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A STUDY TO COMPARE ENTRY LEVEL WORD PROCESSING ENABLING SKILLS TO FIRST YEAR WORK SKILLS

BY

JEANNETTE M. MARCHAND

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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Supervisor

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Date September 25, 1985

DEDICATION

In memory of Janet Miller Runcie

February 18, 1952 - September 20, 1984

ABSTRACT

The primary purpose of this study was to compare the entry level word processing enabling skills of graduates from four institutions where word processing courses are offered to the adult learner in Edmonton, Alberta at the non-university post secondary education level with the competencies these individuals were using within one year of their employment.

The lists of graduates received from the personnel involved in administering or teaching word processing courses at the four institutions comprised a total of 419 graduates. From this population of 419, each graduate on the list was telephoned to see if she met the criteria of the study and if so, was asked if she would be willing to take part in the study. From this procedure a research population of 101 was obtained.

A questionnaire containing 83 statements was constructed. This instrument contained 23 statements requesting demographic and classification data, and 60 statements requesting interval data in identifying frequency of use in a work situation and adequacy of preparation of the enabling skills of word processing operators acquired through formal education. Prior to being used in the major investigation, the questionnaire was subjected to a pilot study and revised. Questionnaires were mailed to the 101 research participants, and 82 completed questionnaires were

returned. All data were analyzed and placed in tabular form.

The demographic data that were collected may have implications when given serious consideration by curriculum planners in designing word processing courses.

The research data revealed that out of the 60 enabling skills that were identified, 28 were not being performed either frequently or very frequently by those involved in the study. Also, those involved in the study indicated that they had not received either adequate or very adequate training on 16 of the 60 enabling skills that were identified. From the research findings, conclusions, observations, and recommendations were made.

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The Problem

Introduction

The processing of words can be traced back to the recording of messages on clay tablets in the eighth century B.C.. The mechanical recording of words continued to evolve in 1868 in the United States when Scholes and Glidden invented the manual typewriter; however, it was not until 1873 when the first commercial typewriter, the Remington No. 1, was marketed that businesses began to switch from longhand to typewriters because typewriters were faster and produced text that was more appealing.

The first stage in the evolution from typewriting to word processing came when paper-tape powered typewriters, utilizing pneumatic paper rolls similar to those used on player pianos, were introduced in the 1930's in the United States. These machines used a standard typewriter keyboard to punch the appropriate letter on a paper tape. A typist could key in a document once and replay the tape over and over again inserting variable information such as names and addresses because the machine program enabled the operator to stop at any location.

These paper tape powered typewriters produced much nicer looking letters than preprinted forms, and were considerably faster; however, these typewriters had some serious limitations. Among these limitations was that the paper tape worked until a mistake was made. This required

complex adjustments in the operation of the typewriter as well as adjustments in the splicing of the tape to correct the error. Also, the variable information that was placed on the tape, like names and addresses, always had to be in the same location, and that information had to be roughly the same length; whole words or sentences could not be added or deleted; and once the paper tape was ripped, damaged, or torn, the splicing procedure had to be repeated.

In the 1960's International Business Machines (IBM) introduced the Selectric typewriter which was developed originally as a computer print-out terminal. This typewriter was radically different from the standard electric typewriter which was available on the commercial market. The main feature of this typewriter was its element that was spherical and looked like a golfball with the type characters embossed on its surface. Unlike a standard typewriter in which the paper carriage moves each time a key is struck, the Selectric had no moving carriage; as each key was struck the element moved across the surface of the paper. The element rotated to present the proper character of the word being typed. With the elimination of the heavy moving carriage vastly improved typing speeds were obtained.

Four years later, 1964, IBM added a magnetic tape-editing device to the Selectric Typewriter which provided the machine with memory capability. With this capability all the functions of the system could be imprinted permanently on internal circuit boards. By adding a

magnetic type editing device, the Selectric typewriter was converted into a Magnetic Tape Selectric Typewriter (MT/ST) which was basically an electric typewriter wired to a tape recorder.

Unlike the paper tape powered typewriter, the MT/ST used magnetic tape rather than paper tape to store keystrokes. This made it possible for the operator to erase or add whole sentences, or even insert information in the middle of a paragraph or a letter without making cumbersome adjustments. The magnetic tapes used with this system were referred to as "mag tapes" which were housed in cartridges. The cartridge made the tape much more compact than the paper tapes so that longer documents could be recorded and stored. Also, there were no more concerns about accidental tears, the tapes could be reused, and they were easily inserted into the typewriter.

As a means of making the machine easier to operate and more practical for general office use, IBM began to substitute magnetic cards for the encapsulated tape and, in 1969, introduced another model which it called the Magnetic Card Selectric Typewriter (MC/ST). This machine was followed by the Mag Card II, which was followed by the Mag Card/A.

Nevertheless, the MT/ST and other hard-wired systems that followed were far from perfect. These hard-wired systems relied heavily on circuit boards; they had very limited machine intelligence in that they could perform only a limited number of tasks which were done at a slow pace.

In the remaining years of the sixties a number of improvements to the MT/ST concept were made. Magnetic cards were introduced which eliminated most logging by storing each page of text on its own card. At the time of this study, the MT/ST is no longer being manufactured, but there are many still in use throughout the world. However, with the introduction of microprocessors--or very small computers--into the system of the word processor the final break with the power typewriters was made and the word processor was born. The microprocessor greatly expanded electronic office equipment's capacity for work; these machines became programmable, and other programs were available to the user. This merging of the microprocessor and the Selectric typewriter produced the word processor of which components consisted of a keyboard/monitor, central processing unit, internal storage devices, and a printer.

IBM introduced a different variation of its MT/ST in 1971 in the form of the Communicating Mag Card Selectric typewriter, or the CMC, which was originally used as an input device for a computer terminal. At this terminal communications were entered or received in either a word processing or a data processing system. The CMC was sold primarily as a communicating device between word processors by transmitting typewritten copy over telephone lines, either locally or long distance to another CMC. The CMC also had the unique capability of communicating with any Western Union TWX or Telex terminal anywhere in the world as well as with other makes of communicating typewriters.

By this time a number of other office machine equipment manufacturers started to follow IBM's lead, and began to use the IBM Selectric typewriter as their basic unit and to incorporate it with their own distinctive editing and memory devices. For example, in comparison to the Selectric-based machine was the Olivetti's S-14 "Mastermind." Xerox Corporation, in 1974, introduced its stand-alone automated typing system which had a playback speed almost twice that of the IBM MT/ST or the MC/ST. This system featured a unique, elecronically driven print wheel that contained one type character on each spoke of the wheel which became known as the "daisy wheel" because the spokes looked like the petals of a daisy.

Newer entries to the word processing market were more expensive and more sophisticated. For example, the cathode ray tube (CRT) system displays text on an electronic video screen as it is being typed. A CRT machine is, in fact, a microcomputer word processing system, which is built around a microprocessor. Because of the microprocessor, the CRT system tends to have greater memory capabilities than the first-generation typewriter-based systems. Consequently, text can be more readily changed and edited. The CRT microcomputer systems also have the potential for communicating with other computer word processing systems as well as with communicating typewriters.

As early as 1964, IBM was the first to use the term "word processing" to describe all automated equipment that assisted in the preparation of the printed word (Rada,

1980). Currently, this definition includes everything from typewriters that possess memory capabilities which are used as stand-alone systems, to shared-logic systems in which a number of peripheral devices make use of a central computer system to process words and data.

A word processing system can be the configuration of a basic stand-alone system, a shared-logic system, or a distributed system. Stand-alone word processing systems contain a number of basic components that include: a terminal, a processing unit, internal storage devices, and a printer, which together allow the system to function as a single entity.

Shared-logic word processing systems possess a central processing unit (CPU) in which all intelligence is contained. The individual components comprising each word processing system are able to operate at a considerable physical distance from the main processing unit, but are unable to operate or function without it. Each unit functions only by sharing the logic or intelligence contained in the central processing unit. If the communication link between each individual word processing station and the CPU is severed, the station ceases to function.

A distributed system allows stand-alone and/or shared-logic systems to share resources between multiple agencies to form one large system. In a distributed system each individual system is capable of operating independently of

the other. This allows for the intelligence to be distributed throughout the overall system. In addition, this type of system allows for the component systems to be physically located virtually in any part of the world.

The introduction of the integrated/multifunction system will encourage the move away from the distributed system by its users. The term multifunction system came into use when companies began utilizing their existing computer systems for word processing and other business applications through the addition of software or incremental capabilities. This type of system not only performs traditional data processing functions, but also serves as a word processor. Hence, the term multifunction. The term integrated system refers to the capability of the multifunction system to interface with a central computer system or other multifunction system, allowing for the exchange of information between these systems.

Because of the newness of word processing equipment and technology, only recently have the manufacturers of this equipment accepted the responsibilities to train those who would be using the equipment to process information. Current economic conditions have forced these vendors to reconsider their role as trainers. As a consequence, in Alberta, those responsible for education in non-university post-secondary education institutions who give leadership for the preparation of personnel for the business world only recently began to provide a curriculum that would prepare individuals to operate word processing equipment. Graduates

from either a manufacturer's training course or from an adult education course offered by these institutions must receive basic preparation in order to understand and operate word processing equipment competently with some degree of confidence.

To determine the type of entry level competencies needed by word processing personnel in the various economic sectors of a large Canadian city, a search was made of the Educational Research Information Center (ERIC) data base. This search was then expanded to include the indices that are used to report the findings of educational research. The result of this search was that no research had been completed in Canada that investigated the entry level competencies needed by word processing personnel. However, there were a number of studies that were completed in the United States whose findings were reported.

Unfortunately, the findings of those investigations that were reported did not compare the entry level word processing competencies of graduates from vendor's programs or from educational programs with those competencies that were required by these individuals after they were employed for a one year period of time.

Problem Statement

The major purpose of this study was to compare the entry level word processing enabling skills of graduates from four institutions where word processing courses are offered to the adult learner in Alberta at the non-

university post secondary education level with the competencies these individuals were using within one year of their employment.

Supporting Objectives

In addition to the major purpose of this study, this study had the following supporting objectives:

1. To identify significant word processing competencies for business, industry, or government that may not be an integral part of either the course of study or the curriculum offered at preparing institutions.

2. To determine the frequency with which entry level word processing competencies were used by first year word processing personnel.

3. To identify additional word processing competencies that members of the research sample acquired at the work place.

4. To determine if those who provide data for the study saw a need for continuous updating of their competency base in order to remain proficient as a word processing operator.

Need for the Study

Professional management and business education journals have documented many instances where dramatic changes have occurred in the office work environment that reflect the office of the future concept. The position of the authors of these articles is that the goal is not to fully automate the office, but rather to increase the rapidity, accuracy, and convenience of all forms of communications through the mechanization of most routine and repetitive office tasks such as the processing of words. These changes have just recently been reflected to some degree in the business education curricula that are made available to adults in non-university post secondary education institutions of this province.

One of the primary responsibilities of business education programs at this level of education is to provide adults with the necessary psychomotor skills for job entry into office occupations. Closely related to this responsibility is the development of competencies in the cognitive and affective domains of learning. Preliminary research of the Educational Research Information Center (ERIC) data base indicated that little research had been conducted in Canada that investigated entry level enabling skills for word processing personnel. This lack of empirical data helped to establish a need for this study. The results of this investigation when completed should identify these enabling skills and fulfill that need.

The results of the research completed by Nanassy, Malsbary, and Tonne (1977) helped to identify a need for the current study when these researchers stressed the fact that because of the rapidity with which the functions in the business world change, research is constantly needed for determining not only how business education teachers teach, but what they should teach. The results of this study confirmed this need by identifying the enabling skills required by word processing personnel when a comparison was made of pre-occupational preparation with enabling skills that were acquired within one year of employment.

Delaney (1977) in a paper delivered at the Sixth Conference of the Canadian Association of Business Education Teachers stressed the need to adapt business education programs and courses to properly serve the business community; the need for new office equipment to gradually find its way into the training classroom; and the need to better prepare graduates to meet demands for the computerized office world. The results of this study met the last need by providing data that can be used by curriculum designers and developers to prepare educational programs that will meet the needs of the business world and produce graduates for an office world that is computerized.

Earlier, Pura (1970) in her research recommended that a study be conducted that would identify current office practices that would influence the decisions of curriculum builders to design curricula that are relevant and current. On this issue it was the opinion of this researcher that

educators should make provision to include in their curriculum the kinds of experiences which employees actually encounter when they are first employed.

Significance of the Study

A major significance of the study was that the results of this research could be used by curriculum planners and curriculum designers responsible for preparing business education curricula in the non-university post secondary education sector. The results of this study could also provide these individuals with additional scope and sequence needed to design or assemble a course of study for word processing personnel at the adult education level. Instructors responsible for teaching competencies based education courses for word processing personnel will find significance in this study because they will be able to use its results to redesign and revise their courses.

Those instructors responsible for teaching word processing in the community colleges and technical institutes in other cities of Alberta or Canada will find significance in the results of this study, and could use these results to identify content, scope, and sequence for the courses they teach.

The results of this study are significant because these results add to the findings of other researchers and institutions who have investigated entry level competencies for word processing personnel.

Employment and Immigration Canada, Occupational and

Career Analysis Development Branch, may find significance in the results of this study should it consider analyzing the occupation of word processing operators when that branch elects to prepare an occupational analysis for this occupation. That analysis could include an exhaustive list of tasks for this occupation which could be built on the competencies (enabling skills) resulting from this study. Another use that this Branch may make of the results of this study is as a base document for the development of an instrument for interprovincial use to determine if the identified competencies are common throughout the country for this evolving occupation.

Population

The population of the study was limited to those who graduated between September, 1983 and September, 1984 from formal word processing training offered by the four non-university post-secondary education institutions that are located in the City of Edmonton who have responsibility for preparing word processing personnel at the adult level.

To identify this population a list of graduates from these four courses was obtained from personnel involved in the teaching or administering of these courses at each of the four institutions. This in essence helped to stratify the population by institution.

Selection of Participants

The second phase in identifying the sample from the

population was the establishment of criteria that would be used to select members of the research sample.

The following criteria were established by the researcher to identify individuals who comprised the sample for the study:

1. Had successfully completed at least 40 hours, and not more than 120 hours, of formal word processing training including both word processing concept theory and hands-on experience.

2. Employed as either a word processing operator or designated as an operator by the employing agency.

3. Employed for a period of less than, but not more than one year after successfully completing formal word processing training.

When the lists of graduates from the four institutions were received, they comprised a total of 419 graduates. Each of the 419 graduates was telephoned to determine if they met the selection criteria, and if they did, they were asked if they would be willing to take part in the study. The purpose of this study was also explained. From this procedure a research population of 101 was obtained.

Table 1

Percent of Graduates Who Formed Research Population

Institution	Total Number of Graduates	Percent of Population
Alberta College	29	7
Alberta Vocational Centre	127	30
Grant MacEwan Community College	198	47
Northern Alberta Institute of Technology	65	16
Totals	419	100

Limitations of the Study

The following limitations were established for this investigation.

The results of this study were limited to those who comprised the research population, which included the graduates of the four word processing courses offered in both the public and private non-university post-secondary education institutions located in the City of Edmonton.

The study was limited to those graduates from these institutions who had at least 40 hours, and not more than 120 hours of formal word processing training which included both a theory and a hands-on component.

A major limitation that was imposed on the research was the list of entry level word processing competencies that were part of the research instrument. The limitation of

this instrument was that the person participating in the research may not recall some of the entry level word processing competencies that were acquired during the training period, or they may not recall those competencies that were acquired within one year after being employed.

The study was also limited to those who graduated between September, 1983 and September, 1984 and who were employed up to one year and not more than one year following graduation. As a consequence, the results of this study cannot be extrapolated with graduates for other years from the four participating institutions or from other training programs such as those offered by private vocational schools registered with Alberta Advanced Education or by manufacturers of word processing equipment.

The results of this research were limited by the accuracy of the responses that were given by participants of the study in filling out the questionnaire distributed by the researcher.

The type of businesses where graduates were employed and how they functioned in that work environment imposed an additional limitation on the research.

Research Assumptions

The following assumptions were made for this particular study:

1. All courses that were offered by the four participating institutions were similar

in content.

2. The graduates who were employed continued to build on the competency base they acquired during their period of preparation.

3. Those who participated in the study would make valid and accurate responses to statements on the questionnaire.

4. The preemployment training for graduates from the four participating institutions was appropriate for their entry into the business community in order for them to do word processing.

Instrument Design

A review of literature on instrument design was made to identify the most appropriate type of instrument to be used to collect data for this study. From this literature review it was decided by the researcher that a questionnaire would be designed to collect data for analysis. How the instrument was used in the study is fully described in the chapter on "Methodology." A questionnaire was selected because it had the following advantages: a questionnaire can be readily reproduced; it can be easily mailed to members of the research population; the data that are collected with this instrument are considered to be objective; data from items are relatively easy to tabulate,

especially if there are check-off responses; and respondents can remain anonymous.

Although the questionnaire has its advantages it is not without its disadvantages. Among its disadvantages are the following: a possible low rate of return; items on the questionnaire can be subject to misinterpretation by the respondents; the respondents may omit or disregard any item they choose without giving an explanation; the respondents may have a lack of incentive to report openly beliefs, feelings, motivations, and plans; some items may force the respondent to select responses that are not an actual choice; the amount of information that can be gathered is limited by the respondent's available time and interest span; and respondents who do return their questionnaires may not provide a representative sample of the total population.

Other purposes of this literature review were for the researcher: to learn how a research instrument is organized; to learn how to phrase a statement so that it expresses the intent of what the researcher wants to say; to learn how to write statements using the correct research terminology to minimize ambiguity; and to learn to sequence questions on a research instrument.

The initial phase of designing the research instrument was to identify a Panel of Experts who would be invited to a DACUM (an acronym for Developing A CurriculUM), workshop to identify the general areas of competence, and the enabling skills for the occupation of word processing operator. The

procedure of conducting the DACUM workshop that was followed was that advocated and prescribed by the Post-Secondary Department, Ministry of Education, Province of British Columbia in its publications which describe the DACUM process from theory to classroom implementation. Raw data collected at this workshop can be found in Appendix III, page 188. These data were used to organize a DACUM chart for the psychomotor skills used by a word processing operator.

Because of time constraints imposed on the research it was impossible to follow the prescribed procedure for validating a DACUM chart, which is to mail the initial draft of the chart to members of the workshop and to selected members of the occupation for their review or evaluation. A slightly different procedure was used to validate the DACUM chart that resulted from the workshop. The procedure was to cross reference. The general areas of competencies and the enabling skills that made up the bands of the chart were cross referenced with the competencies identified by Manpower Temporary Services (1983) who provide a function chart of word processing proficiency levels, with the competencies that Patterson and Schlender (1982) outline in their research. These three sources were synthesized and used to form the instrument for this study.

The draft instrument was reviewed and discussed with a specialist in instrument design from the Department of Educational Psychology, Faculty of Education, The University of Alberta. From that review it was recommended that the

Pilot Study population be retained at five individuals. Modifications were suggested in the method of conducting the Pilot Study. It was recommended that instead of placing the research instrument in the hands of Pilot Study participants as originally planned, that selected questions from the questionnaire be asked. This procedure would help to establish face validity of the instrument. It was highly recommended that the title for the research instrument that was used in the study be classified as a questionnaire, and that the research instrument be mailed to no less than 100 participants. Subsequent to this review, the research questionnaire was revised before it was used in the Pilot Study.

In its final form the questionnaire used in the investigation was a two part instrument. Part A was labelled 'demographic information' and asked twenty-one questions specific to the participant's educational and work history. The latter included a number of questions on the preparation participants had in word processing. Part B was a checklist of word processing competencies that were taken from the three sources previously identified. These competencies included the general areas of competence and the enabling skills. This checklist was a detailed listing of word processing competencies that were described in universal terms that were non-machine specific for the occupation of word processing operator.

Part B of the instrument included two checklists, one

for the 'WORK SCALE' and the other for the 'PREPARATION SCALE.' A five-point Likert scale was used with both the WORK and the PREPARATION scales. The WORK SCALE included these choices: very seldom, seldom, some, frequently, and very frequently. The choices for the PREPARATION SCALE were: very inadequate, inadequate, neither inadequate or adequate, adequate, and very adequate.

This research instrument was used in the Pilot Study.

The Pilot Study

For the Pilot Study phase of the investigation the researcher selected five individuals who are employed as word processing operators or designated as such by their employer. The individuals selected to participate in this phase of the study were employed in the Faculty of Education at The University of Alberta. The reason for selecting these individuals to participate in the Pilot Study was that they met all the criteria that were established for selecting research participants, and they were readily available to the researcher. Pilot Study participants were not involved in the major phase of the research.

During this phase of the research each participant involved was interviewed and observed by the researcher using selected questions from the questionnaire. Each participant then received a copy of the questionnaire to complete. The information gathered on the completed questionnaires was then compared with responses gathered during the interview and observation phase of the Pilot

Study to obtain face validity between what the participants stated they did, and what they actually did.

The Pilot Study had the following purposes:

1. To determine if the questionnaire needed revision or modification.

2. To determine the average amount of time it took for the research instrument to be completed.

Following the Pilot Study the results from this portion of the research were used to modify the research instrument before it was used in the major investigation.

Operational Definitions

These definitions were formulated by a researcher for the benefit of the reader so that a common understanding could be established between these two parties for the terms used throughout this report. The following operational definitions were selected and were applied to this study.

Adult Education. Adult education appears under many labels--"manpower development", "staff development", "inservice education", "continuing education", "lifelong education", and numerous others. According to Knowles (1980) the term encompasses practically all experiences of mature men and women by which they acquire new knowledge, understanding, skills, attitudes, interests, or values. (p. 25) In its more technical meaning, "adult education"

describe "a set of organized activities carried on by a wide variety of institutions for the accomplishment of specific educational objectives" (p. 25).

Allen Tough (1979) describes the way in which adults learn in the form of learning projects which he describes as:

> a highly deliberate effort to gain certain knowledge and skill (or to change in some other way). Some learning projects are efforts to gain new knowledge, insight, or understanding. Others are attempts to improve one's skill or performance, or to change one's attitudes or emotional reactions. Others involve efforts to change one's overt behavior or to break a habit. (p. 1)

UNESCO (1980) in its Occasional Paper 34, Recommendation on the Development of Adult Education, states:

> the term "adult education" denotes the entire body of organized educational processes, whatever the content, level and method, whether formal or otherwise, whether they prolong or replace initial education in schools, colleges and universities as well as in apprenticeship, whereby persons regarded as adult by the society to which they belong develop their abilities, enrich their knowledge, improve their technical or professional qualifications or turn them in a new direction and bring about changes in their attitudes or behaviour in the two-fold perspective of full personal development and participation in balanced and independent social, economic and cultural development. (p. 2)

For the purpose of this study the UNESCO definition for "adult education" was used for that term.

Competencies. There are competencies to be learned in connection with any area of a trade or an occupation. According to Taba (1962) the objectives pertaining to competencies "range from the basic academic skills, such as

reading, writing, and arithmetic, to skills in democratic citizenship and group living" (p. 225).

Tanner and Tanner (1980) outline the objectives of education in relation to competency attainment in this way:

> developing in pupils a command of the fundamental processes; the ability to purchase and use goods and services wisely; the appreciation of beauty in literature, art, music, and nature; the development of saleable skills; and the ability to think critically -- such expectations may be referred to as educational aims. . . the ability to define problems;to make relevant hypotheses; to select and analyze data pertinent to the solution of problems; and to formulate valid conclusions, solutions, and generalizations. . . may be referred to as behavioral objectives. (p. 156)

Nickse (1981) discusses how the aims and objectives of education or schooling encompass four kinds of competencies outlined as: 1) Basic School Skills, 2) Skills for Specific Subject Areas, 3) Skills Related to Adult Roles, and 4) Generic Learning/Thinking Skills. (p. 55)

However, one enormously important approved practice concerns the application of competencies. According to Tanner and Tanner (1980) "experts in curriculum emphasize that the learner must be given a variety of opportunities to apply his or her skills. There is no mastery without intelligent application" (p. 640).

