for 37.7 per cent of the employees using office machines on the job. The business college provided the training for 22.3 per cent.

Respondents expressed a need for prior experience on the typewriters, adding machines and calculators, billing-bookkeeping machines, and the dictating and transcribing

machines. They also felt training was necessary on the typewriter, adding-calculators, and the billing-bookkeeping machines.

Ellensburg, Washington, businesses indicated that, for the most part, they expected to keep the same quantity of staff which used office machines.

II. FINDINGS AND CONCLUSIONS

This study has provided an opportunity to communicate with a cross section of Ellensburg, Washington, businessmen. An analysis of responses to the survey instrument, a review of related studies provided the basis for the following conclusions:

1. The results of the questionnaire reveal that most of the office jobs available in Ellensburg, Washington, are in small business offices.
2. Typewriting is definitely the most important skill to be developed. The use of manual and electric typewriters are almost equally divided in Ellensburg.
3. There appears to be little need for special training on automatic typewriters at the high school level.
4. Although elite typewriters outnumber the pica typewriter, there is still a significant number

of pica machines to warrant continued training on both the pica and elite machines.

5. Dictating and transcribing machines are used in the Ellensburg, Washington, area rather extensively. The Dictaphone and Stenorette are the most widely used machines.
6. Photocopying machines are used widely in the Ellensburg, Washington, businesses.
7. The 10-key adding-listing machine, the full keyboard adding-listing machine, and the calculators are predominately electric.
8. Typewriting is the most important office machine on which to receive training in high school.
9. The majority of businessmen feel they have no problem in hiring competent help.
10. Businessmen in Ellensburg, Washington, feel that there is a need for prior experience before hiring employees to operate office machines.
11. Businessmen in Ellensburg, Washington, feel that there is a need for training on office machines before employment.
12. Businessmen in Ellensburg, Washington, feel that there is a need for specialized office machine training at the high school level.

III. RECOMMENDATIONS

After a careful study of the findings of this survey, an analysis of the opinions expressed in the review of current literature, and a careful study of the existing curriculum offerings at Ellensburg High School, Ellensburg, Washington, the following recommendations are made:

1. Training on office machines should definitely be a part of the business education program.
2. Training on various types of calculators, the 10-key adding-listing machine, and the full keyboard adding-listing machines are necessary. This can be accomplished best through units of machine instruction in the existing business machine class. Where possible, the student should be offered training on the particular makes of machines he is most likely to encounter in the Ellensburg, Washington, area.
3. Instruction in the advanced typewriting courses should be provided on both the electric and manual machine as well as experience on both the pica and elite typewriters.

4. Field trips and demonstrations should be arranged so that the student has an opportunity to become familiar with special and automatic typewriters, various photocopying machines, the most frequently used miscellaneous machines, and data processing equipment.
5. Adequate training on dictating and transcribing machines is vital.
6. Students should be taught that the operation of office machines requires a high degree of accuracy.
7. The Ellensburg Senior High School should provide a separate course in business English and business arithmetic.
8. With the exception of the typewriter, the use of rental equipment should be investigated. The use of rental equipment would eliminate the school being "stuck" with obsolete equipment.
9. When buying or renting any new office machines, consideration should be given to the makes and kinds of machines used by Ellensburg, Washington, business firms.
10. Opportunity needs to be provided for actual experience in the use of office machines. This

can be accomplished through a cooperative work-experience program.

11. A local advisory committee made up of Ellensburg businessmen and business educators should be established. Advisory committees lead to good working relations between the business community and the business education department of a high school. This would enable the teacher to better train his students for future office employment in the local business community.

12. There is a need for further study in Ellensburg, Washington, to determine: (1) the kinds of office positions available in the local community for high school graduates, (2) the salaries paid beginning office workers, and (3) reasons for dismissal of beginning office employees.

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APPENDIX A

COVER LETTER

Route 4, Box 262
Ellensburg, Washington
March 19, 1968

I am working toward a Master's Degree at Central Washington State College. To satisfy the thesis requirement for this degree, I am conducting a survey to determine the status of office equipment and the necessary training for beginning office employment in the Ellensburg area.

In an effort to develop a vocational education program that will fit the needs of the high school graduates who will be employed in the Ellensburg area, your ideas and suggestions are needed to determine the necessary in-school training for the youth in Ellensburg. For example, effective instruction on office machines can only be given if the instructors are aware of the machines used by local businesses and the time spent on machine operation.