In defining competency-based education as it applies to skill acquisition Corcoran (1976) states:

> The competency-based approach begins with the definition of the knowledge, skills, and attitudes required for successful performance in a particular role. Demonstrated competency under realistic conditions becomes the basis for awarding

credentials. (pp. 4-5)

Alverno College (1976) expands this definition in their attempt to describe a competent student:

> A competent student demonstrates certain abilities; she is also committed to using them. Not only can she analyze or communicate effectively, she habitually does so. (p. 4)

Douglas and others (1965) point out that what lies behind all the practice and the fitting together of many previously learned complex knowledges and understandings is:

> what appears to be a simple skill that can be performed almost automatically. It is quite true that once a high skill is attained in something, the act can be performed automatically without any "interference" from the higher brain centers. (p. 63)

There are many other concerns educators associate with competency acquisition. Bloom (1956) addresses the problem of transferability:

> Although information or knowledge is recognized as an important outcome of education, very few teachers would be satisfied to regard this as the primary or the sole outcome of instruction. What is needed is some evidence that the students can do something with their knowledge, that is, that they can apply the information to new situations and problems. It is also expected that students will acquire generalized techniques for dealing with new problems and new materials. . . .The most general operational definition of these abilities and skills is that the individual can find appropriate information and techniques in his previous experience to bring to bear on new problems and situations. (p. 38)

Waks (1977) addresses the rapidly changing and emerging concern of technological advancement:

> Technological developments erode skill requirements. Instead of acquiring an

> occupation through skill development in adolescent and early adult years and retaining it throughout life, we may enter an age of constant work re-adjustment. It will be the age of throwaway knowledge. . . knowledge and skills will be obsolete before they are acquired. (pp. 24-26)

For the purpose of this study the term "competency" referred to as "skills for specific subject areas" (Nickse, 1981, p. 55), and the definition given by Douglas and others (1965) will apply. Both the terms 'competency' and 'enabling skill' will be used interchangeably. A definition for enabling skill can be found in Chapter III on "Methodology" under the heading of DACUM (Developing A CurriculUM).

Graduate. For the purpose of this study a 'graduate' was defined according to Sykes (1978) in The Concise Oxford Dictionary of Current English as "one who has completed a school course." (p. 464)

Word Processing. In their research for the development of a curriculum for a word processing certificate, Williamson and Samuels (1982) describe the term 'word processing' as "a system of processing communications using standardized procedures, modern equipment and specialized employee responsibilities to produce quality communications at rapid speeds and low costs" (p. 6).

In compiling a glossary of word processing terms Dartnell (1977) defines word processing as "an automated system designed to cut the cost and time of the originate/dictate, check/type/retype, sign/mail/distribute

cycle of producing business documents" (p. 53).

The definition for word processing given by Williamson and Samuels (1982) was accepted for this study.

Word Processing Operator. There are as many definitions given for the term 'word processing operator' as there are writers who have written on the topic of word processing.

An analysis of these definitions show that what is presented in most cases are actually the responsibilities or duties that a word processing operator performs. To identify the responsibilities that a word processing operator performs, a review was made of the Canadian Classification and Dictionary of Occupations Guide (1971). This reference is normally used by Canada Manpower personnel to help them identify and codify work that is ordinarily performed by individuals in a particular job. The New Canadian Classification and Dictionary of Occupations Guide (Fourth Edition) (1982) gives the duties and responsibilities of a word processing operator as follows:

> Operates video-console typewriter to record and amend data on memory tapes, disks or other recording device:
>
> Reviews data received to ascertain format or changes in data to be made. Places blank or subject tape or disk in memory unit. Pushes keyboard control to display data being typed, or previously typed data. Types data or amendments to data using video-display typewriter. Proofreads displayed data. Operates video console typewriter to make changes on tape or disk. Selects and inserts single-sheet or continuous-feed paper in carriage of typewriter-printer. Activates typewriter-printer to automatically type copy of records data. Types additional data required onto copy using

typewriter-printer. Labels and stores tapes or disks. (p. 82)

For the purpose of this study the term "word processing operator" will be defined according to the responsibilities or duties that a word processing operator performs as presented in the New CCDO Guide definition.

Organization of the Thesis

The first chapter of this study included the problem statement, the major purpose and supporting objectives of the study, the need and the significance of the study, limitations of the study, and operational definitions which were applicable to this research. Also included in the first chapter was a description of the population of the study, and how the research sample was selected from that population; and finally, the pilot study and the instrument were fully described.

The second chapter includes a review of related literature and the findings of related research studies that have either a direct or indirect relationship to the current investigation.

The third chapter describes the methodology that was used to collect data from the 101 participants.

The fourth chapter related the data analysis of the study and the findings derived.

The fifth and final chapter summarizes the study, outlining the summary, findings, conclusions, observations, and recommendations that were generated from the data collected and subsequent data analysis.

Chapter II

Related Literature and Research

Introduction

This chapter is divided into two sections. The first section presents a review of related literature, books, periodicals and journals, and gives a scenario of the present and possible future changes in the office and the implications that these changes will have on word processing curriculum development. The second section of this chapter presents a review of research that has been conducted and reported, and which had implications to the current study.

Related Literature

Within the professional literature there are articles that have appeared in journals, bulletins, periodicals, and in some instances speeches delivered to professional organizations that deal with business education, office automation and word processing. For the purpose of this investigation these are given the generic title of related literature, and those that are related to the research will be reported in this section.

According to Golen and Smeltzer (1984), in the late 1980's many businesses will be using a network system of information processing. The major reasons for this network approach which links all the office-related hardware and peripherals is perceived to be the reduced cost of the equipment, the increased compatibility of different types of

equipment, and the increased productivity at all levels of the business organization. (p. 30) These authors believe that this network will link together the information processing areas of data processing, word processing, optical character recognition, micrographics, reprographics, computer graphics, dictation equipment, telephone, electronic mail, and voice mail. (p. 30)

In a study investigating the integration of word processing with data processing in an educational environment, Patterson and Schlender (1982) found (a) that certain functions once associated with data processing were found to be available with word processing; (b) that other functions showed a relationship between data and word processing; and (c) in the comparing of job classifications, similar duties were found to be performed by word processing and data processing personnel.

From a number of investigations of the implications of new technology for office and business education and training, Disney (1983) reports that business and industry are involved in an increasingly rapid change to new equipment and that the distinctions between office, communications, and computer equipment are disappearing. Disney recommends that as new and more powerful equipment is increasingly introduced into offices, more attention should be paid in education to the understanding of the processes being served by this equipment, so that when the equipment changes, more fundamental competencies associated with information processing and interpretation remain useful,

thus requiring a systems rather than a component approach. (pp. 37-38)

Nord (1979) supports a "systems" approach to office automation in stating that word processing and data processing should share a working relationship in a total information system. (pp. 21-22) Beebe (1981) supports this view by reporting that the purpose of an information course is to make students aware that word processing and data processing should not work in isolation but together for the common good of the organization. (pp. 275-277)

Business teachers who are accustomed to dealing with separate functions that comprise the whole (that is, thinking in terms of office activities) must now, according to Kutie (1982) develop new concepts in office education that enhance the systems approach and move away from outmoded office procedures. (p. 24)

Similarly, in the summaries of six position papers on the office of the future and its implications for change in education, Walters' (1977) outlines the office of the future as an integrated system addressing technological, human factors, indexing, privacy, and economic justification concerns. (p. 75)

Fraser, Unger, and Lewis (1984) reviewed and synthesized technological developments in robotics and office automation in order to identify the potential demand for skills in these technologies in the next three to five years. In their findings there is a section on training implications for vocational education at the secondary and

post secondary levels which discusses the need for word processing training for entry-level personnel and retraining needs for the acquisition of higher-order skills in analysis, comprehension, and logical thinking. These authors indicate that as businesses spend less on office automation training, a prime opportunity exists for vocational education to provide this training now and in the future.

Studies have shown that the most frequent thing that office workers do is to communicate information. (Mintzberg, 1973, p. 13) The methods used in this communication take many different forms. Other kinds of worker activities include gathering information, filing information, organizing information, retrieving information, modifying information, and generating new information.

The number of information workers has been increasing at a rapid rate, and according to Golen and Smeltzer (1984) predictions are that by 1990 about 75% of the labor force in the United States will be engaged in information occupations. (p. 30)

Unlike other commodities, information is an inexhaustible resource. It is not reduced in quantity or quality by repeated use; rather, its value tends to increase with repeated circulation. According to the quantity of information processed, utilizing information technology is increasing so rapidly that a greater percentage of workers at all levels are becoming involved in the handling of computerized input and output of information and other data.

Microprocessor technology in the office and in the factory helps to automate work, which increases productivity. Office automation is a generic term that identifies a variety of equipment that, when linked together, improves communication capabilities and the accuracy, ease, and availability of information.

Keown (1984) outlines that the increased emphasis placed on productivity will include changes in the workplace in the dissemination of information and communication techniques, human relations practices, pay-for-performance practices, performance measurement systems, and where and how the work is to be done. The changing nature of the work is seen in that blue-collar jobs are being replaced by white-collar jobs, and computer technology has changed and will continue to change jobs, especially in the white collar areas. (p. 57) Because a different set of skills are being looked for now than in the past, interviewers and other selection people need to be tuned in to these new skills and to the fact that the work environment is different from that in the past. According to Keown many workers are being displaced today by changes in the workplace, and this will continue for it is not that there are fewer jobs in most cases, but that jobs have changed. The ability to help people acquire new skills through training and education will be highly important throughout the 80's.

The many applications of the microchip are the technical basis for the rapid growth of information and communication technology. This technology expands the

capacity of human intelligence by providing and processing information in quantities that previously were not possible. Computers, the machines that embody this technology, continue to expand in capability and application.

According to Connors (1984) office automation is concerned with 'communications' through the creating of information, the keyboarding of material, the storing and retrieving of information, and the finishing procedures such as checking the information and distributing it, and this concern is not just with communications through transcribing but it is concerned with communications of the total input and output at all levels. (p. 11)

According to Patterson and Schlender (1982) there is a blurring of the historical definitions of a 'computer product,' an 'office product,' and a 'telephone product.' They believe that all three terms are becoming more alike because they are microprocessor-based systems with electronic information as the thread tying the three together. (p. 25) These authors believe that the entire decade of the 1980's represents a pivotal period for most organizations and particularly for educational institutions. (p. 60)

For instance, many of the traditional areas of female employment may be jeopardized by the anticipated trends stemming from technological innovations that may be brought into the office. More specifically, the diffusion of the microchip is likely to have a major effect on the clerical

occupations, which account for about one-third of all female jobs. (The Economic Council of Canada, 1982, p. 88)

While the eventual impact of this technological development is uncertain, it appears likely that the demand for clerical skills will diminish. A recent study concluded that, depending on its diffusion rate and its productivity effect, the chip could result in an unemployment rate of up to 35% for female clerical workers by 1990. (Menzies, 1981) Much of this job loss could well be offset by the increased demand for technical and professional workers; however, according to the study, few of the displaced workers have access to the training opportunities required to fill the new positions. The sober conclusion of the study conducted by the Economic Council of Canada (1982) is that, unless women move away from traditional jobs into demand-oriented occupations, they will likely face severe structural unemployment in the 1990s. (p. 88)

In the past, information processing, including word processing and information storage and retrieval, was typically performed by persons employed in clerical positions. According to Fraser and others, (1984) the automated office of today (and of the future) will not only affect the activities of the clerical staff within organizations, but will also affect the day-to-day activities of managers as more managers will be performing tasks that have been previously referred to as clerical tasks. (p. 19) The Economic Council of Canada (1982) report that if present labor market trends continue, what

can be expected in most occupations are declining growth rates, with increasing labor force concentration in managerial and service occupations. (p. 36)

With the emphasis on speedier, more widely varied document creation, faster output, rapid information retrieval, and communication between remote workstations, there appears to be a dramatic need to change the office structure.

Currently approximately 20% of all secretarial work is being handled through some configuration of word processing equipment. (Devin, 1983)

Merging technologies are leading the office to an integration of data processing, office systems, and communication. Burford (1980) defines the components of the office of the future as including data processing, micrographics, optical character recognition, telecommunications, and word processing.

Similarly, Jaffee and others (1982) describes these new and emerging technologies with implications for office occupations: personal computers, database systems, software, inventory control systems, word processing, optical data transmission, office automation (office of the future), alternative work scheduling, and worker participation in management (quality circles). (p. 65)

Rada (1980) believes that three factors contribute to the magnitude of this impact. First, capital investment in the office is low in comparison to capital investment in

manufacturing and agriculture. Second, the service sector has shown relatively low productivity increases over time; thus, in order to stimulate growth in the economy, productivity must be increased in the service sector and, more specifically, in the office.

Also, as the economy continues to experience growth in the service industries, increased amounts of information will be processed, placing a greater emphasis on productivity growth and on more efficient methods of processing and disseminating information.

Third, current office labor costs are much higher than those experienced in the past, and are continuing to rise. Optimists predict an 8% annual increase in the cost of office labor and benefits by 1989, whereas pessimists forecast a 12% annual increase by the end of the decade. (Avedon, 1983, p. 172)

The Bureau of Labor Statistics in the United States projects a moderate trend for all occupations from 1982 to 1995 and includes a below 25% growth rate for selected office worker occupational categories such as professional, managerial, and clerical workers. (Martin, 1984, p. 68C) Similar trends could be predicted for Canada. However, Scriven and others (1981) state that in the next five to ten years employment opportunities in word processing will continue to grow with a stronger emphasis being placed on effectiveness rather than efficiency.

According to Duguay (1984) Canada, as a major trading nation, will experience a medium rate of economic growth in

the second half of the decade. (p. 9)

Kutie (1982) predicts that during the 1980's management will be counting on office automation to increase both quantity and quality of managerial and professional productivity because technology will produce the benefits of timely information presented in more usable form to the right persons. According to Kutie this process will include the electronic means of input for text editing--the use of optical character readers, dictating systems, and voice processing--reducing longhand and shorthand input. In the area of telecommunications, such capabilities as data communication, facsimile, electronic voice messaging, electronic mail, and videoconferencing will be employed by support staff and executive personnel. Intelligent copiers and computer-based typesetting and composition will affect the distribution function. Microimaging systems and electronic storage media will continue to grow as means of information storage and the foundation for database management. Word processors will be performing computational functions, and data processing equipment will add word processing capabilty. This merging of word and data processing will make possible decentralization of office and accounting activities, and as a consequence, the variety of activities in the decentralized group may increase.

While a certain amount of increased productivity can be accomplished through automation and computerization, that

amount is limited. Those things alone will not generate sufficient productivity gains. According to Keown (1984) the primary productivity to be gained will come from people. It seems clear that effective management of human resources will become a critical responsibility and one of the primary economic goals of organization throughout the remainder of the '80s. (p. 58)

—Workplace changes, however, are not going to produce a host of new high level jobs. In a 1983 table of what future job growth looks like for the remainder of the decade for the five largest growth occupations for college-level jobs (Elementary School Teachers, Accountants, Computer Systems, Electrical Engineers, Programmers) and for non-college-level jobs (Secretaries, Nurses Aids, Janitors, Sales Clerks, Cashiers), Keown (1984) shows that if this picture is matched with the number of new college graduates expected annually, a continuing excess throughout the '80s is discovered. For employers, this means dealing with placement problems and perhaps with disgruntled college-[illegible] applicants. Keown reports that sharper placement [illegible] counseling skills will be needed. (p. 58)

According to Saputo and Friedman (1984) along with the young student just out of high school, there will be more mature students both male and female returning to the classroom, some to retrain for a midlife career change, others to fulfill an important social need. (p. 22)

Also, the changing makeup of the Canadian work force is another influencing trend. The male-female composition of

the work force is changing rapidly with the female participation rate climbing rapidly. Keown explains that women will represent two-thirds of the labor force growth in the next ten years (to 1995). (p. 27) Not only is the women's growth rate in the labor force growing rapidly, but the makeup of the female work force is very different than in the past. Formerly, this group consisted mainly of single women or married women with no children. Now women are entering the work force as second wage earners, or as heads of households with children of their own to support.

In an overview of women in employment McCoy (1984) reveals that this 'return-to-work' phenomenon of women in the labor force observed by all age groups, especially among adult women, has created a completely new scenario for government agencies with reference to integrated employment policies for the 80's; appropriate skill bases; and changes in the workplace, employment practices, and support programs if women are to take up new jobs. (p. 4)

Although there is some fear that technological change in such occupational groups may replace workers with machines, thus far there is no conclusive evidence that this is necessarily the case, though the nature of many jobs will undoubtedly be changed. (Economic Council of Canada, 1982, p. 20)

However, the Economic Council of Canada reports that it is precisely the jobs that have traditionally afforded opportunities for female and youth employment--clerical, stenographic and other office occupations, as well as jobs

in retailing--that are jeopardized by the rapid technological changes based on the microprocessor. (p. 21) This does not mean, according to the Council, that there will be large-scale displacement (though there will undoubtedly be some), but rather that the nature of the tasks will likely change substantially. (p. 21)

Similarly, Kruk (1977) suggests that keeping up with the paper explosion in the past has meant hiring more people, but the future will see increased staff productivity as the major way of keeping up.

Although managers may or may not be performing clerical tasks in the future this new activity change for managers will require that managers be trained or retrained in skills needed to operate the new automated equipment, and in a basic understanding of how the use of such equipment can increase productivity and efficiency in their respective office environments. Training for managerial-level personnel can best be served, according to Fraser and others (1984), by adult and continuing education programs in postsecondary institutions--a market that has been relatively underserved by these institutions. (p. 20)

According to McCoy (1984) by 1990, 53% of the labor force in the United States will be women. (p. 4) Projections for Canada reveal that by 1985 women will make up approximately 42% of the labor force, and will have experienced a growth rate in the labor force of just over 3% (more than three times as much as men). (The Economic Council of Canada, 1982, pp. 31-32)

However, the Council suggests that while the increase in the participation of women in the labor force is expected to continue, and their share of the labor force is projected to rise from 40% to more than 44% over the decade, other developments show much less conformity with the past. For instance, the proportion of young workers, will drop substantially during the 1980's, with correspondingly fewer new entrants into the market; there will be lower unemployment rates relative to the national figure, and lower mobility of the work force. Most of the young people who entered the labor market in the 1960s and 1970s, at a time of growing youth unemployment, are now swelling the "prime working age" group, in which women will be almost as numerous as men by 1990. Also the increased numbers of women in the prime age group, combined with a changing mix of job opportunities in the service sector, suggest the need for innovative policies to ease the entry of women into nontraditional jobs. (p. 1)

According to Haverson (1983) the majority of current office automation training is conducted in individual firms by experienced personnel within the firm, using material supplied by vendors or developed internally.

However, Haverson (1983) concludes that many firms lack a qualified training staff, and the facilities to conduct such training. Also, compounding this problem is the attitude of top managers within many firms who call for reductions in office automation training budgets which have

an impact on the amount of time available for training entry level word processing operators.

According to Martin (1984) one of the fastest growing business services is temporary office services such as Office Overload, a trend that has implications for the overall employment picture because companies are electing to maintain a lean work force of core workers necessary for efficient day-to-day operations and to use temporary office services for peak or unusual work loads. (p. 68D)

The need to develop alternative sources of training is readily apparent in both Canada and the United States. One such source is the temporary office personnel services across the United States who are attempting to meet the training needs of the future, but are experiencing limited success. Results of a survey of word processing managers, supervisors, and specialists indicated that temporary office personnel that they employed are somewhat useful in meeting basic word processing needs, but lack the technical competencies needed for more complicated applications. (Cowan, 1983, pp. 31-33) Research conducted for Kelly Services Inc., indicate that 78% of word processing operators acquired their basic word processing skills in their present job. (Cowan, pp. 84-88)

In an article on the changing demands of word processing instruction Holley (1982) stresses the need for "an entirely new component of education for secretarial support personnel--an emphasis on word and information processing systems" (p. 22).

The philosophy of most vocational school word processing programs is to train for personal goal attainment and job placement. This philosophy in the past may have encompassed initial job placement, and may have included job placement for entrance at a particular level of the word processing job skill hierarchy. With the constant change in technological advancements, it is now time to rethink the basic philosophy behind offering word processing courses in connection with personnel trends.

The Economic Council of Canada (1982) report that the skilled labor force is rather aged; that Canada's vocational training system has not produced the requisite skills in sufficient quantities; and that the imbalance problems may be exacerbated by technological change, by shifts in the pace of economic activity among sectors and regions, and by the labor market adjustments associated with Canada's adaptation to the changing patterns of international trade and competitiveness. (p. 11)

Traditionally, sharp lines of distinction have separated the business education curricula and other curricula within vocational education programs. As information processing equipment is infused into the business world, a greater number of persons outside of the business education area will require training in information technology. (Fraser, and others, 1984, p. 20) Thus, a substantial training market exists at all levels of vocational education for groups requiring an orientation to, or skills training in information technologies.

A recent study by the New York-based Omni Group reveals that nearly 85% of the Fortune 500 Industrial and Service companies surveyed estimated that by 1985 they will have plans in place that govern the way in which word processors, personal computers, electronic mail systems, and other office automation tools will be evaluated, purchased, and installed. While medium-sized and small companies (those with fewer than 100 employees) have fewer formalized plans, virtually half have plans for developing strategies within the next two years for automating their offices. (Olcott, 1984, p. 7)

The study also found that local-area networks (LANS), which allow different electronic office tools to communicate with each other, will proliferate substantially in the major market segments over the next two years (1985-1987). According to the study, roughly two-fifths of the Fortune 500 Industrial and Service companies were using some form of local area network in 1984, and by 1985 nearly three-quarters of these large corporations expect to use LANS, along with 35% of the medium-sized companies, and 25% of the small companies. (Olcott, p. 7)

While it is obvious that these higher level workers are where the costs are and where productivity gains could be made, strategic plans to automate offices are becoming more and more apparent.

Russon (1983) suggests that flexible teaching methods should be implemented so that the curriculum can evolve to

suit changing career patterns and social changes. (p. 36)

A major trend is the reconfiguration of the office environment that is automated and uses word processing equipment. The movement from the stand-alone word processing system toward an integrated/multifunction system is taking place in the United States in the office of major corporations today. The anticipated growth of the integrated office system will require skilled personnel trained in both word processing and basic computer skills. (Haverson, 1983) In addition, training will be required to aid workers to understand how such equipment as dictating machines, copiers, PBXs, and personal computers are integrated to form a productive and efficient system.

Kutie (1982) appeals to office education teachers to familiarize themselves with a systems approach to information processing which includes the examiniation of a situation or a problem with the aim of devising a total solution. (p. 24) Kutie suggests that business teachers are accustomed to dealing with separate functions that comprise the whole--that is, thinking in terms of office activities, and that they must now develop new concepts that enhance the systems approach and move away from outmoded office procedures that are part of the Business Education curriculum. (p. 24)

Mikulecky (1983) in a case study of literacy training to prepare Comprehensive Employment and Training Act (CETA) eligible workers as competitive word-processor operators found that the average time needed for the trainees to reach

the preset standard for this occupation was 20 weeks, with a few requiring only 14 weeks, and a few as many as 28 weeks.