The information you provide will be kept in strict confidence. Data will be grouped and no reference will be made to an individual business.

A prompt reply to the enclosed survey form will be sincerely appreciated. A stamped, self-addressed envelope is enclosed for your convenience.

Sincerely yours,

Ruth Bopp

Enclosures

APPENDIX B

QUESTIONNAIRE

A SURVEY TO DETERMINE THE NUMBER AND TYPES OF OFFICE MACHINES USED IN THE ELLENSBURG, WASHINGTON, AREA AND SOME OF THE IMPLICATIONS FOR THE TEACHING OF OFFICE MACHINES

Number of Office Employees: Full Time ___ Part Time ___

1. Please indicate below, the quantity and types of machines you have in your office(s).

	TYPEWRITERS		TYPE STYLE	
	Electric	Manual	Elite (Small type)	Pica (Large type)
Executive				
Facit				
IBM				
Olympia				
Remington				
Royal				
Selectric				
Smith Corona				
Underwood				
Other				

AUTOMATIC OR SPECIAL TYPEWRITERS

Autotypist	
Friden Flexowriter	
Friden Justowriter	
Varityper	
Magnetic Tape	
Other	

DICTATING & TRANSCRIPTION MACHINES

Audograph	
Dictaphone	
Ediphone	
IBM Executary	
Norelco	
Soundscriber	
Voicewriter	
Webcor	
Other	

STENCIL DUPLICATORS

	Electric	Manual
A. B. Dick (Mimeograph)	_____	_____
Gestetner	_____	_____
Other	_____	_____

FLUID DUPLICATORS

A. B. Dick (Azograph)	_____	_____
Copy-Right	_____	_____
Ditto	_____	_____
Hermes	_____	_____
Standard	_____	_____
Other	_____	_____

OFFSET DUPLICATORS

A. B. Dick	_____
Multigraph	_____
Other	_____

PHOTOCOPYING MACHINES

A. B. Dick	_____
Apeco	_____
Bruning	_____
Marchant	_____
Ozlide	_____
Thermofax (3M)	_____
Verifax	_____
Zerox	_____

MISCELLANEOUS EQUIPMENT

Addressing Machines	_____
Folding Machines	_____
Computers	_____
Collators	_____
Microfilm Equipment	_____
Postage Machines	_____
Check Writers	_____
Letter Openers (automatic)	_____

FULL KEYBOARD ADDING-LISTING MACHINE

	Electric	Manual
Burroughs		
Monroe		
National Cash Register		
Olivetti-Underwood		
Remington		
Victor		

10-KEY ADDING-LISTING MACHINE

Burroughs		
Facit-Odhner		
Friden		
Marchant		
Monroe		
Olivetti-Underwood		
Remington Rand		
Victor Comptometer		

ROTARY CALCULATORS

Facit		
Friden		
Marchant		
Monroe		
Other		

KEY-DRIVEN CALCULATORS

Burroughs		
Comptometer		
Other		

PRINTING CALCULATOR

Marchant		
Monroe		
Olivetti-Underwood		
Remington Rand		
Other		

AUTOMATED EQUIPMENT

	IBM	Remington Rand	Other
Accounting Machine			
Interpreter			
Key Punch			
Reproducer			
Sorter			
Summary Punch			
Verifier			
Other			

2. How many people in your employ use the following machines? How many are males? How many are females?

	Females	Males
Adding-Calculators		
Billing-Bookkeeping		
Computers		
Data Processing		
Dictating-Transcribing		
Duplicators		
Photocopying		
Typewriters		

3. What is your principal source of employees who operate office equipment?

Business College	
Community College	
Four-year College	
High School	
Technical School	
Promotions within your firm	

4. Do you REQUIRE that your operators have machine training PRIOR to employment? (Circle your answers)

	Training		Experience	
Adding-Calculators	yes	no	yes	no
Billing-Bookkeeping	yes	no	yes	no
Computers	yes	no	yes	no
Data Processing Equipment	yes	no	yes	no
Dictating-Transcribing	yes	no	yes	no
Duplicating	yes	no	yes	no
Photocopying	yes	no	yes	no
Typewriters	yes	no	yes	no

5. In the next year do you expect to increase the number of people who use these machines in your firm? (Circle one)

Adding-Calculators	increase	decrease	same
Billing-Bookkeeping	increase	decrease	same
Computers	increase	decrease	same
Data Processing Equipment	increase	decrease	same
Dictating-Transcribing	increase	decrease	same
Duplicating	increase	decrease	same
Photocopying	increase	decrease	same
Typewriters	increase	decrease	same