There is some concern, too, that the importance of keyboard skills will diminish with the introduction of voice input technology, and with the encouraged use of the computer mouse. The trend away from keyboard input toward voice and mouse input will not directly affect training in keyboard skills within the next few years, because according to Fraser and others, high costs associated with voice-deciphering technology and imperfections inherent in the current technology will impede the rapid adoption of voice input equipment. The computer mouse, on the other hand, may encourage administrators and managers in the use of computers for the input of data, chart and graph use, and data manipulation.

According to Hulbert (1977) more students will locate employment in word-processing systems rather than in traditionally organized offices. (p. 32) In an article on "Office Skills: Word Processing Instruction in Small Schools," Cox (1980) stressed that students should be taught as much as possible about the concept and actualization of word processing, and that they should be trained to obtain employment in any kind of office regardless of the office's size, location, or the duties and tasks involved. (p. 12)

Office automation technology, however, is no better than the quality of the human resources associated with its use. In an article on "The Danger of De-Skilling of OA Personnel," Hubbartt (1984) warns:

> Although many of the new automated systems relieve the office worker of routine computation, flag spelling errors, or reject entry of inappropriate data, basic communication and office skills are essential for proficient operation of the new equipment.
>
> Writing, grammar, spelling, math, telephone manners, listening, problem solving, and work organization will continue as critical to administrative success. However, these skills, as with any learned activity, can erode from lack of use particular when an employee starts to rely on a computer for tasks that once required thinking and effort. (pp. 35-36)

Related Research

It will be recalled that the researcher used the ERIC data base to identify other researches that were completed on the topic of word processing operator. The descriptors that were used are listed in Chapter III entitled "Methodology." With these descriptors information in this data base yielded a total of 131 citations (hits). From these 131 citations their abstracts were reviewed and four dissertations were selected because of their implications for this study. These dissertations were written by Ettinger (1980), Kutie (1977), [illegible]ker (1980), and Reiff (1974). On closer examination the Reiff (1974) dissertation was not used in this study because it did not deal specifically with the identification of word processing competencies. Included in these 131 citations were a number of articles on office automation, word processing, data processing and business education that had some relationship to this study. These articles were reviewed and those with a research orientation are synthesized and reported in this

section. The master's thesis completed by Pura (1970) was selected for an indepth analysis because it was an Alberta study completed on "An Analysis of Office Activities Using Nobels' Taxonomy."

Ettinger

Ettinger (1982) conducted a study of the requirements and business training procedures for word processing personnel with implications for word processing curriculum development in two-year post secondary institutions. Secretaries and supervisors/managers from 73 firms in New York City and Nassau and Westchester Counties of the State of New York provided the data on personnel requirements, and two separate questionnaires and two separate interview-observation guides were used to gather background data and information on skills and knowledge needed for employment in word processing. Participants who answered and returned questionnaires comprised 395 secretaries (51.9%), and 95 supervisors/managers (59%). Statistical analysis of the data indicated that three most important generic competencies to include in word processing curricula are language arts, human relations, and electronic keyboarding. Included among these skills required by managers/supervisors were measuring productivity, developing potential of employees, designing and implementing work flow procedures, developing systems, and evaluating equipment.

Recommendations emanating from this study include: a) the creation of word processing curricula that include both

general and specialized education to prepare students for initial job entry and promotional opportunities to supervisory and managerial positions; b) the development of occupational guidance systems for students; c) the organization of recruitment programs to attract male students into secretarial programs; d) instruction in supervisor/managerial skills that include decision-making, problem-solving, technical, conceptual, and human relations skills; e) the development of certificate programs to serve the adult population; f) the creation of internship programs in word processing; g) and the organization of periodic field trips, development of word processing seminars and workshops, and creation of advisory boards, all jointly sponsored by educators and word processing personnel in industry.

A major conclusion of the study indicated that a new emphasis has been placed on sophisticated electronic equipment, changing office procedures, and integrated systems to coordinate office routines and work flow.

Kutie

Kutie's research (1977) involved an analysis of behavior-oriented job dimensions for six categories of secretaries; trditional secretaries, administrative support coordinators, administrative support secretaries, word processing operators, word processing lead operators, and word processing supervisors. Data were collected from a total of 236 secretaries, primarily in the Northeastern Ohio

region.

Statistical analysis of the data indicated: a) that word processing operators' positions were characterized by such dimensions as controlling and operating machines and equipment; b) that traditional secretaries were generally more satisfied than word processing operators (differences in satisfaction among the six groups were found on four of the factors of the MSQ--Ability Utilization, Achievement, Company Policies and Practces, and Supervision--Technical); and c) job evaluation points derived from the Position Analysis Questionnaire varied greatly for each classification of secretary indicating that job title does not necessarily reflect job complexity.

Recommendations from this study indicate: a) that business educators, including both curriculum designers and guidance counselors, should be aware of the changing structure of office work as evidenced by the variations in job behavior profiles for various classifications of secretaries; b) although the structure of office work is changing, the typewriting function has not yet been eliminated from any of the six kinds of secretarial positions analyzed; and c) the magnetic media typewriters are complex pieces of equipment requiring complex job behaviors, and that word processing jobs should not be equated with clerk-typist levels of work. Because of these technological innovations the behaviors will have to be taught to the worker prior to their entering into the world of work.

Pura

Pura (1970) in a study analyzed office activities using Nobels' taxonomy in an attempt to determine the relative amounts of time which 1967 and 1968 business education graduates spent performing various business and office activities. The population for the study was limited to 73 of the 95 business education graduates of June, 1967, and June, 1968, from St. Joseph Composite High School in Edmonton, Alberta. Pura showed the kinds of activities--operating, interacting, and managing--a beginning office worker is likely to encounter in the world of work. These "interacting activities" constitute an important element in the performance of office duties. Pura indicated that if the objective of the learning process is the achievement of relevant performance skills, the implications from the findings seem to point to the necessity of varied day-to-day assignments which involve not only the operations, but also the interactions and task management activities which apply. (p. 53) Also, while a "simulated" office can provide many of these experiences, this researcher believes that it is only through an extended program incorporating work experience that a "real" atmosphere, with its varied interactions and pressures, can be provided; and that an extended program of this nature would also assist the student in making the transition from the school environment to the business world. (p. 54)

Pura suggests that educators must be aware of current office practices so that course content and skill

development will be relevant in terms of student needs and present-day office requirements; that regular surveys or follow-up studies should be made in order to determine whether the programs of studies are meeting the needs of the students; and that two-way communication with graduates could serve very purposeful ends.

Walker

Walker (1980) conducted a study to determine the current status of word processing in Illinois in order to suggest ways to improve curricula in Illinois post-secondary schools. The study solicited and evaluated textbooks and course materials from 9 textbook publishers; requested information from 14 manufacturers and distributors; surveyed 76 firms with word processing related enquiries; and surveyed business education instructors at 89 post-secondary institutions to gather information about equipment, programs, attitudes, and objectives related to word processing training.

Study findings, based on usable responses from 41 employers and 38 schools, included the following: 63.4% of the firms used word processing equipment and 65.3% preferred that employees have previous word processing training; 77% of the firms anticipated an expansion of the word processing industry during the next 5 years; 68.4% of the schools indicated that they offered some word processing training and 60.5% used word processing equipment; and only 42% of the schools planned to update their present word processing

curriculum.

Summary

In Canadian society there is little, if any, provision for a "life-cycle" view of education and training sharing the stage with employment. For a number of reasons, it would now appear more important than ever that public policies incorporate such a perspective. In the first place, the traditional notion of the one-career work cycle is becoming less relevant. Economic shifts and technological innovations are occurring with increasing rapidity; as a consequence, there is a diminished guarantee that there will always be a demand for the occupation in which one was initially trained. Also, demographic developments, such as the aging of the population, will inevitably lead to shifts in participation patterns; and these, in turn, will dictate changing education and training requisites. The emergence of new sociocultural values, too, must be considered. The growing emphasis on personal development can be expected to lead to an increased demand for lifelong education and training opportunities. (The Economic Council of Canada, 1982, p. 93)

For these reasons, Holley (1982) stresses increased emphasis in training skills particularly in the human relations skills, and the concept of teamwork. (p. 22)

Smith (1981) expands this concept of training skills in the human relations skills to include that of balancing basic human skills or competencies such as interpersonal

relations, communications, goal setting, and time management with basic technical skills. (p. 37)

The Economic Council of Canada's (1984) Human Resources Survey showed that about half of the participating establishments had experienced severe skills shortages in the 1977-1978 period, and that well over 40% anticipated further difficulties in the next few years, particularly with respect to high-level, blue-collar skills. (p. 11)

In an article on "The Office of the Future: Impact on Business Education" Smith (1981) suggests that the basic human skills or competencies needed in the office such as interpersonal relations, communications, goal setting, and time management should be balanced with basic technical skills which this author identifies as: the ability to speak the language of technology and to have an understanding of its terminology; the ability to have a broad understanding of technological capabilities; and to have a basic understanding of how technology can be applied to office problems. (p. 37)

Also, Fraser, and others (1984) believe that although growth is projected for the office automation market, industry observers speculate that two factors may limit this growth over the next five years. The first is the continued lack of standardization to automate the office, even though certain hardware modifications will allow interfacing between various pieces of equipment. The capital investment required to realize this capability will still be extensive.

The second factor is the cost of and rapid rate of change in office automation equipment in general. While larger firms continue to make capital investments for the purchase of office automation equipment, smaller firms may be induced to hold off in anticipation of future technological developments and cost reductions for this equipment. (p. 18)

According to Fraser and others, the influx of personal computers into the environment of the automated office will provide multifunction capabilities that will stimulate a demand for individuals with higher-order skills, including analysis, comprehension, and logical thinking. These authors believe that with the increasing capabilities of office automated equipment to interface with mainframe computer systems, the need to provide individuals with a macrolevel understanding of system operations and with higher-order skills is further underscored. Although there continues to be a need for individuals with more traditional office skills, there will be a decrease in the number of new job openings for individuals without higher-order skills. (p. 20)

Chapter III

Methodology

Introduction

The content of this chapter will describe the procedures that were used to collect data with the research instrument, including the placement of the collected data on 80 column computer cards to be analyzed using the frequency program from the Statistical Package for the Social Sciences (SPSSX).

Research Method

The following methodology was used to collect data for analysis for this investigation.

A computer search was conducted of the Educational Resources Information Center data base in September, 1984. To conduct that search the following descriptors were taken from the Thesaurus of Descriptors: curriculum development, job skills, office occupations education, curriculum design, and word processing both as a descriptor and as an identifier. From this search a total of 131 citations (hits) were obtained. Included in these 131 citations were journal articles, education reports, and doctoral dissertations (ERIC Documents). From a review of the abstracts of these citations, it was found that no research had been completed in Canada that investigated the entry level enabling skills needed by word processing operators by comparing educational competencies with the competencies

word processing operators acquired within one year after being employed. This absence of research helped to establish a need for the study. Three masters' theses and one doctoral dissertation listed in the 131 citations were selected for purchase because of their implication for the current study. These dissertations were used in reporting related research.

A review of the literature devoted to research instrument design and selection of instruments to collect data was made. From this review the decision was made by the researcher to use a questionnaire. The initial procedure that was used in designing this instrument involved bringing together. a Panel of Experts in a Developing A CurriculUM (DACUM) workshop.

DACUM

DACUM is an approach to identify instructional content for curricula which is combined with an evaluation process for occupational training programs. This analysis procedure was created as a joint effort of the Experimental Projects Branch, Department of Manpower and Immigration Canada, and General Learning Corporation of New York. The result of this work provided technical direction to the Women's Job Corps program at Clinton, Iowa. Early efforts at Clinton were to produce a curriculum intended to enhance trainee involvement in the training program and in planning of that program for goal attainment. The result of this analysis was a graphic representation of the curriculum that was similar to a time bar chart. From these early efforts, an

experimental DACUM for a typical occupation was developed in Canada as a model for further application.

DACUM has been defined by Adams (1972) of Nova Scotia Newstart in its report Canada Newstart Program in this way:

> It is an analysis of the occupation rather than a curriculum evolving from an analysis. The occupation is subdivided into General Areas of Competence. Each is then analyzed to identify each skill enabling skill it contains. The result is independent specification of each of the skills (behaviours) that collectively enable an individual to perform competently in the occupation. These skills are defined quite simply and are structured independently in small blocks on the chart. Each can serve as an independent goal for learning achievement. (p. 24)

DACUM is considered to be a thorough and systematic procedure which breaks down an occupation into manageable segments for easier teaching and learning. There are five interrelated steps involved when the DACUM procedure is used:

1. Conduct a job analysis
2. Set performance objectives
3. Select evaluation instruments
4. Choose instructional techniques
5. Organize instructional resource

(Adams, 1975, p. 25)

For the purposes of this study, it was decided by the researcher that Step 1 of the procedure would identify those general areas of competence and enabling skills that would become part of the research instrument.

The first task in developing a DACUM chart was the selection of a Panel of Experts in word processing, the particular occupational area to be analyzed. The resource persons chosen to participate and be members on the DACUM

panel were people that were currently working in the occupational area. This panel was organized and co-ordinated by the researcher, a specialist in the field, who has experience in job analysis, curriculum design, and group dynamics.

Prior to beginning to work on the chart, members of the panel were oriented to the DACUM procedure. During the orientation this researcher stressed to the panel members that the panel would be identifying work behaviors (enabling skills) or activities rather than knowledges or concepts related to word processing. After this preliminary phase of the workshop the participants reached agreement on the job title and the scope of the occupation being analyzed both of which are vital to the brainstorming process on which the workshop functions. An accurate job title that was selected by the Panel of Experts was 'word processing operator.' The general areas of competence for this occupational title given by the panel were written on waxed back cards, and then stuck to a wall board for easy manoeuvrability and viewing by the panel.

Members of the panel were then asked to further describe the agreed upon general areas of competence in more specific behavioral terms, and rearrangement of the cards on the wallboard took place. While panel members reordered and expanded the specific general areas of competence, they also extended these areas to include specific enabling skills that made up these areas, thus establishing Bands on

the chart. The next step involved ordering the general areas of competence and their bands into logical sequences of relative importance. What resulted was a DACUM chart titled 'General Areas of Competence and Enabling Skills for Word Processing Operations' which included a sequential list of the general areas of competence and the Band for each competence with its enabling skills. A copy of this chart can be found in Appendix II, page 185.

The DACUM chart that is developed represents the occupation as it is currently practiced. The completed DACUM chart has two major uses, as outlined by Adams (1975):

> DACUM can be defined as a single-sheet skill profile that serves as both a curriculum plan and an evaluation instrument for occupational training programs.
>
> It is graphic in nature, presenting definitions of the skills of an entire occupation on this single sheet of paper. This discourages treatment of any element of the occupation in isolation. (p. 24)

Because the DACUM chart shows an entire range of competencies for an occupational area, it is sometimes mistakenly assumed that all these competencies will be learned in a formal instructional program. The competency profile is only a tool for determinng training needs and for guiding program planning. Depending on the type of training required and various constraints such as time and cost, only certain competencies from the chart will be chosen to be taught.

For the purpose of this study the DACUM procedure was used to identify both the general areas of competence and

the enabling skills that comprise the occupation of word processing operator. These became Part B of the research instrument. The word processing skill checklist was developed from the three sources described on page 19, Chapter I.

Ideally the initial DACUM chart that results from the workshop is mailed to participants and to selected practitioners for their evaluation. Following the return of the chart to the workshop coordinator the chart is revised to its final form. It was not the purpose of the research to follow this procedure.

To identify participants for this investigation telephone contact was made by the research to administrative personnel at the four non-university post-secondary education institutions in Edmonton where word processing courses are taught. From this contact the researcher was given the names of each individual at each institution responsible for either teaching or coordinating word processing courses. These individuals were contacted by telephone and a meeting with them was arranged.

During these meetings the purpose of the study was explained; the role of the instructor or coordinator of the course in the research was explained; and an offer of providing an abstract of the study to those individuals who cooperated was made; and a list of word processing graduates who had graduated between September 1983 and September 1984 was requested from the four word processing personnel at the four institutions.

Each person contacted at the four institutions cooperated by providing a list of graduates from their word processing courses. The four lists contained the names of 419 graduates. From these lists of graduates a population was obtained. How this sample was selected, and the criteria used to select these individuals is described in the "Population and Selection Procedure" section of the first chapter.

The home address of each graduate was included on the lists that were supplied to the research. From these lists and with the use of the Edmonton telephone directory, telephone numbers were obtained for the 419 graduates. A telephone call was made to these individuals between the hours of 19:00 and 19:30 because they would be home from work to receive the call. The purpose of this call was to determine if the person contacted met the criteria for selecting research participants. Of the 419 individuals, 101 met the selection criteria and became the population for this study. Another purpose of this telephone call was to explain the research and to ask the individual to participate in the study by completing the research instrument.

A covering letter was prepared explaining the purpose of this research and the role that the participant would have in the study. This letter was mailed to each member of the research population along with the research instrument. Also enclosed with these documents was a self-addressed, stamped envelope. An additional purpose of the covering

letter was to request the cooperation of the individual to whom the letter was addressed to participate in the study by completing the questionnaire and returning it by the established deadline date. A copy of this letter can be found in Appendix I, page 170. This procedure yielded a total return of 49 completed questionnaires which represented a 49% rate of return. To increase the rate of return those participants who did not meet the required questionnaire submissions deadline date received a follow-up telephone call.

As a result of the follow-up telephone call that was made to the 52 research participants who were delinquent in meeting the original submission deadline date, an additional 33 completed questionnaires were received. This increased the total rate of return to 82 completed questionnaires or a percentage of 81%. Of the 82 research instruments that were received, none were eliminated from the research.

The data from the research instruments were coded by the researcher and keypunced by personnel of the Division of Educational Research Services, Faculty of Education, University of Alberta. The frequency program selected from the Statistical Package for the Social Sciences (SPSSX) was used to generate frequencies and percentages. An analysis of these data was used to organize the next chapter of this report.

Chapter IV

Analysis of Data

Introduction

This chapter presents the data that were collected with the research instrument which was mailed to 101 word processing operators. Eighty-two operators returned a completed instrument and constituted the population of this study. This represented a 81% rate of return.

Chapter I of this study indicated that the research instrument was a questionnaire, which was designed to collect two kinds of data: demographic (including educational and work history), and interval. To collect these data, the instrument was composed of the following two parts:

Part A--"Demographic Information" gathered information about the participants' Educational History - General, and Work History. Part B--the "Word Processing Competency Checklist" consisted of two scales. The first scale--the WORK SCALE--gathered information on those word processing competencies the participant performed at the work place during the first year of employment. In responding to this scale the participant had to check the correct response of the 5-point Likert scale which included the following choices: Very Seldom, Seldom, Some, Frequently, and Very Frequently. The second scale--the PREPARATION SCALE--was used to gather participant's opinions of the word processing functions previously acquired in a formal educational

setting. A 5-point Likert scale was used with the PREPARATION SCALE. The Likert scale included these categories: Very Inadequate, Inadequate, Neither Inadequate or Adequate, Adequate, and Very Adequate.

Interpreting Research Data

It will be recalled from Chapter I that the data from the research instruments were coded by the researcher and keypunched by personnel of the Division of Educational Research Services, Faculty of Education, University of Alberta. The frequency and percentage program was selected from the Statistical Package for the Social Sciences (SPSSX) and was used to generate frequencies and percentages for this study. Sample pages resulting from the computer readout of the SPSSX program supplying the data for the tables of this chapter can be found in Appendix III, page 188. The tables that report these data have specific titles and are sequenced with the questions on the research instrument. Included in the column headings of most of these tables are the following terms: category title, frequency, and percent. The category title will be different for each table because it lists the possible answers to the question. Frequency refers to the number of cases of those who responded to a particular question on the research instrument. Percent is a term used to refer to the percentage of cases actually reporting.

In reporting the research data that were collected with the research questionnaire, this chapter will be

divided into two sections that deal with the sections of the questionnaire. The research data will be presented in the order in which it was secured on the research instrument from the 82 completed and usable questionnaires that were returned by participants. The data from these instruments will be presented in tabular form for ease of presentation and analysis. The totals in some of the tables may not equal 100% for the following two reasons: some of the participants did not respond to this particular part of the questionnaire, or because of rounding.

Demographic Information

To collect the data that would establish the demographic information of the respondents, Part A--Educational History - General, of the questionnaire was comprised of four questions that asked for information about the respondent's high school program, the highest grade level the respondent attained in high school, the last percentage mark in English the respondent attained in their highest grade in high school, and the number of years since the respondent last attended a formal school before being admitted to a post-secondary non-university formal word processing course.

The first question under Educational History asked the participant to identify their high school program. Of the four high school programs: academic, business, vocational, and general that were available, data in Table 2 show that 38 respondents had registered in academic program of study

while in high school, 23 had registered in business, 5 in the vocational education program, and 14 had registered in a general program. In summary, these data show that 46.3% (38) of the research participants were enrolled in the academic program, and 28.0% (23) were enrolled in the business program. These two groups added together represent 74.3% (61) of the research population. The remaining 23.2% of those involved in the research were enrolled in either the vocational education or general education program of study while they were in high school. These data indicate that the majority of word processing operators who took part in the study had an academic or business high school program background.

Table 2

High School Program of Those in the Research

High School Program	Frequency	Percent
Academic	38	46.3
Business	23	28.0
Vocational	5	6.1
General	14	17.1
TOTAL	80[a]	97.5

[a] Two participants neglected to provide data.

In Table 3 (Question 2) are data which identifies the highest grade level attained by the participant while in high school. No statistics were gathered for Grade 10;

however, 7 participants attained Grade 11 level of education; 11 attained Grade 12; and 61 indicated they were a 'High School Graduate'. In summary, 74.4% (61) of the research participants had graduated high school, and 13.4% (11) had a Grade 12 education. These figures indicate that the highest grade level attained by participants was at least Grade 12.

Table 3

Highest Grade Level Attained by Participants

Highest Grade Level	Frequency	Percent
Grade 10	7	8.5
Grade 11	11	13.4
Grade 12	61	74.4
HS Graduate		
Total	79[a]	96.3

[a] Three participants neglected to provide data.

Question 3 asked research participants to identify the last percentage mark they attained in English in their highest grade in high school. Although the range of English marks that participants recorded varied from 60% (7) to 93% (1), 18.3% (15) attained a mark of 80%, and 13.4% (11) attained a mark of 75%. These data are found in Table 4. The average English mark for the word processing operators who took part in the study was in the mid seventies.

Question 4 asked those involved in the study to

identify the time that elapsed between the time they had left formal schooling and the time they were admitted to a word processing course. Of the five categories listed: 32.9% (27) of the research participants checked that they had terminated their formal schooling 0-2 years before enrolling in a word processing course; 17.1% (14) checked 3-5 years; 15.9% (13) checked 6-10 years; 14.6% (12) checked 11-15 years; and 19.5% (16) of the research participants checked 'Other.' See Table 5 for these data.

As is indicated in Table 5, approximately 30% of the operators (32.9%) had been away from a formal school setting for a minimum of 2 years, while 20% in the "other" category could be the result of two possibilities: 1) that operators are returning to courses to continually upgrade, or 2) that operators have not attended formal schooling for over 15 years.

Table 4

Last English Mark Attained by Participants in High School

Last English Mark	Frequency	Percent
60	7	8.5
63	2	2.4
65	7	8.5
68	2	2.4
70	15	18.3
71	1	1.2
72	2	2.4
74	4	4.9
75	11	13.4
76	2	2.4
77	1	1.2
78	2	2.4
79	2	2.4
80	4	4.9
82	1	1.2
83	1	1.2
85	6	7.3
87	1	1.2
93	1	1.2
TOTAL	72[a]	87.4

[a] Ten members did not supply this information.