6. Do you have machines for which you give on-the-job training? Yes ___ No ___

If Yes: Which Machines? _____
_____
_____

7. Do you have a problem finding competent people to operate your office equipment? Yes ___ No ___

8. Where do you think specialized training on office equipment should be provided?

Business College _____
Community College _____
Four-Year College _____
High School _____
Technical School _____
On-the-Job _____

9. What business courses offered in high school would be most helpful for students beginning in an office position? Please rank the five most important in 1-2-3-4-5 order. 1 is highest.

Bookkeeping	_____	General Business	_____
Business Arithmetic	_____	Office Machines	_____
Business English	_____	Office Practice	_____
Distributive Education	_____	Shorthand	_____
Filing	_____	Typewriting	_____
Other	_____		

FIRM NAME _____

Do you want a copy of the Tabulated Survey Results?
Yes ___ No ___

APPENDIX C

FOLLOW-UP LETTER

Route 4, Box 262
Ellensburg, Washington
April 10, 1968

Will you please take ten minutes to help me. About two weeks ago, I sent to you an office machine's survey and as yet have not received a reply from you. The purpose of this survey is to determine the status of office equipment and the necessary training for beginning office employment in the Ellensburg area.

In an effort to develop a vocational education program that will fit the needs of the high school graduates who will be employed in the Ellensburg area, your ideas and suggestions are needed to determine the necessary in-school training for the youth in Ellensburg. For example, effective instruction on office machines can only be given if the instructors are aware of the machines used by local businesses and the time spent on machine operation.

The information you provide will be kept in strict confidence. Data will be grouped and no reference will be made to an individual business.

To assure a reasonable degree of validity, your cooperation is necessary. Your completing and returning the enclosed survey form in the self-addressed, stamped envelope promptly will be sincerely appreciated.

Sincerely yours,

Ruth Bopp

Enclosures

APPENDIX D

OFFICE MACHINE INVENTORY

OFFICE MACHINE INVENTORY of Business Education Department
Ellensburg Senior High School, Ellensburg, Washington,
July, 1968

Makes	Typewriters Elec.	Typewriters Manual	10-Key Adding Listing Electric	Full Keyboard Adding Elec.	Full Keyboard Adding Manual	Calculators Electric	Duplicators Elec.	Duplicators Manual	Dictating and Transcribing
Olympia		34							
IBM Standard	14								
IBM Selectric	10								
Underwood	1								
Marchant			1						
Remington Rand			2						
Olivetti-Underwood			6			2			
Monroe			2	1		2			
Allen Wales					1				
A. B. Dick, Fluid							1	1	
A. B. Dick, Stencil							1		
Stenorette									2
IBM Executary									3
Totals	25	34	11	1	1	4	2	1	5

MISCELLANEOUS EQUIPMENT

3 Mimeoscopes
25 Student Listening Stations
51 Headsets
2 Transmitters
2 Line-a-Time, Remington
6 Tape Recorders
2 Record Players
2 Overhead Projectors
2 Paper Cutters

APPENDIX E

UNEDITED COMMENTS

UNEDITED COMMENTS FROM ELLENSBURG

WASHINGTON BUSINESSMEN

1. High school should be tougher.

2. Telephone technique needs to be taught.

3. Principal source of employees who operate machines is a combination of development within firm and hiring of people in community who have a well-established reputation for a high degree of skill.

4. Our company has an IBM computer center for all of our retail outlets in our Seattle office.

5. There is a definite lack of job training for those students who cannot make college in our high schools today.

6. No turnover in the last 12 years.

7. Handwriting and spelling should be taught in high school.

8. Spelling and penmanship should have been learned before high school, but it is surprising how many applicants we find who can do neither well.

9. Teach them in first grade to read, write, and do arithmetic. All else follows.

10. We have had a half a dozen high school students come in and apply for a job which should have been kicked (and would have) out of any business office in any town. Some of these smart, loud-mouth kids have parents in business in our "fair community." One starts wondering about our businessmen.

11. I do not subscribe to high schools having vocational training. I feel this should be left to the 21 community colleges in Washington state. Let the high school concentrate on teaching our youth how to read and write and spell. Leave job training to others. You know, of course, that community colleges are "open door" institutions.