Table 5

Number of Years Since Participants Attended Formal School

Number of Years	Frequeney	Percent
0 - 2	27	32.9
3 - 5	14	17.1
6 - 10	13	15.9
11 - 15	12	14.6
OTHER	16	19.5
TOTAL	82	100.0

The Work History portion of Part A of the questionnaire consisted of 17 questions that were directed toward the respondent's employment status and the respondent's total number of years of employment prior to formal word processing training, whether or not the respondent had prior word processing experience, and if so, what word processing functions the respondent performed; the amount of formal word processing training the respondent received, and a rating of that training; whether or not the respondent's word processing training was done on the same equipment that the respondent was using in the work place at the time of the study; what occupation the respondent was employed in prior to formal word processing training; whether a typewriter was used by the participant in that occupation, and if so, what kind was it; the respondent's current type of office and office size in which the respondent worked; the type of word processing equipment that the respondent used at the time of the study; whether or not the respondent could operate any other kind of word processing equipment, and if so, to identify what other types of equipment that could be operated; the number of hours per week that those involved in the research devoted to word processing, and the word processing function most often performed; whether or not participants felt that additional word processing training was needed on the word processing equipment that was being used in the work place; whether or not the respondent had attended a workshop or conference on office automation and/or word processing in the year prior to the

study; and, whether or not the respondent's employer had a policy toward supporting word processing operators in order for them to secure additional education, training, or professional development.

In Table 6 there are data which identify the employment status of those involved in the investigation prior to their enrolling in a word processing course. Question 5 of the questionnaire was used to collect these data. Of the three categories that were listed: never, part-time, full-time, 54.9% (45) of the research participants indicated that they were employed full-time, 34.1% (28) were employed part-time, and the remaining 11.0% (9) had never been employed before taking a word processing course. These statistics indicate that more than one-half of the research participants (54.9%) prior to enrolling in formal word processing training courses were employed full-time in the work place.

Table 6

Employment Status of Participants Prior to Formal Word Processing Training

Employment Status	Frequency	Percent
Never	9	11.0
Part-Time	28	34.1
Full-Time	45	54.9
Total	82	100.0

There are data in Table 7 which show the period of time that research participants had been employed prior to their enrolling in a word processing course (Question 6). Although the range of responses varied from 1 to 35 years of previous office employment, 22.0% (18) specified they worked for one year before enrolling in a word processing course; 12.2% (10) indicated two years; 4.9% (4) indicated three years; and 7.3% (6) 4 years. An aggregate of these four groups show that approximately 50% (46.4%) of those involved in the study were employed four years or less before they returned to school to become word processing operators. Of the 69 participants who responded to this question, 6.1% (5) specified they had been employed ten years before taking a word processing course; 4.9% (4) eight years; 3.7% (3) seven years; 3.7% (3) 11 years; 3.7% (3) 15 years; 2.4% (2) 5 years; 2.4% (2) 6 years; 2.4% (2) 9 years; and 1.2% (7) had 13, 18, 20, 23, 26, 32, and 35 years respectively of work experience.

These data also show that participants had a wide range of work experience before they took course work that helped them to become competent word processing operators.

Table 7

Number of Years of Employment of Participants

Years of Employment	Frequency	Percent
1	18	22.0
2	10	12.2
3	4	4.9
4	6	7.3
5	2	2.4
6	2	2.4
7	3	3.7
8	4	4.9
9	2	2.4
10	5	6.1
11	3	3.7
13	1	1.2
15	3	3.7
18	1	1.2
20	1	1.2
23	1	1.2
26	1	1.2
32	1	1.2
35	1	1.2
Total	69[a]	84.1

[a] Thir[redacted] participants neglected to provide data.

Table 8 was organized to present data that was collected with Question 7 which asked each research participant if they were employed in an office as a word processing operator prior to obtaining formal word processing training. Of the 81 word processing operators who responded to this question, 93.9% (77) indicated they had not been employed as a word processing operator prior to formal training.

Table 8

Word Processing Status Prior to Formal Training

Prior Status	Frequency	Percent
Yes	4	4.9
No	77	93.9
Total	81	98.8[a]

[a] This percent does not equal 100; one participant neglected to provide this data.

The remaining 4.9% (4) indicated they had been employed as a word processing operator prior to training and that they had performed the following word processing functions: letters/memos, printing, multi-page documents, reformatting, and editing and creating documents. See Table 9 for these data. The functions that were not performed by these 4 research participants included: forms, statistical documents, records/list processing, and other.

The prior performance of such word processing functions as letters/memos and multi-page documents matches the word processing function "most often" performed by operators after formal training (See Table 21).

Table 9

Operator Functions Performed by Participants in Prior Employment

Operator Function	Frequency	Percent
Letters-Memos	1	1.2
Printing	1	1.2
Multi Documents	1	1.2
Reformat	1	1.2
Edit-Create Documents	1	1.2

Question 8 collected data concerning the amount of formal word processing training the research participant obtained. For this question three categories were listed: 40-60 hours; 61-120 hours; Over 121 hours. Fifty-four point nine percent or 45/79 of the participants indicated they had between 40 and 60 hours of formal word processing training prior to being employed. This figure could indicate that 40 to 60 hours of training may be all that is needed for job entry. The statistics for the other two categories indicate 23.2% (19) received between 61 and 120 hours of training; and 18.3% (15) indicated they had more than 121 hours of training in word processing. See Table 10 for these data.

These data could be interpreted to mean that the minimum amount of training time to prepare a word processing operator involved in this study with entry level skills was 40 hours, while the maximum amount of training time was 120 hours.

Table 10

Amount of Formal Word Processing Training of 82 Participants

Formal Training Hours	Frequency	Percent
40 - 60	45	54.9
61 - 120	19	23.2
121 +	15	18.3
Total	79[a]	96.4

[a] Three participants did not give this information.

The purpose of Question 9 was to have respondents rate the word processing training they received prior to being employed in this occupation. To respond to this question participants were asked to check one of the following four choices: 'of no use,' 'of little use,' 'of some use,' 'of much use.' Results from the responses to this question are included in Table 11 where data show that 63.4% (52) of the research participants indicated that they considered their training to be 'of much use' to them; 23.2% (19) indicated that their training was 'of some use' in a working environment; and 2.4% (2) indicated that their training was 'of little use' to them. None of the research participants indicated that their training was 'of no use.' The statistics reveal that formal training does play an important part in assisting operators in performing functions that are required of word processing operators.

Table 11

Participant's Rating of Formal Word Processing Training

Rating	Frequency	Percent
Of No Use	-	-
Of Little Use	2	2.4
Of Some Use	19	23.2
Of Much Use	52	63.4
Total	73	89.0[a]

[a] Percent does not total 100; 9 participants neglected to provide data to this question.

To determine if the word processing training that participants received prior to employment was on the same equipment they were using at the time of the investigation Question 10 was written to collect this information. Table 12 organizes these data which indicate that 67.1% (55) of the research participants were using different equipment than the equipment on which they were trained; while 23.2% (19) were using the same equipment on which they received their training.

The above statistics show that training focussed on machines and on specific machine operations may not meet a desired outcome of easing the student's transition from training to the world of work.

Table 12

Training Word Processing Equipment Same as Equipment Used in Employment

Same Equipment Used	Frequency	Percent
Yes	19	23.2
No	55	67.1
Total	74[a]	90.3

[a] Eight questionnaires were missing this data.

Question 11 examined the types of occupations that those involved in the study were employed in prior to their formal word processing training. Data collected with this question are reported in Table 13 and indicate that 32.9% (27) of the research population were employed in secretarial occupations; 18.3% (15) 'other' occupations; 12.2% (10) as clerk typists; 11.0% (9) as public relations/sales clerk; 4.9% (4) as receptionists; 3.7% (3,3) for both clerical and cashiers; and 2.4% (2,2) for both school/student and keypunch data control clerk. Of the 75 research participants who responded to this question, 15 or 20% listed their occupation in the "Other" category which included the following classifications: the 'never worked before' group, accounts' receivable clerk, bookkeeper, floral deisgner, microfilm processors, waitress, teacher, nanny, and mother. While these figures indicate that 50% of potential word processing operators may come from the Clerk

Typist, Secretarial, and Receptionist background, the other 50% will come from a variety of unrelated backgrounds. This indicates that it is not necessary for one to possess secretarial skills to enter a course for word processing, although these skills may be helpful for the student to know.

Table 13

Occupation of Participants Prior to Formal Word Processing Training

Previous Occupation	Frequency	Percent
Clerk Typist	10	12.2
Secretary	27	32.9
Receptionist	4	4.9
School-Student	2	2.4
Clerk	3	3.7
Cashier	3	3.7
Public Relations/ Sales Clerk	9	11.0
Key Punch/Data Control Clerk	2	2.4
Other	15	18.3
Total	75[a]	91.5

[a] Seven participants did not supply this data.

Question 12 was a two part question. The first part was to determine if a typewriter was used in the occupation that participants listed as their occupation. This required a simple "Yes" or "No" answer. The second part of this question asked those who checked "Yes" to identify the type of typewriter they used. Analysis of data from this

question show that 67.1% (55) of the participants used a typewriter in their occupation, and 24.4% (20) had not used a typewriter. Of those who responded "Yes" they did use a typewriter, 58.5% (48) used an electric typewriter, 9.8% (8) checked they used an electronic typewriter. None of the research participants used a manual typewriter in the occupation they were employed in prior to training. These data can be found in Tables 14 and 15 respectively.

These figures indicate that the manual typewriter is being replaced by the electric typewriter, and that the electronic typewriter has a position in the work place. The use of electronic typewriters introduces, and may even encourage, operators to further explore electronic equipment (in the form of word processing). The present status and future use of electronic typewriters is one area that needs to be further explored.

Table 14

Typewriter Used by Participants in Previous Occupation

Use of Typewriter	Frequency	Percent
Yes	55	67.1
No	20	24.4
Total	75[a]	91.5

[a] There were seven participants who did not supply this data.

Table 15

Kind of Typewriter Participants Used in Previous Occupation

Kind of Typewriter	Frequency	Percent
Manual	-	-
Electric	48	58.5
Electronic	8	9.8
Total	56[a]	68.3

[a] Of the 82 participants, 26 did not furnish this data.

Question 13 was written to identify the type of office that research participants were employed in during the time of the study. To respond to this question required a single check mark. The first choice, Government, was divided into three divisions with the remaining nine choices identifying the business type. When completed questionnaires were received and analyzed it was obvious that research participants had checked two and sometimes three choices, thus making these data difficult to interpret. Because of the difficulty in interpreting these data, Question 13 was not included in the data analysis.

To identify the size of office where the research participants were employed, participants answered Question 14 on the questionnaire. For this question there were four categories: 1-25 persons; 26-50 persons; 51-100 persons; and over 100 persons. To respond to this question required

a check mark on the part of those involved in the investigation. In Table 16 are data from this question which indicate that 64.6% (53) of those who provided data identified that they were in an office that employed between 1 and 25 persons; 15.9% (13) checked that the size of the office force where they worked was between 26 and 50 persons; and 9.8% (8,8) were employed in an office where between 51 and 100, or over 100 persons comprised the staff of the office. The above statistics indicate that 64.6% of the research participants worked in an office which could be classified as small.

TABLE 16

Size of Office Where Participants were Employed

Size of Office Staff	Frequency	Percent
1 - 25	53	64.6
26 - 50	13	15.9
51 - 100	8	9.8
Over 100	8	9.8
Total	82	100.0

The fifteenth question asked participants to identify the type of word processing equipment they used in their working environment as a word processing operator. Of the seven trade names for word processing equipment listed: AB Dick, AES, IBM, Mainframe, Micom, Wang, and Other (Please Specify), 31.7% (26) indicated Micom as the major piece of equipment they used to process information. IBM equipment

was used by 15.9% (13) of the participants; 9.8% (8) used AES; 7.3% (6) used Wang; and 1.2% (1) used AB Dick equipment. Thirty point five percent (25) checked that they used 'Other' word processing equipment which they listed as: Digital, NBI, Xerox, Mowawk, Courier, GEAC, Olivetti, Toshiba, Kaypro, Apple IIE, Macintosh, Epson, Profs, Xerox, GEAC, Epson, Sperry, Compaq, TRS80, ATMS, and DCF Vucom. These data can be found in Table 17.

Although the figure reported for the Micom system is 31.7%, it is interesting to note the names of the equipment listed in the "Other" category; the majority of these pieces of equipment were micro-computers. Considering the information gathered in the previous question on office size (Table 16), it is evident that companies (especially if they are small) are opting for less costly, multifunctional equipment of the micro-computer variety.

Table 17

Type of Word Processing Equipment Used by Participants in Present Position

Word Processing Equipment Used	Frequency	Percent
AB Dick	1	1.2
AES	8	9.8
IBM	13	15.9
Micom	26	31.7
Wang	6	7.3
Other	25	30.5
Total	79[a]	96.4

[a] Three participants did not provide data.

Question 16 was a two part [illegible] to ascertain if the research participant could operate any other type of word processing equipment. The first part of the question required a simple "YES" or "NO" response on the part of respondents. If they indicated the affirmative, they were to check the other type of equipment they could operate. In Table 18 are data which indicate that 72.0% (59) of the participants answered "YES" they could operate other word processing equipment, and 26.8% (22) answered "NO."

Respondents answering "YES" to Question 16 were then asked to complete the second part of the question by designating the other type(s) of equipment they could operate. An analysis of this data reveal that 58.5% (48) of the research participants indicated that in addition to the word processing equipment in their office environment, they

could also operate Micom word processing equipment; 9.8% (8) indicated Wang; 8.5% (7,7) indicated AES and AB Dick; and 4.9% (4,4) indicated IBM and Mainframe equipment. Twelve point two percent (10) listed under 'Other' the following word processing equipment they could operate: Macintosh, Epson, Apple, Olivetti, TRS80, ATMS, Sperry, and Digital equipment. These data indicate that the word processing operators who participated in the study could operate a variety of different kinds of equipment, and these data can be found in Table 19.

Table 18

Operation of Other Word Processing Equipment by Research Participants

Operate Other Equipment	Frequency	Percent
Yes	59	72.0
No	22	26.8
Total	81[a]	98.8

[a] One participant did not provide the data requested.

Table 19

Type of Other Word Processing Equipment Participants Could Operate

Trade Name	Frequency	Percent
AB Dick	7	8.5
AES	7	8.5
IBM	4	4.9
Mainframe	4	4.9
Micom	48	58.5
Wang	8	9.8
Other	10	12.2
Total	88[a]	107.3

[a] Six participants could operate more than one other kind of equipment.

To determine the number of hours per week that those involved in the research devoted to word processing operations, Question 17 was written. Of the seven categories that participants could chose from, data in Table 20 reveal that 23.2% (19) of the research population devoted between 6 and 11 hours per week to work processing operations, and 17.1% (14) devoted 0 and 5 hours per week. In each of the following categories: 18 and 23 hours; 24 and 29 hours; and 30 and 35 hours, 12.2% (10,10,10) of those who responded indicated they spent those hours processing words; 11.0% (9) devoted between 36 and 41 hours; and 9.8% (8) devoted between 12 and 17 hours of their working day to processing words.

These data indicate that 50.1% of the research

participants who responded to this question spend from 0 to 17 hours a week performing word processing operations. The remaining 47.6% of the responding participants spend 18 to 41 hours a week performing word processing operations in the work place.

Table 20

Hours Per Week Devoted to Word Processing Operations by Participants

Number of Hours Per Week	Frequency	Percent
0 - 5	14	17.1
6 - 11	19	23.2
12 - 17	8	9.8
18 - 23	10	12.2
24 - 29	10	12.2
30 - 35	10	12.2
36 - 41	9	11.0
Total	80[a]	97.7

[a] Two participants did not provide this data.

Data collected with Question 18 identify the word processing function "MOST OFTEN" performed by participants in the work place. In Table 21 are data which indicate that 42.7% (35) of the research participants indicated that the word processing function "most often" performed was the production of letters and memos; and 36.6% (30) indicated multi-page documents; while the functions 'most often' performed by each of 5 participants, or 6.1% of the research

sample were forms, statistical documents, and records/list processing.

In identifying letters-memos, and multi documents as the functions "most often" performed, instruction in these functions would include the areas of competence and enabling skills that would support these functions.

Table 21

Word Processing Function Participants "Most Often" Performed

Function Performed "Most Often"	Frequency	Percent
Letters-Memos	35	42.7
Forms	5	6.1
Statistical Documents	5	6.1
Records	5	6.1
Multi Documents	30	36.6
Total	80[a]	97.7

[a] Data was not provided by 2 participants.

To determine if those involved in the study felt that there was a need for additional training on the word processing equipment they were working with at the time of the study, Question 19 was prepared. In Table 22 there are data collected with this queston which indicate that 13.4% (11) 'strongly agree' that there is a need for additional training on the word processing equipment participants were using; 34.1% (28) 'agree;' 17.1% (14) were 'undecided' as to

the need for additional training; 24.4% (20) 'disagree;' and 8.5% (7) 'strongly disagree' there was a need for such training. Although 47.5% of the participants feel a need for further training, the remainder of the responses (50.0%) are either indifferent or disagree that they need additional training. Regardless of how word processing operators feel about the need for further training, training should be made available to those who request it.

Table 22

Participant's Opinion Toward Need for Additional Training on Equipment in Present Position

Opinion of Participant	Frequency	Percent
Strongly Agree	11	13.4
Agree	28	34.1
Undecided	14	17.1
Disagree	20	24.4
Strongly Disagree	7	8.5
Total	80[a]	97.5

[a] Two research participants did not provide this data.

Question 20 asked the research participants if they had attended a workshop or conference on office automation and/or word processing in the year preceeding the study by checking either "YES" or "NO". Data in Table 23 indicate 75.6% (62) answered "NO" they had not attended either a workshop or a conference on office automation the year prior

to the study. These data, however, do show that 23.2% (19) of the 81 participants who responded to this question did have the privilege to attend such a meeting.

Table 23

Workshop or Conference Attendance in Past Year

Workshop or Conference Attendance	Frequency	Percent
Yes	19	23.2
No	62	75.6
Total	81[a]	98.8

[a] One participant did not provide this data.

The policy of employers toward supporting word processing operators to secure additional education, training, or professional development was asked for in Question 21. Of the 82 research participants, 11.0% (9) indicated they received no support for professional development or additional education from their employer; 30.5% (25) indicated their employer would pay all, or part of the registration fee for evening courses in which they would enroll; 42.7% (35) indicated their employer would pay the registration fee and other costs for short workshops, seminars, etc., that were related to their work; 24.4% (20) indicated their employer would provide them with manuals, handbooks, professional magazines, etc., that are related to their work; 24.4% (20) indicated their employer provided in-

service training related to their work; and, 17.1% (14) indicated that the degree of assistance depends upon the applicant. None of the research participants indicated their employers offered a 'reduced salary for full-time education'. These data are found in Table 24. Employer support is dependent upon a number of employer/employee relationship factors, budgeting requirements and constraints, and social and economical factors. All of these factors, individually, need to be further examined.

Research Participant Comments

Included with Question 21 was a section where those involved in the study could make comments about the support their employer gave them toward securing either further education, or becoming involved in professional development activities. Below are selected comments which were made by the research participants to further support the statistics already reported in this study, and to offer further direction to training institutions:

> . . . This company provided a 4 1/2 day course on DCF-Vucom and supplied all necessary materials. The course was taken during company time with no loss of pay.
>
> . . . Office Assistance provides seminars and weekend courses for its temporaries to have additional training and informaton for advancement in the professional field (higher positions, better salaries, etc.).
>
> . . . If an employee wishes to take related courses that are not offered by the government, they will pay a portion upon completion.
>
> . . . I am employed with an agency, so must get get training on my own.

Table 24

Policy of Employer Toward Support of Word Processing Operators Who Want Additional Education, Training, or Professional Development

Employer Support Policy	Frequency	Percent
No Support	9	11.0
Reduced Salary For Full-Time Education	-	-
Pay All or Part of Registration Fee for Evening Courses	25	30.5
Pay Registration Fee, Other Costs for Short Workshops, Seminars	35	42.7
Provide Manuals, etc. Related to Work	20	24.4
Provide In-Service Training Related to Work	20	24.4
Degree of Assistance Applicant Related	14	17.1
Total	123[a]	

[a] This total does not equal 82; participants gave more than one answer.

. . . They will pay full registration fee, but prefer courses on AES equipment because that is what our equipment is.

. . . It has been my experience as an operator that all training available provides an adequate foundation for practical application. However, the largest area of frustration stems from the management level. Why not offer instruction to the people who buy the equipment.

. . . My job...is only a temporary position for six months. My supervisor shows no interest or concern for me to have additional training.

. . . I am working mainly with the glossary function. Paragraphs and sentences are already programmed into the machine. We call these up and type in the variable information required.

. . . The machine I am currently operating is called a Profs machine. It is mainly used to check all incoming mail...It can be use to send memos, documents, and messages to other offices...It also has a printer.

. . . I strongly recommend training on word processing equipment you use in the place of your employment so that it may be used to its greatest extent.

. . . I work in a small office and was more or less forced to teach myself how to use the machine. However, because of my education, I had no difficulties. I am extremely interested in learning all functions of the machine along with the computer capabilities that it does have.

. . . Received one week on-the-job training on the machine I am currently using.

. . . Currently working on an IBM PC which has word processing capabilities. I usually use the word processor a couple of times a week. All our disks are programmed in our head office. These programs produce ledger sheets for analysis. Specific information inputted will produce these ledgers. I would like to use the word processor more often but because of the limited training I have on the machine, I find whatever I can usually do on the machine easier to do on the typewriter because I am constantly having to go to my reference books to find out what to do next. Whenever I have down time I do spend time on the word processor.

. . . I took the introductory course to find a new job, to get my foot in the door. Now that I have been working a 7 1/2 hour day on the word processor for a year, I plan to take a supervisory word processing course in communications during the evening.

. . . Only employees who have been on staff full time for one year are eligible for educational assistance unless automation of a department meant all staff needed training irrespective of length of employment.

. . . Would like more practical 'teach yourself' material. Formal training seems unnecessary.

Word Processing Competency Checklist

The Scales

The Word Processing Competency Checklist listed a number of word processing functions that were not machine specific and that could be performed by word processing operators who were adequately trained. Beside each word processing function TWO 5-point Likert scales were included. The first scale--THE WORK SCALE--was to gather information on the frequency of use of the individual word processing functions that were actually being performed at the work place. The 5-point Likert scale for the WORK SCALE included these five choices: Very Seldom, Seldom, Some, Frequently, and Very Frequently.

The second scale--THE PREPARATION SCALE--was designed to collect data on the participant's opinion of the preparation of each of the word processing functions that may have been presented in a formal educational setting. The scale for the PREPARATION SCALE was also a 5-point Likert scale with the following categories: Very Inadequate, Inadequate, Neither Inadequate or Adequate, Adequate, and Very Adequate. In an analysis of the questionnaires that were returned, it was found that a limited number of research participants had written 'Never' as a response. In retrospect this could have been considered a weakness of this portion of the research instrument.

The Word Processing Functions

The word processing functions which appeared on the

questionnaire of this study were divided into the following twelve general areas of competence: 1. Set Up the System, 2. Keyboard (Input) - I, 3. Keyboard (Input) - II, 4. Create Documents, 5. Reformat Text, 6. Minor correcting and Proofing, 7. Major Editing and Revising, 8. Store and File Text, 9. Recall and Retrieve Text, 10. Print (Output) Text, 11. Execute Special Features, and 12. Execute Other Specialized Functions. The research participants rated some 60 enabling skills that fell under the twelve general areas of competence. Each general area of competence contained an average of approximately five enabling skills. Each individual who participated in the study was asked to rate each enabling skill; firstly, according to the 5-point Likert WORK SCALE for frequency of performance with reference to their work place, and secondly, to rate the PREPARATION SCALE for adequacy of preparation with reference to their formal word processing training. The result was that each participant rated 2 scales with 12 categories for each scale for a total of 24 categories that contained 60 competencies for each scale. Frequency counts and percentages were done on both the WORK SCALE and the PREPARATION SCALE for each enabling skill for each general area of competence.

What follows in this section is a separate table that presents the data collected for the WORK SCALE, and a table that presents the data collected for the PREPARATION SCALE for each general area of competence. The WORK SCALE table

will be followed by the PREPARATION SCALE table.

General Area of Competence - SET UP THE SYSTEM

Enabling Skills:

1.1 Turn the machine on and off
1.2 Load or access system
1.3 Load or access work diskette or file
1.4 Initialize a disk

Of the four functions that are involved to SET UP THE SYSTEM, only the enabling skills of "Turn the machine on and off" (42/82) and "Load or access work diskette or file" (47/82) were very frequently done as a work skill by research participants. "Load or access system disk" was an enabling skill that was frequently done by 35 of the 82 word processing operators involved in this investigation. Only 20 of these participants indicated that to "Intialize a disk" was some time performed by them in their work. Data in support of the above can be found in Table 25.

Table 25

Enabling Skills Performed by Participants for General Area of Competence - Set Up The System - Work Scale

Enabling Skill	Performed by Participants				
	Very Seldom	Seldom	Some	Frequently	Very Frequently
1.1 Turn the Machine On and Off	(10) 12.3	(5) 6.2	(10) 12.3	(14) 17.3	(42) 51.9
1.2 Load or Access System Disk	(17) 21.2	(7) 8.7	(20) 25.0	(35) 43.8	(1) 1.2
1.3 Load or Access Work Diskette or File	(6) 7.5	(1) 1.2	(9) 11.2	(17) 21.2	(47) 58.7
1.4 Initialize a Disk	(18) 23.1	(4) 5.1	(20) 25.6	(16) 20.5	(19) 24.4

It was the opinion of research participants that the preparation they received in their formal schooling to perform the enabling skills needed to SET UP THE SYSTEM was considered to be very adequate. Of the 82 word processing operators, 50 (61.7%)) indicated that their preparation to "Turn the machine on and off" was very adequate. Forty-five (56.3%) held the opinion that the preparation they had to "Load or access work diskette or file" was also very adequate. The opinion of 42 or 52.5% of the research population was that their preparation to "Load or access system disk" was very adequate.

Less than 35%, 25, of those involved in the study were of the opinion that the training they received to

"Initialize a disk" was very adequate. These data are found in Table 26.

Table 26

Opinions of Participants Toward Preparation of Enabling Skills for the General Area of Competence - Set Up The System - Preparation Scale

Enabling Skill	Opinions of Participants				
	Very Inadeq[1]	Inadeq[2]	Nei Inadeq or Adeq[3]	Adeq[4]	Very Adeq[5]
1.1 Turn the Machine On and Off	(2) 2.5	(1) 1.2	(4) 4.9	(24) 29.6	(50) 61.7
1.2 Load or Access System Disk	(1) 1.2	(1) 1.2	(7) 8.7	(28) 35.0	(42) 52.5
1.3 Load or Access Work Diskette or File	0 0	(1) 1.2	(6) 7.5	(28) 35.0	(45) 56.3
1.4 Initialize a Disk	(6) 7.7	(7) 9.0	(16) 20.5	(23) 29.5	(25) 32.1

[1] Very Inadeq = Very Inadequate
[2] Inadeq = Inadequate
[3] Nei Inadeq or Adeq = Neither Inadequate or Adequate
[4] Adeq = Adequate
[5] Very Adeq = Very Adequate

General Area of Competence - KEYBOARD (INPUT) - I

Enabling Skills:

2.1 Use alpha and numeric keys
2.2 Use code and function keys (underscoring, centering, boldfacing, etc.)
2.3 Use cursor or locator keys
2.4 Use special system keys
2.5 Use word wrap-around (On/Off)
2.6 Decimal alignment

The frequency count of the WORK SCALE of competencies 2.1, 2.2, 2.3, and 2.5 of KEYBOARD (INPUT) - I indicate that these competencies were very frequently performed at the work place. Participants indicated they performed enabling skill 2.4 Special System Keys very frequently, and competence 2.6 Decimal Alignment was performed very seldom. Supporting data for these findings can be found in Table 27.

Table 27

Enabling Skills Performed by Participants for General Area of Competence - Keyboard (Input) - I - Work Scale

Enabling Skill	Performed by Participants				
	Very Seldom	Seldom	Some	Frequently	Very Frequently
2.1 Use Alpha and Numeric Keys	(2) 2.5	0 0	(14) 17.7	(15) 19.0	(48) 60.8
2.2 Use Code and Function Keys	(2) 2.5	(1) 1.2	(5) 6.2	(29) 35.8	(44) 54.3
2.3 Use Cursor or Locator Keys	(2) 2.5	0 0	(1) 1.2	(13) 16.2	(64) 80.0
2.4 Use Special System Keys	(7) 8.9	(5) 6.3	(16) 20.3	(21) 26.6	(29) 36.7
2.5 Use Word Wrap-Around (On/Off)	(6) 7.6	(2) 2.5	(6) 7.6	(9) 11.4	(55) 69.6
2.6 Decimal Alignment	(24) 29.6	(18) 22.2	(22) 27.2	(10) 12.3	(7) 8.6

Of the six enabling skills that culminate in the general area of competence - KEYBOARD (INPUT) -I, it was the opinion of those involved in the study that the preparation

they received with the following three enabling skills 2.1, 2.2, and 2.3 was very adequate. Forty-eight percent of the participants indicated the preparation they received to execute enabling skill 2.5 was adequate, while 33 of the 82 word processing operators involved in the research were of the opinion their training for Decimal alignment was adequate. See Table 28 for the and other data.

Table 28

Opinions of Participants Toward Preparation of Enabling Skills for the General Area of Competence - Keyboard (Input) - I - Preparation Scale

Enabling Skill	Opinions of Participants				
	Very Inadeq[1]	Inadeq[2]	Nei Inadeq or Adeq[3]	Adeq[4]	Very Adeq[5]
2.1 Use Alpha and Numeric Keys	(2) 2.6	(2) 2.6	(10) 13.0	(23) 29.9	(40) 51.9
2.2 Use Code and Function Keys	(1) 1.2	(1) 1.2	(7) 8.7	(28) 35.0	(42) 52.5
2.3 Use Cursor or or Locator Keys	0 0	0 0	(5) 6.3	(31) 39.2	(43) 54.4
2.4 Use Special System Keys	(2) 2.6	(1) 1.3	(23) 30.3	(31) 40.8	(18) 23.7
2.5 Use Word Wrap-Around (On/Off)	(4) 5.4	(6) 8.1	(15) 20.3	(48) 64.9	(1) 1.4
2.6 Decimal Alignment	(2) 2.5	(12) 15.2	(21) 26.6	(33) 41.8	(11) 13.9

[1]Very Inadeq = Very Inadequate
[2]Inadeq = Inadequate
[3]Nei Inadeq or Adeq = Neither Inadequate or Adequate
[4]Adeq = Adequate
[5]Very Adeq = Very Adequate

General Area of Competence - KEYBOARD (INPUT) - II

Enabling Skills:

3.1 Use headers and footers with automatic page numbering
3.2 Paginate
3.3 Use multi-columns
3.4 Footnoting
3.5 Use subscripts and superscripts

The frequency count of the WORK SCALE for enabling skills 3.1, 3.2, 3.3, 3.4, and 3.5 of KEYBOARD (INPUT) - II indicated that all five competencies were very seldom performed at the work place by the 82 word processing operators who supplied these data. Data related to the general area of competence - KEYBOARD (INPUT) - II and its enabling skills are found in Table 29.

Table 29

Enabling Skills Performed by Participants for General Area of Competence - Keyboard (Input) - II - Work Scale

Enabling Skill	Performed by Participants				
	Very Seldom	Seldom	Some	Frequently	Very Frequently
3.1 Use Headers and Footers with Automatic Page Numbering	(22) 27.5	(14) 17.5	(15) 18.8	(13) 16.2	(15) 18.8
3.2 Paginate	(24) 29.6	(14) 17.3	(14) 17.3	(12) 14.8	(16) 19.8
3.3 Use Multi-Columns	(25) 30.9	(14) 17.3	(21) 25.9	(13) 16.0	(7) 8.6
3.4 Footnoting	(54) 66.7	(15) 18.5	(6) 7.4	(4) 4.9	(1) 1.2
3.5 Use Subscripts and Superscripts	(43) 53.7	(12) 15.0	(12) 15.0	(7) 8.7	(5) 6.3

Data in Table 30 show that for two of the five enabling skills the preparation for competencies 3.1 and 3.2 was considered by participants to be adequate, while these participants were of the opinion that their preparation with enabling skills 3.3, 3.4 and 3.5 was neither inadequate or adequate.

Table 30

Opinions of Participants Toward Preparation of Enabling Skills for the General Area of Competence - Keyboard (Input) - II - Preparation Scale

Enabling Skill	Opinions of Participants				
	Very Inadeq[1]	Inadeq[2]	Nei Inadeq or Adeq[3]	Adeq[4]	Very Adeq[5]
3.1 Use Headers and Footers with Automatic Page Numbering	(8) 10.3	(7) 9.0	(18) 23.1	(27) 34.6	(17) 21.8
3.2 Paginate	(3) 3.8	(5) 6.4	(11) 14.1	(31) 39.7	(27) 34.6
3.3 Use Multi-Columns	(6) 7.6	(10) 12.7	(24) 30.4	(23) 29.1	(15) 19.0
3.4 Footnoting	(9) 11.4	(16) 20.3	(27) 34.2	(17) 21.5	(9) 11.4
3.5 Use Subscripts and Superscripts	(11) 14.1	(8) 10.3	(30) 38.5	(20) 25.6	(8) 10.3

[1]Very Inadeq = Very Inadequate
[2]Inadeq = Inadequate
[3]Nei Inadeq or Adeq = Neither Inadequate or Adequate
[4]Adeq = Adequate
[5]Very Adeq = Very Adequate

General Area of Competence - CREATE DOCUMENTS

Enabling Skills:

4.1 Format (setting tabs, margins, line spacing, pitch, etc.)
4.2 Name documents
4.3 Use prompts, messages, and menus
4.4 Use stop codes

Of the four enabling skills for the general area of competence - CREATE DOCUMENTS, only competencies 4.1, 4.2,

and 4.3 were rated as being done very frequently, while competency 4.3 was done frequently by those involved in the research. See Table 31 for these data.

Table 31

Enabling Skills Performed by Participants for General Area of Competence - Create Documents - Work Scale

Enabling Skill	Performed by Participants				
	Very Seldom	Seldom	Some	Frequently	Very Frequently
4.1 Format	(4) 4.9	(4) 4.9	(7) 8.6	(22) 27.2	(44) 54.3
4.2 Name Documents	(5) 6.2	(3) 3.7	(5) 6.2	(14) 17.3	(53) 65.4
4.3 Use Prompts, Messages, and Menus	(8) 10.3	(3) 3.8	(11) 14.1	(22) 28.2	(34) 43.6
4.4 Use Stop Codes	(22) 28.2	(15) 19.2	(18) 23.1	(16) 20.5	(7) 9.0

The opinions that participants had toward the preparation they received to become competent with the four enabling skills in order to CREATE DOCUMENTS are found in the data that make up Table 32. The frequencies in this table show that it was the opinion that their preparation in enabling skills 4.1, 4.2, and 4.3 was very adequate. Participants' opinions toward the preparation they received with competency 4.4 was neither inadequate or adequate, a neutral rating. These data are found in the table which follows.

Table 32

Opinions of Participants Toward Preparation of Enabling Skills for the General Area of Competence - Create Documents - Preparation Scale

Enabling Skill	Opinions of Participants				
	Very Inadeq[1]	Inadeq[2]	Nei Inadeq or Adeq[3]	Adeq[4]	Very Adeq[5]
4.1 Format	(1) 1.2	(4) 5.0	(7) 8.7	(16) 20.0	(52) 65.0
4.2 Name Documents	(2) 2.5	(1) 1.3	(7) 8.9	(21) 26.6	(47) 59.5
4.3 Use Prompts, Messages, and Menus	(5) 6.5	(3) 3.9	(11) 14.3	(23) 29.9	(35) 45.5
4.4 Use Stop Codes	(7) 9.1	(2) 2.6	(27) 35.1	(25) 32.5	(16) 20.8

[1]Very Inadeq = Very Inadequate
[2]Inadeq = Inadequate
[3]Nei Inadeq or Adeq = Neither Inadequate or Adequate
[4]Adeq = Adequate
[5]Very Adeq = Very Adequate

General Area of Competence - REFORMAT TEXT

Enabling Skills:

5.1 Restructure margins, tabs, line spacing, pitch, etc.
5.2 Hyphenate (manual and automatic)
5.3 Repaginate
5.4 Justify

In Table 33 are data which show all of the data analysis for - REFORMAT TEXT - that were collected from the 82 word processing operator participants. Of the four enabling skills that were listed on the questionnaire, only

competencies 5.1 and 5.4 were rated as being very frequently performed by participants. The remaining two competencies 5.2 and 5.3 were very seldom performed by those involved in this study.

Table 33

Enabling Skills Performed by Participants for General Area of Competence - Reformat Text - Work Scale

Enabling Skill	Performed by Participants				
	Very Seldom	Seldom	Some	Frequently	Very Frequently
5.1 Restructure	(7) 8.7	(5) 6.3	(24) 30.0	(17) 21.2	(27) 33.7
5.2 Hyphenate	(22) 27.5	(9) 11.2	(19) 23.7	(10) 12.5	(19) 23.7
5.3 Paginate	(38) 47.5	(6) 7.5	(11) 13.7	(9) 11.2	(15) 18.8
5.4 Justify	(13) 16.0	(9) 11.1	(16) 19.8	(16) 19.8	(27) 33.3

Opinions that participants had toward the preparation they received with the enabling skills for the general area of competence - REFORMAT TEXT - were used to organize data in Table 34. Data in this table show that it was the opinion of participants that they received very adequate preparation with the four enabling skills: 5.1, 5.2, 5.3, and 5.4.

Comparing data from Table 34 with data from Table 33 it becomes evident that participants rated their preparation

for all four enabling skills as very adequate but indicated they performed competencies 5.2 and 5.3 very seldom at work.

Table 34

Opinions of Participants Toward Preparation of Enabling Skills for the General Area of Competence - Reformat Text - Preparation Scale

Enabling Skill	Opinions of Participants				
	Very Inadeq[1]	Inadeq[2]	Nei Inadeq or Adeq[3]	Adeq[4]	Very Adeq[5]
5.1 Restructure	(2) 2.5	(2) 2.5	(11) 13.9	(32) 40.5	(32) 40.5
5.2 Hyphenate	(2) 2.6	(6) 7.7	(10) 12.8	(30) 38.5	(29) 37.2
5.3 Paginate	(7) 8.9	(8) 10.1	(15) 19.0	(23) 29.1	(25) 31.6
5.4 Justify	(2) 2.5	(2) 2.5	(11) 13.9	(23) 29.1	(41) 51.9

[1]Very Inadeq = Very Inadequate
[2]Inadeq = Inadequate
[3]Nei Inadeq or Adeq = Neither Inadequate or Adequate
[4]Adeq = Adequate
[5]Very Adeq = Very Adequate

General Area of Competence - MINOR CORRECTING AND PROOFING

Enabling Skills:

6.1 Delete, insert, and replace text
6.2 Correct characters and words while keyboarding
6.3 Scroll (horizontally and vertically to review text)
6.4 Change margins, tabs, line spacing, etc.

MINOR CORRECTING AND PROOFING is a general area of

competence which was identified in this study as being composed of four enabling skills. The responses made by the 82 participants to Section 6 of the WORK SCALE comprise the data presented in Table 35. These data show that all four of these enabling skills where performed very frequently by research participants.

Data in Table 36 represent opinions collected with the PREPARATION SCALE of the Word Processing Skill Checklist. These data indicate that participating word processing operators were of the opinions that the preparation they were given in the word processing course with enabling skills 6.1, 6.2, 6.3 and 6.4 was very adequate.

Table 35

Enabling Skills Performed by Participants for General Area of Competence - Minor Correcting and Proofing - Work Scale

Enabling Skill	Performed by Participants				
	Very Seldom	Seldom	Some	Frequently	Very Frequently
6.1 Delete, Insert, and Replace Text	(1) 1.2	(1) 1.2	(4) 4.9	(12) 14.8	(63) 77.8
6.2 Correct Characters and Words Keyboarding	(1) 1.2	- -	(10) 12.3	(17) 21.0	(53) 65.4
6.3 Scroll	(6) 7.4	(1) 1.2	(15) 18.5	(18) 22.2	(41) 50.6
6.4 Change Margins, Tabs, Line Spacing, etc.	(7) 8.6	(5) 6.2	(16) 19.8	(23) 28.4	(30) 37.0

Table 36

Opinions of Participants Toward Preparation of Enabling Skills for the General Area of Competence - Minor Correcting and Proofing - Preparation Scale

Enabling Skill	Opinions of Participants				
	Very Inadeq[1]	Inadeq[2]	Nei Inadeq or Adeq[3]	Adeq[4]	Very Adeq[5]
6.1 Delete, Insert, and Replace Text	-	-	(6) 7.5	(18) 22.5	(56) 70.0
6.2 Correct Characters and Words Keyboarding	-	-	(13) 16.5	(19) 24.1	(47) 59.5
6.3 Scroll	-	(3) 3.8	(8) 10.1	(28) 35.4	(40) 50.6
6.4 Change Margins, Tabs, Line Spacing, etc.	-	(6) 7.6	(10) 12.7	(24) 30.4	(39) 49.4

[1]Very Inadeq = Very Inadequate
[2]Inadeq = Inadequate
[3]Nei Inadeq or Adeq = Neither Inadequate or Adequate
[4]Adeq = Adequate
[5]Very Adeq = Very Adequate

General Area of Competence - MAJOR EDITING AND REVISING

Enabling Skills:

7.1 Move blocks or columns of text
7.2 Delete, insert, replace blocks/columns of text
7.3 Use global search and replace
7.4 Use spelling verification

The general area of competence MAJOR EDITING AND REVISING and its four enabling skills were part of the checklist portion of the research instrument. Only 21 of

the 82 participants performed enabling skill 7.2 very frequently in their work activities. These same word processing operators performed enabling skill 7.1 some of the time, and they indicated that they performed competencies 7.3 and 7.4 very seldom.

Table 37

Enabling Skills Performed by Participants for General Area of Competence - Major Editing and Revising - Work Scale

Enabling Skill	Performed by Participants				
	Very Seldom	Seldom	Some	Frequently	Very Frequently
7.1 Move Blocks or Columns of Text	(12) 14.8	(15) 18.5	(22) 27.2	(16) 19.8	(15) 18.5
7.2 Delete, Insert, Replace blocks/ Columns of Text	(7) 8.7	(11) 13.7	(20) 25.0	(21) 26.2	(21) 26.2
7.3 Use Global Search and Replace	(29) 36.2	(19) 23.7	(16) 20.0	(8) 10.0	(7) 8.7
7.4 Use Spelling Verification	(41) 51.9	(7) 8.9	(10) 12.7	(6) 10.1	(11) 13.9

In Table 38 are data which were collected with the PREPARATION SCALE for the four enabling skills for the function of MAJOR EDITING AND REVISING. These data show that of the four competencies participants were of the opinion that their preparation to perform enabling skills 7.1 and 7.2 to be very adequate. Their opinion toward preparation received with competencies 7.4 and 7.3 was neither inadequate or adequate and adequate respectively.

Table 38

Opinions of Participants Toward Preparation of Enabling Skills for the General Area of Competence - Major Editing and Revising - Preparation Scale

Enabling Skill	Opinions of Participants				
	Very Inadeq[1]	Inadeq[2]	Nei Inadeq or Adeq[3]	Adeq[4]	Very Adeq[5]
7.1 Move Blocks or Columns of Text	(2) 2.5	(2) 2.5	(17) 21.5	(27) 34.2	(30) 38.0
7.2 Delete, Insert, Replace blocks/ Columns of Text	(1) 1.3	(4) 5.1	(16) 20.3	(28) 35.4	(30) 38.0
7.3 Use Global Search and Replace	(3) 3.9	(10) 13.0	(19) 24.7	(24) 31.2	(20) 26.0
7.4 Use Spelling Verification	(18) 23.7	(9) 11.8	(28) 36.8	(12) 15.8	(7) 9.2

[1]Very Inadeq = Very Inadequate
[2]Inadeq = Inadequate
[3]Nei Inadeq or Adeq = Neither Inadequate or Adequate
[4]Adeq = Adequate
[5]Very Adeq = Very Adequate

General Area of Competence - STORE AND FILE TEXT

Enabling Skills:

8.1 Store more than one version of a document
8.2 Delete previous versions of documents
8.3 Set up files and maintain records
8.4 Copy file(s) or a part of a file

Of the four competencies that are involved to learn to STORE AND FILE TEXT, only competence 8.3 was very frequently performed by those involved in the research. Competence 8.4 was frequently performed, while

competencies 8.1 and 8.2 were some time performed by the 82 word processing operators who furnished data for Table 39.

Table 39

Enabling Skills Performed by Participants for General Area of Competence - Store and File Text - Work Scale

Enabling Skill	Performed by Participants				
	Very Seldom	Seldom	Some	Frequently	Very Frequently
8.1 Store More Than One Version of a Document	(17) 21.2	(12) 15.0	(23) 28.7	(13) 16.2	(15) 18.8
8.2 Delete Previous Versions of Documents	(10) 12.3	(10) 12.3	(24) 29.6	(15) 18.5	(22) 27.2
8.3 Set Up Files and Maintain Records	(12) 14.8	(8) 9.9	(12) 14.8	(24) 29.6	(25) 30.9
8.4 Copy File(s) or a Part of a File	(11) 13.6	(8) 9.9	(16) 19.8	(25) 30.9	(21) 25.9

The PREPARATION SCALE for STORE AND FILE TEXT asked participants to give their opinions for the same enabling skills that they rated on the WORK SCALE. In Table 40 are data which show that 28 operators were of the opinion that they had received training with enabling skill 8.2 that was either adequate or very adequate. According to the opinions of the 82 participants, competencies 8.1, 8.3, and 8.4 were adequately taught while they were taking their course work.

Table 40

Opinions of Participants Toward Preparation of Enabling Skills for the General Area of Competence - Store and File Text - Preparation Scale

Enabling Skill	Opinions of Participants				
	Very Inadeq[1]	Inadeq[2]	Nei Inadeq or Adeq[3]	Adeq[4]	Very Adeq[5]
8.1 Store More Than One Version of a Document	(8) 10.1	(2) 2.5	(20) 25.3	(25) 31.6	(24) 30.4
8.2 Delete Previous Versions of Documents	(6) 7.6	(2) 2.5	(15) 19.0	(28) 35.4	(28) 35.4
8.3 Set Up Files and Maintain Records	(8) 10.0	(5) 6.3	(19) 23.7	(26) 32.5	(22) 27.5
8.4 Copy File(s) or a Part of a File	(4) 5.0	(6) 7.5	(15) 18.8	(29) 36.2	(26) 32.5

[1]Very Inadeq = Very Inadequate
[2]Inadeq = Inadequate
[3]Nei Inadeq or Adeq = Neither Inadequate or Adequate
[4]Adeq = Adequate
[5]Very Adeq = Very Adequate

General Area of Competence - RECALL AND RETRIEVE TEXT

Enabling Skills:

9.1 Use document index (directory)
9.2 Access stored text
9.3 Selectively display portions of stored text, such as a specific page
9.4 Use security codes

Three of the four enabling skills that are used by word processing operators to RECALL AND RETRIEVE TEXT were rated by research participants to be very frequently done in

their work. The following enabling skills received this rating: 9.1, 9.2, and 9.3. These operators indicated that enabling skill 9.4 was very seldom done as a work activity. Table 41 contains these data.

Table 41

Enabling Skills Performed by Participants for General Area of Competence - Recall and Retrieve Text - Work Scale

Enabling Skill	Performed by Participants				
	Very Seldom	Seldom	Some	Frequently	Very Frequently
9.1 Use Document Index (DIR)	(3) 3.7	(1) 1.2	(9) 11.2	(17) 21.2	(50) 62.5
9.2 Access Stored Text	(1) 1.2	(2) 2.5	(5) 6.3	(22) 27.5	(50) 62.5
9.3 Selectively Display Portions of Stored Text, Such as a Specific Page	(4) 5.1	(5) 6.3	(14) 17.7	(26) 32.9	(30) 38.0
9.4 Use Security Codes	(48) 60.8	(6) 7.6	(8) 10.1	(5) 6.3	(9) 11.4

Of the three enabling skills 9.1, 9.2, and 9.3 that were very frequently performed by participants, their opinions of the preparation they received to perform these three competencies was considered to be very adequate. Although Use security codes was very seldom used as a word processing function research particpants were of the opinion that their preparation to perform this skill was neither inadequate or adequate. Table 42 contains this data.

Table 42

Opinions of Participants Toward Preparation of Enabling Skills for the General Area of Competence - Recall and Retrieve Text - Preparation Scale

Enabling Skill	Opinions of Participants				
	Very Inadeq[1]	Inadeq[2]	Nei Inadeq or Adeq[3]	Adeq[4]	Very Adeq[5]
9.1 Use Document Index (DIR)	(2) 2.6	(3) 3.8	(3) 3.8	(24) 30.8	(46) 59.0
9.2 Access Stored Text	(1) 1.3	(2) 2.6	(6) 7.7	(29) 37.2	(40) 51.3
9.3 Selectively Display Portions of Stored Text, Such as a Specific Page	(4) 5.2	(2) 2.6	(9) 11.7	(30) 39.0	(31) 40.3
9.4 Use Security Codes	(21) 27.3	(6) 7.8	(31) 40.3	(7) 9.1	(9) 11.7

[1]Very Inadeq = Very Inadequate
[2]Inadeq = Inadequate
[3]Nei Inadeq or Adeq = Neither Inadequate or Adequate
[4]Adeq = Adequate
[5]Very Adeq = Very Adequate

General Area of Competence - PRINT (OUTPUT) TEXT

Enabling Skills:

10.1 Start/Stop printer
10.2 Set up printer using menus or special print commands
10.3 Load paper
10.4 Print from screen or storage
10.5 Use print queues
10.6 Change ribbons or print wheels
10.7 Operate automatic sheet feeder

For the general area of competence - PRINT (OUTPUT) - TEXT there were seven enabling skills that were listed on

the combined checklist. In analyzing the WORK SCALE checklist it was found that all seven of the enabling skills were very frequently performed in this study. Data in Table 43 show the following number of participants who rated each of the competencies: 10.1 (48); 10.2 (26); 10.3 (46); 10.4 (54); 10.5 (21); 10.6 (28); and 10.7 (27).

Table 43

Enabling Skills Performed by Participants for General Area of Competence - Print (Output) Text - Work Scale

Enabling Skill	Performed by Participants				
	Very Seldom	Seldom	Some	Frequently	Very Frequently
10.1 Start/Stop Printer	(2) 2.5	(1) 1.2	(8) 10.0	(21) 26.2	(48) 60.0
10.2 Set Up Printer Using Menus or Special Print Commands	(10) 12.5	(7) 8.7	(17) 21.2	(20) 25.0	(26) 32.5
10.3 Load Paper	(9) 11.2	(3) 3.7	(8) 10.0	(14) 17.5	(46) 57.5
10.4 Print from Screen or Storage	(2) 2.5	(3) 3.7	(8) 9.9	(13) 16.0	(54) 66.7
10.5 Use Print Queues	(16) 20.8	(8) 10.4	(12) 15.6	(20) 26.0	(21) 27.3
10.6 Change Ribbons of Print Wheels	(13) 16.2	(4) 5.0	(17) 21.2	(18) 22.5	(28) 35.0
10.7 Operate Automatic Sheet Feeder	(27) 33.7	(9) 11.1	(10) 12.5	(5) 6.3	(27) 33.7

In giving their opinions of the preparation they received with these enabling skills while on course, it was the opinions of these individuals that they received very adequate preparation with competencies 10.1, 10.2, 10.3, 10.4, and 10.5; and that they received neither inadequate or adequate preparation with enabling skill 10.7. Table 44 supports this data.

Table 44

Opinions of Participants Toward Preparation of Enabling Skills for the General Area of Competence - Print (Output) Text - Preparation Scale

Enabling Skill	Opinions of Participants				
	Very Inadeq[1]	Inadeq[2]	Nei Inadeq or Adeq[3]	Adeq[4]	Very Adeq[5]
10.1 Start/Stop Printer	-	(5) 6.3	(8) 10.1	(21) 26.6	(45) 57.0
10.2 Set Up Printer Using Menus or Special Print Commands	(5) 6.5	(9) 11.7	(10) 13.0	(25) 32.5	(28) 36.4
10.3 Load Paper	(5) 6.3	(5) 6.3	(8) 10.1	(22) 27.8	(39) 49.4
10.4 Print from Screen or Storage	(1) 1.2	(2) 2.5	(7) 8.7	(25) 31.3	(44) 55.0
10.5 Use Print Queues	(8) 7.9	(3) 3.9	(20) 26.3	(21) 27.6	(26) 34.2
10.6 Change Ribbons of Print Wheels	(10) 12.7	(7) 8.9	(21) 26.6	(18) 22.8	(23) 29.1
10.7 Operate Automatic Sheet Feeder	(21) 26.6	(10) 12.7	(24) 30.4	(8) 10.1	(15) 19.0

[1] Very Inadeq = Very Inadequate
[2] Inadeq = Inadequate
[3] Nei Inadeq or Adeq = Neither Inadequate or Adequate
[4] Adeq = Adequate
[5] Very Adeq = Very Adequate

General Area of Competence - EXECUTE SPECIAL FEATURES

Enabling Skills:

11.1 Use forms
11.2 Use math or arithmetic
11.3 Sort and select (Records/List Processing)
11.4 Merge (Form Letters)
11.5 Assemble a document from a number of sources
11.6 Use communications features
11.7 Use the system dictionary
11.8 Use glossary, key stroke save, or other key stroke storage features

Data in Table 45 show that those involved in the study very seldom performed the eight enabling skills listed in this table. Other data in this table show that other participants performed some of these enabling skills but not all, either some of the time, seldom, or very frequently.

Table 45

Enabling Skills Performed by Participants for General Area of Competence - Execute Special Features - Work Scale

Enabling Skill	Performed by Participants				
	Very Seldom	Seldom	Some	Frequently	Very Frequently
11.1 Use Forms	(34) 42.5	(6) 7.5	(17) 21.2	(9) 11.2	(12) 15.0
11.2 Use Math of Arithmetic	(47) 58.0	(11) 13.6	(11) 13.6	(5) 6.2	(3) 3.7
11.3 Sort and Select (Records/List Processing)	(40) 49.4	(15) 18.5	(11) 13.6	(6) 7.4	(5) 6.2
11.4 Merge (Form Letters	(26) 32.5	(8) 10.0	(13) 16.2	(14) 17.5	(16) 20.0
11.5 Assemble a Document From a Number of Sources	(40) 50.6	(7) 8.9	(13) 16.5	(10) 12.7	(8) 7.6
11.6 Use Communications Features	(45) 57.7	(10) 12.8	(12) 15.4	(3) 3.8	(4) 5.1
11.7 Use the System Dictionary	(48) 60.0	(9) 11.2	(5) 6.3	(6) 7.5	(5) 6.3
11.8 Use Glossary, Key Stroke Save, or Other Key Stroke Storage Features	(37) 46.8	(4) 5.1	(18) 22.8	(7) 8.9	(10) 12.7

Participants' opinions show that for the eight enabling skills listed, it was their opinion that the training they received with competency 11.4 was very adequate. They were also of the opinion that their training was neither inadequate or adequate for competencies 11.1, 11.5, 11.6, 11.7, and 11.8; while they considered the training they received with enabling skills 11.2, and 11.3 to be very inadequate.

Table 46

Opinions of Participants Toward Preparation of Enabling Skills for the General Area of Competence - Execute Special Features - Preparation Scale

Enabling Skill	Opinions of Participants				
	Very Inadeq[1]	Inadeq[2]	Nei Inadeq or Adeq[3]	Adeq[4]	Very Adeq[5]
11.1 Use Forms	(19) 24.7	(14) 18.2	(20) 26.0	(12) 15.6	(11) 14.3
11.2 Use Math of Arithmetic	(26) 32.9	(16) 20.3	(22) 27.8	(6) 7.6	(6) 7.6
11.3 Sort and Select (Records/List Processing)	(18) 23.1	(10) 12.8	(18) 23.1	(15) 19.2	(14) 78.2
11.4 Merge (Form Letters	(4) 5.1	(10) 12.7	(13) 16.5	(25) 31.6	(25) 31.6
11.5 Assemble a Document From a Number of Sources	(10) 13.0	(14) 18.2	(22) 28.6	(15) 19.5	(13) 16.9
11.6 Use Communications Features	(23) 30.3	(9) 11.8	(30) 39.5	(7) 9.2	(3) 3.9
11.7 Use the System Dictionary	(24) 31.2	(11) 14.3	(24) 31.2	(5) 6.5	(6) 7.8
11.8 Use Glossary, Key Stroke Save, or Other Key Stroke Features	(16) 21.3	(9) 12.0	(25) 33.3	(12) 16.0	(11) 14.7

[1]Very Inadeq = Very Inadequate
[2]Inadeq = Inadequate
[3]Nei Inadeq or Adeq = Neither Inadequate or Adequate
[4]Adeq = Adequate
[5]Very Adeq = Very Adequate

General Area of Competence - EXECUTE OTHER SPECIALIZED FUNCTIONS

Enabling Skills:

12.1 Use graphics
12.2 Use photocomposition equipment
12.3 Use typesetting equipment
12.4 Perform system trouble-shooting
12.5 Write special programs
12.6 Supervise other operators

Section 12 of the Word Processing Competency Checklist included six enabling skills that make up the general area of competence - EXECUTE OTHER SPECIALIZED FUNCTIONS. Data collected with this section were used to organize Table 47. These data show that enabling skills 12.1, 12.2, 12.3, 12.4, 12.5, and 12.6 were very seldom done by the participants of this study as a work activity.

Table 47

Enabling Skills Performed by Participants for General Area of Competence - Execute Other Specialized Functions - Work Scale

Enabling Skill	Performed by Participants				
	Very Seldom	Seldom	Some	Frequently	Very Frequently
12.1 Use Graphics	(42) 51.9	(8) 9.9	(13) 16.0	(6) 7.4	(8) 9.9
12.2 Use Photo-Composition Equipment	(65) 83.3	(3) 3.8	(1) 1.3	- -	(1) 1.3
12.3 Use Type-Setting Equipment	(63) 80.8	(3) 3.8	(1) 1.3	(3) 3.8	- -
12.4 Perform System Trouble Shooting	(44) 57.1	(13) 16.9	(10) 13.0	(2) 2.6	(1) 1.3
12.5 Write Special Programs	(64) 82.1	(2) 2.6	(3) 3.8	- -	(1) 1.3
12.6 Supervise Other Operators	(50) 62.5	(8) 10.0	(10) 12.5	(2) 2.5	(4) 5.0

Opinions of those who provided data for this question on the PREPARATION SCALE are shown as data in Table 48, which show it was the opinion of participants that their preparation with enabling skill 12.1 was adequate. Their preparation with competencies 12.2, 12.3, 12.4, and 12.5 was very inadequate, and enabling skill 12.6 was neither inadequate or adequate.

Table 48

Opinions of Participants Toward Preparation of Enabling Skills for the General Area of Competence - Execute Other Specialized Functions - Preparation Scale

Enabling Skill	Opinions of Participants				
	Very Inadeq[1]	Inadeq[2]	Nei Inadeq or Adeq[3]	Adeq[4]	Very Adeq[5]
12.1 Use Graphics	(12) 15.4	(9) 11.5	(14) 17.9	(21) 26.9	(19) 24.4
12.2 Use Photo-Composition Equipment	(29) 38.7	(11) 14.7	(24) 32.0	(3) 4.0	(1) 1.3
12.3 Use Type-Setting Equipment	(26) 34.7	(12) 16.0	(26) 34.7	(1) 1.3	(3) 4.0
12.4 Perform System Trouble Shooting	(27) 37.0	(11) 15.1	(22) 30.1	(5) 6.8	(2) 2.7
12.5 Write Special Programs	(37) 50.0	(7) 9.5	(22) 29.7	-	(1) 1.3
12.6 Supervise Other Operators	(25) 33.3	(7) 9.3	(26) 34.7	(5) 6.7	(7) 9.3

[1]Very Inadeq = Very Inadequate
[2]Inadeq = Inadequate
[3]Nei Inadeq or Adeq = Neither Inadequate or Adequate
[4]Adeq = Adequate
[5]Very Adeq = Very Adequate

Chapter V

Summary, Findings, Conclusions, Observations, and Recommendations

Introduction

Chapter I of this thesis included a detailed outline of the research design and the methodology that was used to bring this study to its conclusion. Contents of that chapter also contained the problem statement, the major and supporting objectives of the study, the need and significance of the study, the research population and procedure used to select the sample, limitations of the investigation, research assumptions, instrument design, a description of the Pilot Study, operational definitions applicable to this research, and the methodology used to collect data for analysis.

Chapter II is titled "Related Literature and Research" and is divided into two sections: related literature, and related research.

Chapter III is titled "Methodology" and discusses the research method used in the study including a description of the DACUM procedure to identify general areas of competence and enabling skills for the occupational title 'word processing operator.'

In Chapter IV data that were collected with the research instrument are analyzed. These data were analyzed and presented in tabular form for ease of presentation and interpretation by the reader.

The final chapter of this report, Chapter V, is divided into five related and integrated parts. The first part contains a summary of the research methodology. The second, third, and fourth part includes the findings, conclusions and observations of the research. In the fifth and last part, recommendations are made for further research for those concerned with designing curriculum for word processing courses.

Summary

Word processing has been in existence since the earliest attempts of the Babylonians in the eighth-century B.C. when members of that civilization began to capture their thoughts in recorded form on clay tablets. Later attempts at processing words in the nineteenth and twentieth centuries resulted in inventions that brought about easier ways of recording ideas. One attempt succeeded in recording the spoken word, while other attempts to record the ideas of man produced such inventions as moveable type which was followed by the printing press and the typewriter.

The electric typewriter appeared in different forms throughout this time and included a machine to make typing errors disappear from original copies with the use of a special "lift off" tape, and a "dual pitch" lever which changed the pitch from pica to elite by simply switching a lever. Then the IBM "Selecric" Typewriter replaced typebars and moving carriages with a printing element shaped like a golfball.

The automatic typewriter is considered to be one of the oldest output word processing typwriter group still on the market today. Machines of this type use a paper roll similar to the old piano rolls for its medium. Punched holes in a paper roll represented the characters, and during playback air was forced through these holes in the paper roll medium automatically driving the typewriter. Some units in this group now use paper tape and paper cards as media but these too, are quickly disappearing. All these inventions made it easier for man to accurately record ideas in printed form.

The most recent innovation placed on the market by manufacturers of office equipment has been the integrated/multifunction systems which is encouraging the move away from the stand-alone and/or shared-logic systems. These systems came into use when companies began utilizing their existing computer systems for word processing and other business applications through the addition of software or incremental capabilities. This type of system not only performs traditional data processing functions, but also serves as a word processor. Hence, the term multifunction. The term integrated system refers to the capability of the multifunction system to interface with a central computer system or other multifunction system, allowing for the exchange of information between these systems.

The Problem

The research problem and major objective of this study was to compare the entry level word processing enabling skills of graduates from four institutions where word processing courses were offered to the adult learner in Alberta at the non-university post secondary education level with the enabling skills these individuals were using within one year of their employment.

In support of this purpose the following major objectives of the study were established.

1. To identify significant word processing competencies for business, industry, or government that may not be an integral part of either the course of study or the curriculum offered at preparing institutions.

2. To determine the frequency with which entry level word processing competencies were used by first year word processing personnel.

3. To identify additional word processing competencies that members of the research sample acquired at the work place.

4. To determine if those who provide data for the study saw a need for continuous updating of their competencies base in order to remain proficient as a word processing operator.

Population and Selection Procedure

The population of this study consisted of 419 word processing operators who had successfully completed some formal word processing training between September, 1983 and September, 1984, at either the Northern Alberta Institute of Technology (N.A.I.T), Grant MacEwan Community College, Alberta College, or Alberta Vocational Centre (Edmonton).

To identify this population a list of graduates was obtained from personnel involved in administering or teaching of these courses at each of the four institutions. Of the four lists that were received there were a total of 419 names.

The following selection criteria were established to select research participants:

1. Had successfully completed at least 40 hours, and not more than 120 hours, of formal word processing training including both word processing concept theory and hands-on experience.

2. Employed as either a word processing operator, or designated as an operator by the employing acency.

3. Employed for a period of less than, but not more than one year after successfully completing formal word processing training.

With the use of the four lists and the Edmonton Telephone Directory the telephone numbers for the 419 graduates were obtained. A telephone call was placed to all the names on these lists. The result of this procedure was that a 101 graduates met the criteria for selecting participants, and agreed to participate in the study. These 101 became the research population.

The Research Instrument

The research instrument selected for use with this study, was a questionnaire. Demographic data and interval data using two modified 5-point Likert scales were used to collect data from 82 research participants.

This instrument was composed of the following two parts: Part A - Demographic Information, and Part B - Word Processing Competency Checklist.

Part A of the research instrument gathered information about the participants' Educational History - General, and Work History. Part B was a checklist of word processing competencies that were taken from the DACUM chart. These competencies included the general areas of competence and the enabling skills. This checklist was a detailed listing of word processing competencies that were described in universal terms that were non-machine specific for the occupation of word processing operator. This research instrument was used in the Pilot Study.

Part B consisted of two 5-point Likert scales with 12 general areas of competence and 60 enabling skills. The

WORK SCALE gathered information on those word processing competencies the participant performed at the work place during the first year of employment. The PREPARATION SCALE collected information on the participant's opinion of the word processing functions previously received in a formal educational setting.

The draft instrument was designed and discussed with a specialist in instrument design from the Department of Educational Psychology, Faculty of Education, The University of Alberta. From that review it was recommended that the Pilot Study population be retained at five individuals. Modifications were suggested in the method of conducting the Pilot Study. It was recommended that instead of placing the research instrument in the hands of Pilot Study participants as originally planned, that selected questions from the questionnaire be asked. This procedure would help to establish face validity of the instrument. It was highly recommended that the title for the research instrument that was used in the study be classified as a questionnaire, and that the research instrument be mailed to no less than 100 participants. Subsequent to this review, the research instrument was revised before it was used in the Pilot Study.

The Pilot Study

Those participating in the Pilot Study were word processing operators who were involved in a two-part study. In the first part of the Pilot Study, each participant was

interviewed and observed by the researcher using selected questions from the questionnaire. In the second part of the Pilot Study, each participant received a copy of the questionnaire to complete. The information gathered on the completed questionnaires was then compared by the researcher to responses gathered during the interview and observation phase of the Pilot Study to establish face validity between what the participant stated they did, and what they actually did. Following the Pilot Study the results from this portion of the research were used to modify the research instrument before it was used in the major investigation.

Methodology

Following the revision of the questionnaire, the revised questionnaire was mailed to the 101 members of the research population.

A covering letter was prepared which included a deadline date and it was mailed to each member of the research population along with the questionnaire. A self-addressed, stamped envelope was also enclosed with the research instrument. From the initial mailing, 49 completed questionnaires were returned. This represented a rate of return of 49%.

To increase this rate of return a follow-up telephone call was made to those who were delinquent in meeting the initial deadline date. As a result of this follow-up telephone call, an additional 33 completed questionnaires were returned.

This increased the rate of return to 82 completed questionnaires for a total percentage return of 81%. All 82 completed questionnaires were processed and analyzed.

The data from the research instruments were coded by the researcher and keypunched by personnel of the Division of Educational Research Services, Faculty of Education, University of Alberta. The frequency program was selected from the Statistical Package for the Social Sciences (SPSSX) and was used to generate frequencies, and percentages. These frequencies and percentages were placed in tabular form for presentation and analysis to determine the findings of this study.

Related Research

The researcher conducted an information retrieval search of the ERIC data base, as well as conducting a manual search of the standard indices for reporting the findings of educational research. From this search a total of 131 citations (hits) were obtained. Included in these citations were journal articles, education reports, doctoral dissertations (ERIC Documents). A review of the research literature revealed that no research on the entry level competencies of word processing operators had been completed in Canada.

A study was completed in the United States by Ettinger (1982) which dealt with the requirements and business training procedures for word processing personnel with implication for word processing curriculum development in

two-year post secondary institutions. Statistical analysis of the data for that study indicated that three most important generic competencies to include in word processing curricula are language arts, human relations, and electronic keyboarding. A major conclusion of the Ettinger study was that new emphasis has been placed on sophisticated electronic equipment, changing office procedures, and integrated systems to coordinate office routines and work flow.

At Kent State University in Ohio, Kutie (1977) analyzed the behavior-oriented job dimensions for six categories of secretaries which included word processing operators, word processing lead operators, and word processing supervisors. Data were collected from a total of 236 secretaries. Analysis of the data indicated that word processing operators' positions were characterized by such dimensions as controlling and operating machines and equipment; many of the behaviors in the job profiles were non-skill behaviors and/or combinations of basic skills; and, in reference to job satisfaction, traditional secretaries were generally more satisfied that word processing operators. A major conclusion of the study was that business educators, including both curriculum designers and guidance counselors, should be aware of the changing structure of office work as evidenced by the variations in job behavior profiles for various classifications of secretaries, and that word processing jobs should not be equated with clerk-typist

levels of work.

Pura completed a study at the University of Alberta in 1970 which analyzed office activities using Nobels' taxonomy in an attempt to determine the relative amounts of time which 1967 and 1968 business education graduates spent performing various business and office activities. Pura showed the kinds of activities--operating, interacting, and managing--a beginning office worker is likely to encounter in the world of work. This researcher indicated that if the objective of the learning process is the achievement of relevant performance skills, the implications from the findings seem to point to the necessity of varied day-to-day assignments which involve not only the operations, but also the interactions and task management activities which apply to the business world.

Pura suggests that educators must be aware of current office practices so that course content and skill development will be relevant in terms of student needs and present-day office requirements; that regular surveys or follow-up studies should be made in order to determine whether the programs of studies are meeting the needs of the students; and that two-way communication with graduates could serve very purposeful ends.

Walker (1980) from Western Illinois University conducted a study to determine the current status of word processing in Illinois in order to suggest ways to improve curricula in Illinois post secondary schools. The study involved soliciting and evaluating word processing textbooks

and course materials; requesting information from word processing manufacturers and distributors; surveying 76 firms employing graduates, and surveying business instructors.

Study findings, based on usable responses from 41 employers and 38 schools included: 63.4% of the firms used word processing equipment and 65.3% preferred that employees have previous word processing training; 77% of the firms anticipated an expansion of the word processing industry during the next 5 years; 68.4% of the schools indicated that they offered some word processing training and 60.5% used word processing equipment; and only 42% of the schools planned to update their present word processing curriculum.

Findings

Educational History - General

Word processing operators involved in the investigation were graduated from high school in either an academic or a business education program of study, with an average English mark in the mid seventies. One half (50.0%) of these participants last attended a formal school from zero to five years prior to their formal word processing training; and 30.5% indicated that it had been six to fifteen years since they last attended a formal school.

Work History

The majority (54.9%) of the word processing operators involved in the research were employed full-time, while

34.1% were employed part time prior to enrolling in some form of a formal word processing training course. These operators were employed on an average of up to four years prior to enrolling in the formal word processing course.

The majority (93.9%) of the word processing operators who provided data for this study were not employed as word processing operators prior to entering formal training. They were equally employed in a secretarial/clerk typist/receptionist, and a variety of other unrelated occupations. They used electric and electronic typewriting equipment in that employment, and none of the research participants indicated the use of a manual typewriter to process information.

The few research participants who had previous employment as word processing operators indicated that they performed the following word processing tasks: letters and memos, printing, multipage documents, reformating, and editing and creating documents. These tasks complement the basic areas of competencies and enabling skills that were identified in this research.

Fifty-four point nine percent of the word processing operators who took part in this study and who responded to this question indicated they had between 40 and 60 hours of word processing training prior to being employed as a word processing operator; another 23.2% indicated they had up to 120 hours. When asked to rate their training, research participants rated their formal word processing training 'of much use.' These data indicate that training

for entry word processing positions assists operators in performing functions that are required of word processing operators.

Fifty-five (67.1%) of the research participants who responded to this question indicated they were not trained on the same equipment they used as word processing operators when the study was conducted. This data indicates that training focussed on machine specific operations may not ease the student's transition from training to work.

This study showed that the average size of the office staff where participants were employed was between 1 and 25 persons which indicate that the majority of the research participants worked in an office which could be classified as small.

Results of data analysis indicate that 50.1% of the word processing operators involved in this study devote between 0 to 17 hours per week performing word processing functions, and 47.6% devote 18 to 41 hours per week to the processing of words. The majority of the research participants specified that the word processing function 'most often' performed was letters and memos, with multipage documents also being common.

The results of the data collected from the research participants on the most common word processing equipment being used (Micom, 31.7%) correlated to the high distribution among the four institutions in the study of Micom equipment. However, the second highest category of

equipment used (appearing under the category of 'other,' (30.5%) included the use of microcomputer technology as opposed to dedicated systems.

Also, approximately 75% (59) of the word processing personnel who provided data for the study indicated they could operate other kinds of word processing equipment other than the equipment they were using.

Thirty-nine (47.5%) of the word processing operators who were involved in the study indicated that they needed additional training on the word processing equipment they were presently using in their work environment, while forty-one (50.0%) of the research participants were either undecided, or strongly disagreed, for the need for additional training on equipment in their present position.

Sixty-two (75.6%) of the research participants indicated they had not attended a workshop or conference on office automation and/or word processing a year prior to the study.

The policy of employers toward supporting word processing operators to secure additional education, training, or professional development was that the employer would: pay the registration fee and other costs for short workshops, seminars, etc. relating to type of work (42.7%); or they would pay all, or part, of the registration fee for courses taken in the evening (30.5%). Employers would also provide manuals, handbooks, professional magazines, etc., relating to work; and would provide in-service training related to work. Although some participants indicated the

degree of assistance depended upon the applicant, few indicated that there was no support by their employer for professional development or additional education.

The Word Processing Competency Checklist

The word processing competency checklist listed a number of word processing functions under 12 general areas of competence and 60 enabling skills for all 12 general areas of competence, which may be performed by word processing operators. These word processing competencies were rated firstly, according to frequency of their use in the work place (the WORK SCALE) using a 5-point Likert scale that included: Very Seldom, Seldom, Some, Frequently, and Very Frequently. Secondly, using the PREPARATION SCALE, participants were asked to rate the adequacy of the preparation they received in formal word processing training using a 5-point Likert scale with these choices: Very Inadequate, Inadequate, Neither Inadequate or Adequate, Adequate, and Very Adequate.

It will be recalled that the purpose of this study was to compare the entry level word processing enabling skills of graduates from four non-university post secondary education institutions in Alberta where word processing courses were offered to the adult learner with the enabling skills that research participants were using within one year of employment. The responses collected from the word processing competency checklist indicated that formal word processing preparation exceeded the competency requirement

for word processing operators for the first year of employment.

Conclusions

From the research findings of this study, it could be concluded that research participants who attended formal non-university post-secondary school training in word processing acquired the enabling skills at the entry level that would permit them to perform as word processing operators in the world of work during their first year of employment.

SIGNIFICANT WORD PROCESSING COMPETENCIES

The sequence in which the general areas of competence are presented in this section follow the same sequence in the way the data was collected with the instrument, and the sequence in which the tables were presented in Chapter 3. To illustrate, Table 25 identifies those enabling skills that comprise the general area of competence for SET UP THE SYSTEM. The first general area of competence presented in this section involves SET UP THE SYSTEM.

For the purposes of this research, the frequently and very frequently ratings, and the adequate and very adequate ratings, were aggregated and any enabling skill with a percent less than 40 was eliminated as a finding.

From the research findings of this study, the following significant word processing general area of competencies and enabling skills were identified:

The Work Scale

General Area of Competence - SET UP THE SYSTEM

Enabling Skills	Frequently	Very Frequently
Turn the Machine On and Off	17.3%	51.9%
Load or Access System Disk	43.8%	1.2%
Load or Access Work Diskette or File	21.2%	58.7%
Initialize a Disk	20.5%	24.4%

None of the enabling skills for SET UP THE SYSTEM were eliminated from the study because an aggregate for all four enabling skills was rated above the 40% cut-off point.

General Area of Competence - KEYBOARD (INPUT) - I

Enabling Skill	Frequently	Very Frequently
Use Alpha and Numeric Keys	19.0%	60.8%
Use Code and Function Keys (Underscoring, Centering, Boldfacing, etc.)	35.8%	54.3%
Use Cursor or Locator Keys	16.2%	80.0%
Use Special System Keys	26.6%	36.7%
Use Word Wrap-Around (On/Off)	11.4%	69.6%

Only one enabling skill, Decimal Alignment, from KEYBOARD (INPUT) - I was eliminated from the study. The remaining five enabling skills were retained.

The general area of competence of KEYBOARD (INPUT) - II and its five (5) corresponding enabling skills were eliminated from the study because the percentage for each was below the cut-off point.

General Area of Competence - CREATE DOCUMENTS

Enabling Skill	Frequently	Very Frequently
Format (Setting Tabs, Margins, Line Spacing, Pitch, etc.)	27.2%	54.3%
Name Documents	17.3%	65.4%
Use Prompts, Messages, and Menus	28.2%	43.6%

For the general area of competence, CREATE DOCUMENTS, enabling skill 'use stop codes' was eliminated because it was performed 29.5% of the time by participants.

General Area of Competence - REFORMAT TEXT

Enabling Skill	Frequently	Very Frequently
Restructure Margins, Tabs, Line Spacing, Pitch, etc.	21.2%	33.7%
Justify	19.8%	33.3%

Two of the four enabling skills for REFORMAT TEXT, 'hyphenate,' and 'paginate' were deleted because their aggregate percentage was less than 40%.

General Area of Competence - MINOR CORRECTING AND PROOFING

Enabling Skill	Frequently	Very Frequently
Delete, Insert, and Replace Text	14.8%	77.8%
Correct Characters anords While Keyboarding	21.0%	65.4%
Scroll (Horizontally and Vertically to Review Text)	22.2%	50.6%
Change Margins, Tabs, Line Spacing, etc.	28.4%	37.0%

All of the enabling skills for the general area of competence MINOR CORRECTING AND PROOFING were retained.

General Area of Competence - MAJOR EDITING AND REVISING

Enabling Skill	Frequently	Very Frequently
Delete, Insert, Replace Blocks/Columns of Text	26.2%	26.2%

Three of the four enabling skills used with MAJOR EDITING AND REVISING were removed. These were: move blocks or columns of text, use global search and replace, and use spelling verification.

General Area of Competence - STORE AND FILE TEXT

Enabling Skill	Frequently	Very Frequently
Delete Previous Versions of Documents	18.5%	27.2%
Set Up Files and Maintain Records	29.6%	30.9%
Copy Files(s) or a Part of a File	30.9%	25.9%

Only one of the four enabling skills related to STORE AND FILE TEXT (Store More Than One Version of a Document) was eliminated from the research. This enabling skill had an aggregate percentage of less than 40.

General Area of Competence - RECALL AND RETRIEVE TEXT

Enabling Skill	Frequently	Very Frequently
Use Document Index (Directory)	21.2%	62.5%
Access Stored Text	37.5%	62.5%
Selectively Display Portions of Stored Text, Such as a Specific Page	32.9%	38.0%

The enabling skill, Use Security Codes, was rated less than 40% and was eliminated from the study.

General Area of Competence - PRINT (OUTPUT) TEXT

Enabling Skill	Frequently	Very Frequently
Start/Stop Printer	26.2%	60.0%
Set Up Printer Using Menus or Special Print Commands	25.0%	32.5%
Load Paper	17.5%	57.5%
Print From Screen or Storage	16.0%	66.7%
Use Print Queues	26.0%	27.3%
Change Ribbons or Print Wheels	22.5%	35.0%
Operate Automatic Sheet Feeder	6.3%	33.7%

All seven enabling skills for the general area of competence PRINT (OUTPUT) TEXT were rated above 40% and were retained as part of the study.

The enabling skills as well as the general areas of competence for EXECUTE SPECIAL FEATURES, and EXECUTE OTHER SPECIALIZED FUNCTIONS, were eliminated from the study. The enabling skills for each general area of competence was below the 40% cut-off point.

In summary, of the 60 enabling skills that were identified, 28 (approximately one half) were not being performed either frequently or very frequently by those involved in the study and, therefore, were eliminated as enabling skills in order to better organize instructional content for word processing courses.

The Preparation Scale

General Area of Competence - SET UP THE SYSTEM

Enabling Skills	Adequate	Very Adequate
Turn the Machine On and Off	29.6%	61.7%
Load or Access System Disk	35.0%	52.5%
Load or Access Work Diskette or File	35.0%	56.3%
Initialize a Disk	29.5%	32.1%

It was the opinion of participants that the preparation they received on the four enabling skills in SET UP THE SYSTEM was very adequate or adequate.

General Area of Competence - KEYBOARD (INPUT) - I

Enabling Skill	Adequate	Very Adequate
Use Alpha and Numeric Keys	29.9%	51.9%
Use Code and Function Keys (Underscoring, Centering, Boldfacing, etc.)	35.0%	52.5%
Use Cursor or Locator Keys	39.2%	54.4%
Use Special System Keys	40.8%	23.7%
Use Word Wrap-Around (On/Off)	64.9%	1.4%
Decimal Alignment	41.8%	13.9%

The participants were of the opinion that the preparation they received to KEYBOARD (INPUT) - I was adequate or very adequate.

General Area of Competence - KEYBOARD (INPUT) - II

Enabling Skill	Adequate	Very Adequate
Use Headers and Footers with Automatic Page Numbering	34.6%	21.8%
Paginate	39.7%	34.6%
Use Multi-Columns	29.1%	19.0%

preparation that participants received in 'Footnoting' and in 'Use Subscripts and Superscripts,' two of the enabling skills to KEYBOARD (INPUT) - II, was in their opinion, not either adequate or very adequate.

General Area of Competence - CREATE DOCUMENTS

Enabling Skill	Adequate	Very Adequate
Format (Setting Tabs, Margins, Line Spacing, Pitch, etc.)	20.0%	65.0%
Name Documents	26.6%	59.5%
Use Prompts, Messages, and Menus	29.9%	45.5%
Use Stop Codes	32.5%	20.8%

Participants were of the opinion that the preparation they received for the four enabling skills to CREATE DOCUMENTS was either adequate or very adequate.

General Area of Competence - REFORMAT TEXT

Enabling Skill	Adequate	Very Adequate
Restructure Margins, Tabs, Line Spacing, Pitch, etc.	40.5%	40.5%
Hyphenate (Manual and Automatic)	38.5%	34.2%
Repaginate	29.1%	31.6%
Justify	29.1%	51.9%

The results of this study show that participants were of the opinion that the preparation they received on the four enabling skills to REFORMAT TEXT was indeed adequate or very adequate.

General Area of Competence - MINOR CORRECTING AND PROOFING

Enabling Skill	Adequate	Very Adequate
Delete, Insert, and Replace Text	22.5%	70.0%
Correct Characters and Words While Keyboarding	24.1%	59.5%
Scroll (Horizontally and Vertically to Review Text)	35.4%	50.6%
Change Margins, Tabs, Line Spacing, etc.	30.4%	49.4%

The above data show that the participants were of the opinion that the preparation they received with the four enabling skills to execute MINOR CORRECTING AND PROOFING was adequate or very adequate.

General Area of Competence - MAJOR EDITING AND REVISING

Enabling Skill	Adequate	Very Adequate
Move Blocks or Columns of Text	34.2%	38.0%
Delete, Insert, Replace Blocks/Columns of Text	35.4%	38.0%
Use Global Search and Replace	31.2%	26.0%

Participants indicated that they were <u>not</u> adequately prepared for one of the four enabling skills to do MAJOR EDITING AND REVISING of text. That enabling skill was 'Use Spelling Verification.'

General Area of Competence - STORE AND FILE TEXT

Enabling Skill	Adequate	Very Adequate
Store More Than One Version of a Document	31.6%	30.4%
Delete Previous Versions of Documents	35.4%	35.4%
Set Up Files and Maintain Records	32.5%	27.5%
Copy Files(s) or a Part of a File	36.2%	32.5%

The participants were of the opinion that the preparation they received in the four enabling skills for STORE AND FILE TEXT was adequate or very adequate.

General Area of Competence - RECALL AND RETRIEVE TEXT

Enabling Skill	Adequate	Very Adequate
Use Document Index (Directory)	30.8%	59.0%
Access Stored Text	37.2%	51.3%
Selectively Display Portions of Stored Text, Such as a Specific Page	39.0%	40.3%

Participants were of the opinion that they were adequately or very adequately prepared for three of the four enabling skills in RECALL AND RETRIEVE TEXT. The enabling skill they felt they were not adequately trained for was 'Use Security Codes.'

General Area of Competence - PRINT (OUTPUT) TEXT

Enabling Skill	Adequate	Very Adequate
Start/Stop Printer	26.6%	57.0%
Set Up Printer Using Menus or Special Print Commands	32.5%	36.4%
Load Paper	27.8%	49.4%
Print From Screen or Storage	31.3%	55.0%
Use Print Queues	27.6%	34.2%
Change Ribbons or Print Wheels	22.8%	29.1%

The preparation that participants received to 'Operate Automatic Sheet Feeder,' one of the seven enabling skills to PRINT (OUTPUT) TEXT, was in their opinion not either adequate or very adequate.

General Area of Competence - EXECUTE SPECIAL FEATURES

Enabling Skill	Adequate	Very Adequate
Sort and Select (Records/ List Processing)	19.2%	78.2%
Merge (Form Letters)	31.6%	31.6%

It was the opinion of the participants that the preparation they received for six (6) of the eight enabling skills to EXECUTE SPECIAL FEATURES was not either adequate or very adequate.

General Area of Competence - EXECUTE OTHER SPECIALIZED FUNCTIONS

Enabling Skill	Adequate	Very Adequate
Use Graphics	26.9%	24.4%

Participants were of the opinion that the preparation they received for only one enabling skill out of six, Use Graphics, for the general area of competence EXECUTE OTHER SPECIALIZED FUNCTIONS, was adequate or very adequate.

In summary, those involved in the study indicated that they had not received either adequate or very adequate training on 16 (approximately one fourth) of the 60 enabling skills that were listed on the PREPARATION SCALE. It is possible that these 16 enabling skills were not used after the participants left the training program where these skills could be reinforced in the workplace through repetitive use.

Data in Tables 25 to 48 of Chapter IV, and the computer readout found in Appendix III, were used to report the above data.

Significant word processing competencies identified above need to be included in word processing courses by curriculum planners and teachers when designing and teaching word processing courses.

It may be recalled that in addition to the major purpose of this study, this study had four supporting objectives.

One of the supporting objectives of this study was to identify significant word processing competencies for business, industry, or government that may not be an integral part of either the course of study or the curriculum offered at preparing institutions. From the results of this study, it was found that the majority of research participants did not indicate any further competencies that were an integral part of either the course of study, or the training that they received in word processing.

The second supporting objective was to determine the frequency with which entry level word processing competencies were used by first year word processing personnel. Course planners may wish to scrutinized the frequency statistics given in the preceeding tables on the entry level word processing competencies being used by first year word processing personnel before planning and developing word processing course material.

For example, data collected with Question 18, identifying the word processing function 'most often' performed by participants in the work place, indicated that 42.7% (35) of the participants performed letters and memos, and 36.6% (30) performed multi-page documents more frequently than they did other word processing functions. Considering these statistics, and given the above data on significant word processing competencies, it is anticipated that word processing curriculum planners will include the identified enabling skills to produce letters, memos, and multi-page documents in their course work.

Another supporting objective was to identify additional word processing competencies that members of the research sample acquired at the work place one year after completing a formal course. From the results of this study, it was found that participants did not acquire or develop any additional word processing competencies after they had been employed as a word processing operator after one year of employment.

The final supporting objective was to determine if those who provided data for the study saw a need for continuous updating of their competency base in order to remain proficient as a word processing operator. The results of this study indicated that approximately one third of the research participants were continuously upgrading their skill base through professional activities and self study.

Observations

The research population of this study were very cooperative in completing the research questionnaire. This is evidenced by the fact that 82 of the 101 word processing operators contacted (81%) completed and returned complete questionnaires. Because of this high rate of return, it is evident that those who cooperated in this study implied a good deal of interest in the results of this investigation. A copy of the research abstract will be sent to those participating word processing operators who requested it.

The personnel involved in the teaching of word processing courses at each of the four non-university post-secondary school institutions in Edmonton, Alberta have also been most helpful and enthusiastic concerning this research, and have expressed interest in the study and its outcomes.

The research instrument had a number of weaknesses which were uncovered during data analysis. Its major weakness was the length of the questionnaire. A second weakness was the integration of the WORK SCALE and

PREPARATION SCALE on one instrument which sought to collect different kinds of data. This was confusing to those involved in the study. A separate scale to determine the frequency of use, rather than the adequacy of preparation as was the case in the WORK SCALE, should have been used. A third weakness was there should have been a category for 'never,' or 'unknown' added to the Likert scales for both the WORK and PREPARATION scales. This was pointed out on a few of the completed instruments that were returned by participants.

A comparison of the WORK SCALE with the PREPARATION SCALE indicates that there is a relationship between the skills on both scales. It is possible that this relationship exists because a number of the skills from both scales were not being used by participants, and therefore, includes the opinion that their preparation with these skills were considered less than adequate.

Research participants were encouraged by the researcher to make telephone contact if they had any further concerns about what information was requested for the study, or about the research instrument specifically. Only one inquiry was received to clarify how the instrument was to be filled out.

It was observed that the manual typewriter was not being used by participants in the study. Therefore, this observation could evolve into the following recommendation: that all manual typewriters be phased out of the equipment inventory that is part of the business education classrooms.

Finally, it was observed that 47.5% of the research population indicated they needed additional training on the word processing equipment they were using in the position they held at the time of the study. Research participants also indicated that they had not attended a workshop or conference on office automation and/or word processing in the year prior to the investigation.

The question arises as to whether or not the competencies identified in this study were basic word processing functions that could easily be performed because the operator found the equipment being used difficult to learn, and was, therefore, reticent to use the operating manual in order to learn new and unfamilar functions. Higher-order formatting and machine operations require word processing operators to possess certain background knowledge of machine manipulation as well as the ability to view word processing as part of an intregal office setting.

The following observation could be inferred from what some of the participants placed in the comment section of the instrument: it was observed that the operating manuals that accompanied the equipment were difficult to interpret particularly by operators who were employed by small firms. Manufacturers of word processing equipment should make every effort to rewrite their manuals so they are easily interpreted.

Recommendations

The findings and conclusions of this study terminate in recommendations for those who design and teach a word processing program of study, for the administrators of word processing programs, and for the National Word Processing Association.

These recommendations are based on the findings and conclusions of this study which were derived from an analysis of the data that were collected with the research questionnaire.

The Word Processing Program of Study

A major finding of this study was that only 28 of the 60 enabling skills identified through the DACUM process were being used by first year word processing operators, and that those involved in the study indicated that they had not received either adequate or very adequate training on 16 of the 60 enabling skills identified.

As a result of this finding, it is recommended that curriculum designers and developers as well as those who teach word processing courses review these findings and give serious consideration to redesigning their course, so that only those skills identified are taught in a first year course, and that other skills be taught at an advanced level.

For those who design and teach word processing programs of study at the non-university post secondary education level, they must gear their programs to the adult learner

who may have a number of years of work experience. Non-university post secondary education institutions must develop an educational philosophy based on the concept which is 'education for lifelong learning.'

Non-university post-secondary education institutions must become aware of and must understand current evolving office practices, economic trends, and work force distributions. Personnel in these institutions must develop the research competencies that are needed to conduct follow-up studies on their graduates in order to determine course and program relevancy and effectiveness. Follow-up studies will assist these institutes to maintain a two-way communication with graduates. These institutions must develop alternate support strategies that will accommodate changing student status.

The program of study for word processing should be geared to the mature student regardless of gender, and it should be divided into three phases of skill development and acquisition (Level I, Level II, and Level III) with a transitional phase between each level where work experience would be offered in cooperation with business and industry. This cooperative form of education would prove beneficial to both student and institution because students would learn of the most recent office technology being used and would gain practical experience, and with this information the institutions could update their programs and their equipment as well as place themselves in a more informed position when offering upgrading to their instructors.

The word processing program of study initally should include a variety of experiences on various pieces of computer-based equipment of different manufacturers, and should include those general areas of competence and their supporting enabling skills that were identified in this study. Higher-order competencies in analysis, comprehension, and logical thinking must be encouraged through the coordination of office routines and work flows.

The Prospective Word Processing Operator

Prospective word processing operators, to be successful in acquiring positions in the world of work, must have the identified enabling skills that are listed in this chapter, and the understanding that to be successful, continuing education will be a necessary activity for them to practice. These individuals must become aware of the fact that the successful completion of formal non-university training or education programs is not terminal.

Guidance to prospective word processing operators should begin early in the business education program to make those who aspire to enter this occupation aware of the skills and competencies that an employer expects a word processing operator to possess. Brochures outlining necessary skills, competencies, and manpower projections should be made available to those who aspire to become word processing operators.

The Administrators/Supervisors of Word Processing

The administrators of the word processing programs should establish realistic educational goals and course prerequisites which will be used as a base for the skills and competencies that were identified in this research.

The skills and competencies identified in this research should be considered dynamic and should be reviewed so that adjustments could be made periodically to better meet the changing requirements of the work environment including the software for word processing equipment as it becomes available in the market place.

Supervisors of word processing personnel who assign operators to equipment should attempt to assign an operator to equipment on which the operator was trained before discriminately selecting equipment without determining the value of in-service training dependent on operator concern and expertise. Word processing supervisors should allow word processing operators to further enhance their expertise by providing assistance and support for further education and professional activities.

The National Word Processing Association

The list of general areas of competence and enabling skills required of job entry word processing operators identified in this research, will be made available by the researcher to the National Word Processing Association in order to provide the association with information to ensure that those general areas of competence and enabling skills

are approved by the Association for programs that offer training to prepare operators with job entry word processing skills.

Recommendations for Further Research

It is recommended that this research be replicated on a national basis using a population of between 150 and 225 word processing operators who have been employed for a minimum period of two years, and who are from a wide variety of work environments.

Such a study might use the results of this research as its data base to identify additional general areas of competence and enabling skills that were not identified in the current study.

It is further recommended that a research investigation be undertaken using two discreet populations, yet who are closely interrelated. A study of this nature would include both word processing operators and word processing supervisors to determine interpersonal skills required, as well as determining enabling skills in word processing that are needed by both groups.

It is also recommended that a research investigation be conducted that would involve response measurement that would determine the value judgements that need to be made by word processing operators on-site, while processing words or functions; the value judgements that word processing operators need to make toward the kind of words and content they are asked to process.

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APPENDIX I

In this appendix can be found a copy of the covering letter that was sent to 101 word processing operators selected as the research population.

Also included in this appendix is a copy of the research questionnaire that was enclosed with the covering letter.

Jeannette M. Marchand
2209, 11135 - 83 Avenue
Edmonton, AB
T6G 2C6
Telephone Number: 432-7670

March 29, 1985.

(Address of Research Participant)

Dear (Name of Research Participant):

Further to our recent telephone conversation, I would like to thank you for agreeing to complete a research questionnaire for a study I am conducting. The title of that study is "Job Entry Level Skills Required of Word Processing Operators." It is hoped that the results of this research may be used by those responsible for designing word processing courses at the non-university post secondary education level.

Results of a pilot study show that the questionnaire can be completed in one-half hour. When you have completed the questionnaire please place it in the enclosed self-addressed stamped envelope and return it to me. I have established a deadline date of April 12 for the return of all research instruments. Please honor that date so data analysis can be followed according to the established time line.

The information provided by you to questions on this research instrument will be used only for research purposes, and will be treated as privileged information. At the conclusion of this study all questionnaires will be destroyed. A copy of the abstract of the study will be made available upon request.

Again thank you for taking time from your busy schedule to participate in this important study. Please feel free to contact me at the above telephone number if you have any questions on the completion of the questionnaire.

Sincerely,

Jeannette M. Marchand

Enclosures

DIRECTIONS TO WORD PROCESSING OPERATORS

For the purpose of this investigation a word processing operator is defined in the Canadian Classification and Dictionary of Occupations Guide (Fourth Edition) (1982), in this way:

> Operates video-console typewriter to record and amend data on memory tapes, disks or other recording device:
>
> Reviews data received to ascertain format or changes in data to be made. Places blank or subject tape or disk in memory unit. Pushes keyboard control to display data being typed, or previsously typed data. Types data or amendments to data using video-display typewriter. Proofreads displayed data. Operates video console typewriter to make changes on tape or disk. Selects and inserts single-sheet or continuous-feed paper in carriage of typewriter-printer. Activates typewriter-printer to automatically type copy of records data. Types additional data required onto copy using typewriter-printer. Labels and stores tapes or disks. (p. 82)

The questionnaire that you are asked to complete consists of [redacted]ts, Part A and Part B. Part A, Demographic I[redacted]tion, is divided into Educational History and Work History. This part consists of twenty-one questions which require either a CHECK MARK, or a SHORT RESPONSE.

Part B, a Word Processing Skill Checklist, is a checklist of word processing skills that are non-machine specific and that may have been acquired at work and/or through formal training. This checklist consists of twelve word processing skill categories, which require TWO CIRCLES (one for WORK and one for PREPARATION) for EACH ITEM.

When you have completed the questionnaire please place it in the enclosed self-addressed stamped envelope and return it to me.

PART A - DEMOGRAPHIC INFORMATION

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EDUCATIONAL HISTORY - GENERAL

1. Please identify the program in which you were registered in High School.

Academic	(1)	
Business	(2)	
Vocational	(3)	
General	(4)	___(5)

2. What was the highest grade level that you attained in High School?

Grade 10	(1)	
Grade 11	(2)	
Grade 12	(3)	
High School Graduate	(4)	___(6)

3. What was the last percentage mark in English you attained in your highest grade in high school ___ ___ % ___(7)

4. How many years was it since you last attended a formal school before you were admitted to a word/information processing course?

0 - 2 Years	(1)	
3 - 5 Years	(2)	
6 - 10 Years	(3)	
11 - 15 Years	(4)	
Other (Please Specify)	(5)	___(8)

WORK HISTORY

5. Prior to enrolling in the word/information processing course, what was your employment status?

Never Employed	(1)	
Employed Part-Time	(2)	
Employed Full-Time	(3)	___(10)

6. If applicable, for how long a period had you been employed prior to enrolling in the word/information processing course? ___ (1) Years ___ (2) Months ___(12)

7. Were you employed as a word processing operator in an office before you obtained formal education as a word/information processing operator?

YES _____ NO _____ (13)

If YES, please list the word/information processing functions you performed

_____ (1)
_____ (2)
_____ (3)
_____ (4)
_____ (5) (14)

8. Please indicate the approximate amount of formal word/information processing training you have obtained.

1. Forty to Sixty Hours . . . . _____ (1)
2. Sixty-One to 120 Hours . . . . _____ (2)
3. Over 121 Hours . . . . . _____ (3) (19)

9. How would you rate the word/information processing training that you received prior to being employed.

Of no use Of little use Of some use Of much use

_____ (1) _____ (2) _____ (3) _____ (4) (20)

10. Was the word/information processing training that you received prior to being employed done on the same equipment you are now working with?

YES _____ (1) NO _____ (2) (21)

11. Prior to word/information training, at what occupation were you employed? _____ (22)

12. Did you use typewriting in that occupation?

YES _____ (1) NO _____ (2) (23)

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_____ 1

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_____ 1

If YES, was that typewriter Manual _____ (1)
Electric _____ (2)
Electronic _____ (3) ___(24)

13. Please identify the type of office in which you are currently employed.

1. Government/Federal . . . . . _____ (1)
Provincial . . . . _____ (2)
Municipal . . . . . _____ (3)
2. Legal . . . . . _____ (4)
3. Medical . . . . . _____ (5)
4. Banking . . . . . _____ (6)
5. Education . . . . . _____ (7)
6. Real Estate . . . . . _____ (8)
7. Engineering . . . . . _____ (9)
8. Insurance . . . . . _____ (10)
9. Gas & Oil . . . . . _____ (11)
10. Other (Please Specify) . . . . _____ (12) ___(25)

14. Please identify the size of office in which you are currently employed?

1. 1 - 25 persons . . . . . _____ (1)
2. 26 - 50 persons . . . . . _____ (2)
3. 51 - 100 persons . . . . . _____ (3)
4. Over 100 persons . . . . . _____ (4) ___(26)

15. What type of word/information processing equipment do you use in your present positi[illegible]

1. A B DICK . . . . . _____ (1)
2. AES . . . . . _____ (2)
3. IBM . . . . . _____ (3)
4. MAINFRAME . . . . . _____ (4)
5. MICOM . . . . . _____ (5)
6. WANG . . . . . _____ (6)
7. Other (Please Specify) . . . . _____ (7) ___(27)

16. Can you operate any other kind of word/information processing equipment, other than the type of equipment you are presently using in your office?

YES _____ (1) NO _____ (2) ___(28)

___ ___ ___ 1

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If YES, please name the type(s) of equipment.

1.	A B DICK	_____ (1)	
2.	AES	_____ (2)	
3.	IBM	_____ (3)	
4.	MAINFRAME	_____ (4)	
5.	MICOM	_____ (5)	
6.	WANG	_____ (6)	
7.	Other (Please Specify)	_____ (7)	___(32)

8. How many hours a week do you devote to word/information processing?

0 - 5 Hours	_____ (1)	
6 - 11 Hours	_____ (2)	
12 - 17 Hours	_____ (3)	
18 - 23 Hours	_____ (4)	
24 - 29 Hours	_____ (5)	
30 - 35 Hours	_____ (6)	
36 - 41 Hours	_____ (7)	___(33)

3. Of all the word/information processing operations you perform, what one would you say you perform MOST OFTEN. (Check Only ONE Answer)

Letters/Memos	_____ (1)	
Forms	_____ (2)	
Statistical Documents	_____ (3)	
Records/List Processing	_____ (4)	
Multi-page Documents	_____ (5)	___(34)

9. Do you feel the need for additional training on the word/information processing equipment you are presently working with?

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	
_____ (1)	_____ (2)	_____ (3)	_____ (4)	_____ (5)	___(35)

0. Have you attended a workshop or conference on office automation and/or word/information processing in the past year?

YES _____ (1) NO _____ (2) ___(36)

21. What is the policy of your employer toward supporting word/information processing operators to secure additional education, training, or professional development?

1.	No support for professional development or additional education	(1)	
2.	Reduced salary for full-time education	(2)	
3.	Will pay all, or part, of the registration fee for courses taken in the evening	(3)	
4.	Will pay the registration fee and other costs for short workshops, seminars, etc., relating to type of work	(4)	
5.	Provide manuals, handbooks, professional magazines, etc., relating to work	(5)	
6.	Provides in-service training related to work	(6)	
7.	The degree of assistance depends upon the applicant . .	(7)	(39)

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COMMENTS:

After you have completed this part, please proceed to PART B.

PART B - WORD PROCESSING SKILL CHECKLIST

Listed below are a number of functions that may be performed by word processing operators.

Beside each function two scales are listed. The first scale is to gather information on the frequency of individual word processing functions that are actually being performed on the job. The second scale is to gather information on the preparation of the individual word processing functions that were previously received in a formal educational setting.

Please READ each word processing function carefully, and CIRCLE the appropriate answer for EACH scale.

RESPONSE KEY

SCALE 1 WORK	SCALE 2 PREPARATION
1. Very Seldom	1. Very Inadequate
2. Seldom	2. Inadequate
3. Some	3. Neither Inadequate or Adequate
4. Frequently	4. Adequate
5. Very Frequently	5. Very Adequate

	1 2 3 4 5 WORK	1 2 3 4 5 PREPARATION	___ ___ ___ 2 FOR OFFICE USE ONLY
1. SET UP THE SYSTEM			
1.1 Turn the machine on and off	1 2 3 4 5	1 2 3 4 5	___ ___ (6)
1.2 Load or access system disk	1 2 3 4 5	1 2 3 4 5	___ ___ (8)
1.3 Load or access work diskette or file . .	1 2 3 4 5	1 2 3 4 5	___ ___ (10)
1.4 Initialize a disk . .	1 2 3 4 5	1 2 3 4 5	___ ___ (12)

	WORK	PREPARATION	
	1. Very Seldom 2. Seldom 3. Some 4. Frequently 5. Very Frequently	1. Very Inadequate 2. Inadequate 3. Neither Inadequate or Adequate 4. Adequate 5. Very Adequate	
	1 2 3 4 5	1 2 3 4 5	___ ___ ___ 2 FOR OFFICE USE ONLY
2. KEYBOARD (INPUT) - I			
2.1 Use alpha and numeric keys	1 2 3 4 5	1 2 3 4 5	___ (14)
2.2 Use code and function keys (underscoring, centering, boldfacing, etc.) . .	1 2 3 4 5	1 2 3 4 5	___ (16)
2.3 Use cursor or locator keys	1 2 3 4 5	1 2 3 4 5	___ (18)
2.4 Use special system keys	1 2 3 4 5	1 2 3 4 5	___ (20)
2.5 Use word wrap-around (on/off)	1 2 3 4 5	1 2 3 4 5	___ (22)
2.6 Decimal Alignment . .	1 2 3 4 5	1 2 3 4 5	___ (24)
3. KEYBOARD (INPUT) - II			
3.1 Use headers and footers with automatic page numbering	1 2 3 4 5	1 2 3 4 5	___ (26)
3.2 Paginate	1 2 3 4 5	1 2 3 4 5	___ (28)
3.3 Use multi-columns . .	1 2 3 4 5	1 2 3 4 5	___ (30)
3.4 Footnoting	1 2 3 4 5	1 2 3 4 5	___ (32)
3.5 Use subscripts and superscripts	1 2 3 4 5	1 2 3 4 5	___ (34)

WORK	PREPARATION
1. Very Seldom	1. Very Inadequate
2. Seldom	2. Inadequate
3. Some	3. Neither Inadequate or Adequate
4. Frequently	4. Adequate
5. Very Frequently	5. Very Adequate

	WORK	PREPARATION	FOR OFFICE USE ONLY
	1 2 3 4 5	1 2 3 4 5	___ 2
4. CREATE DOCUMENTS			
4.1 Format (setting tabs, margins, line spacing, pitch, etc.)	1 2 3 4 5	1 2 3 4 5	___ (36)
4.2 Name documents	1 2 3 4 5	1 2 3 4 5	___ (38)
4.3 Use prompts, messages, and menus	1 2 3 4 5	1 2 3 4 5	___ (40)
4.4 Use stop codes . . .	1 2 3 4 5	1 2 3 4 5	___ (42)
5. REFORMAT TEXT			
5.1 Restructure margins, tabs, line spacing, pitch, etc.	1 2 3 4 5	1 2 3 4 5	___ (44)
5.2 Hyphenate (manual and automatic)	1 2 3 4 5	1 2 3 4 5	___ (46)
5.3 Repaginate	1 2 3 4 5	1 2 3 4 5	___ (48)
5.4 Justify	1 2 3 4 5	1 2 3 4 5	___ (50)
6. MINOR CORRECTING AND PROOFING			
6.1 Delete, insert, and replace text	1 2 3 4 5	1 2 3 4 5	___ (52)
6.2 Correct characters and words while keyboarding	1 2 3 4 5	1 2 3 4 5	___ (54)

	1. Very Seldom 2. Seldom 3. Some 4. Frequently 5. Very Frequently	1. Very Inadequate 2. Inadequate 3. Neither Inadequate or Adequate 4. Adequate 5. Very Adequate	
	1 2 3 4 5 WORK	1 2 3 4 5 PREPARATION	FOR OFFICE USE ONLY
6.3 Scroll (horizontally and vertically to review text)	1 2 3 4 5	1 2 3 4 5	(56)
6.4 Change margins, tabs, line spacing, etc. .	1 2 3 4 5	1 2 3 4 5	(58)
7. MAJOR EDITING AND REVISING			
7.1 Move blocks or columns of text	1 2 3 4 5	1 2 3 4 5	(60)
7.2 Delete, insert, replace blocks/columns of text	1 2 3 4 5	1 2 3 4 5	(62)
7.3 Use Global Search and Replace	1 2 3 4 5	1 2 3 4 5	(64)
7.4 Use Spelling Verification	1 2 3 4 5	1 2 3 4 5	(66)
8. STORE AND FILE TEXT			
8.1 Store more than one version of a document	1 2 3 4 5	1 2 3 4 5	(68)
8.2 Delete previous versions of documents	1 2 3 4 5	1 2 3 4 5	(70)
8.3 Set up files and maintain records	1 2 3 4 5	1 2 3 4 5	(72)
8.4 Copy file(s) or a part of a file	1 2 3 4 5	1 2 3 4 5	(74)

	WORK	PREPARATION	
	1. Very Seldom 2. Seldom 3. Some 4. Frequently 5. Very Frequently	1. Very Inadequate 2. Inadequate 3. Neither Inadequate or Adequate 4. Adequate 5. Very Adequate	
	1 2 3 4 5	1 2 3 4 5	___ 3
			FOR OFFICE USE ONLY
9. RECALL AND RETRIEVE TEXT			
9.1 Use document index (directory)	1 2 3 4 5	1 2 3 4 5	___ (6)
9.2 Access stored text .	1 2 3 4 5	1 2 3 4 5	___ (8)
9.3 Selectively display portions of stored text, such as a specific page	1 2 3 4 5	1 2 3 4 5	___ (10)
9.4 Use security codes ..	1 2 3 4 5	1 2 3 4 5	___ (12)
10. PRINT (OUTPUT) TEXT			
10.1 Start/Stop printer .	1 2 3 4 5	1 2 3 4 5	___ (14)
10.2 Set up printer using menus or special print commands	1 2 3 4 5	1 2 3 4 5	___ (16)
10.3 Load paper	1 2 3 4 5	1 2 3 4 5	___ (18)
10.4 Print from screen or storage	1 2 3 4 5	1 2 3 4 5	___ (20)
10.5 Use print queues . .	1 2 3 4 5	1 2 3 4 5	___ (22)
10.6 Change ribbons or print wheels	1 2 3 4 5	1 2 3 4 5	___ (24)
10.7 Operate automatic sheet feeder	1 2 3 4 5	1 2 3 4 5	___ (26)

	WORK	PREPARATION	FOR OFFICE USE ONLY
	1. Very Seldom 2. Seldom 3. Some 4. Frequently 5. Very Frequently	1. Very Inadequate 2. Inadequate 3. Neither Inadequate or Adequate 4. Adequate 5. Very Adequate	
11. EXECUTE SPECIAL FEATURES			
11.1 Use forms	1 2 3 4 5	1 2 3 4 5	(28)
11.2 Use math or arithmetic	1 2 3 4 5	1 2 3 4 5	(30)
11.3 Sort and Select (Records/List Processing)	1 2 3 4 5	1 2 3 4 5	(32)
11.4 Merge (Form Letters)	1 2 3 4 5	1 2 3 4 5	(34)
11.5 Assemble a document from a number of sources	1 2 3 4 5	1 2 3 4 5	(36)
11.6 Use communications features	1 2 3 4 5	1 2 3 4 5	(38)
11.7 Use the system dictionary	1 2 3 4 5	1 2 3 4 5	(40)
11.8 Use Glossary, Key Stroke Save, or other key stroke storage features . .	1 2 3 4 5	1 2 3 4 5	(42)
12. EXECUTE OTHER SPECIALIZED FUNCTIONS			
12.1 Use graphics	1 2 3 4 5	1 2 3 4 5	(44)
12.2 Use photocomposition equipment	1 2 3 4 5	1 2 3 4 5	(46)
12.3 Use typesetting equipment	1 2 3 4 5	1 2 3 4 5	(48)

1. Very Seldom
2. Seldom
3. Some
4. Frequently
5. Very Frequently

1. Very Inadequate
2. Inadequate
3. Neither Inadequate or Adequate
4. Adequate
5. Very Adequate

	WORK	PREPARATION	FOR OFFICE USE ONLY
	1 2 3 4 5	1 2 3 4 5	
12.4 Perform system trouble-shooting . .	1 2 3 4 5	1 2 3 4 5	___ (50)
12.5 Write special programs	1 2 3 4 5	1 2 3 4 5	___ (52)
12.6 Supervise other operators	1 2 3 4 5	1 2 3 4 5	___ (54)

APPENDIX II

The DACUM chart of the general areas of competence and their supporting enabling skills that were identified by workshop participants can be found in this appendix.

The resulting DACUM chart was cross referenced with the enabling skills identified by Manpower Temporary Services (1983) and the competencies identified by Patterson and Schlender (1982) from their research. The instrument that was generated from the synthesis of these three sources was used to collect data for this investigation.

Also included in this appendix are the names and addresses of those who were invited to be DACUM workshop participants.

AS OF COMPETENCE AND ENABLIN

WORD PROCESSING OPERATIONS

ESS TE	A-4 USE DOCUMENT INDEX	A-5 USE SECURITY CODES	A-6 USE PROMPTS, MESSAGES, AND MENUS	A-7 USE CURSOR AND LOCATOR KEYS	A-8 USE SPECIAL SYSTEM KEYS	A-9 USE WORD WRAP AROUND (ON/OFF)	A-10 SCROLL (HORIZONTALLY/ VERTICALLY)
	A-18 USE ALPHA AND NUMERIC KEYS	A-19 CORRECT CHARACTERS AND WORDS WHILE KEYBOARDING	A-20 DELETE, INSERT, AND REPLACE TEXT	A-21 FORMAT (SETTING TABS, MARGINS, LINE SPACING, PITCH, ETC.)	A-22 NAME DOCUMENTS	A-23 SET UP FILES AND MAINTAIN RECORDS	A-24 DELETE PREVIOUS VERSIONS OF DOCUMENTS
UEUES	A-32 OPERATE AUTOMATIC SHEET FEEDER	A-33 CHANGE RIBBONS OR PRINT WHEELS	A-34 USE STOP CODES	A-35 HYPHENATE (MANUAL AND AUTOMATIC)	A-36 JUSTIFY		
TS IPTS	B-4 PAGINATE	B-5 REPAGINATE	B-6 MERGE (FORM LETTERS)				
S. G.	C-4 CHANGE MARGINS, TABS, LINE SPACING, ETC.	C-5 USE MATH OR ARITHMETIC	C-6 SORT AND SELECT (RECORDS/LIST PROCESSING)	C-7 USE GRAPHICS	C-8 USE MULTI-COLUMNS	C-9 DELETE, INSERT, REPLACE BLOCKS/ COLUMNS OF TEXT	C-10 USE SPELLING VERIFICATION
EM TING	C-18 SUPERVISE OTHER OPERATORS						

WORKSHOP PARTICIPANTS

(Panel of Experts)

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APPENDIX III

In this appendix can be found computer readouts that were generated using the SPSSX program to identify frequencies and percentages that were used to prepare the tables which make up the third chapter.

3 JUL 85 CLEAN PAGE 5f
14 46 07 WORD PROCESSING

CARD2

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
	2	82	100.0	100.0	100.0
	TOTAL	82	100.0	100.0	

VALID CASES 82 MISSING CASES 0

TECOW tm equ oc wrk

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
very seldom	1	10	12.2	12.3	12.3
seldom	2	5	6.1	6.2	18.5
some	3	10	12.2	12.3	30.9
frequently	4	14	17.1	17.3	48.1
very frequent	5	42	51.2	51.9	100.0
		1	1.2	MISSING	
	TOTAL	82	100.0	100.0	

VALID CASES 81 MISSING CASES 1

TEOOP tm equ oc prep

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
very inadequate	1	2	2.4	2.5	2.5
inadequate	2	1	1.2	1.2	3.7
neither inade or ade	3	4	4.9	4.9	8.6
adequate	4	24	29.3	29.6	38.3
very adequate	5	50	61.0	61.7	100.0
		1	1.2	MISSING	
	TOTAL	82	100.0	100.0	

VALID CASES 81 MISSING CASES 1

3 JUL 85 CLEAN PAGE 5g
14 46 07 WORD PROCESSING

LADW la acc sy dsk wrk

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
very seldom	1	17	20.7	21.2	21.2
some	3	7	8.5	8.7	30.0
frequently	4	20	24.4	25.0	55.0
very frequently	5	35	42.7	43.8	98.7
never	6	1	1.2	1.2	100.0
		2	2.4	MISSING	
	TOTAL	82	100.0	100.0	

VALID CASES 80 MISSING CASES 2

LADP la acc sy dsk prep

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
very inadequate	1	2	2.4	2.5	2.5
inadequate	2	1	1.2	1.2	3.7
neither inade or ade	3	7	8.5	8.7	11.2
adequate	4	28	34.1	35.0	46.2
very adequate	5	42	51.2	52.5	98.7
never	6	1	1.2	1.2	100.0
		2	2.4	MISSING	
	TOTAL	82	100.0	100.0	

VALID CASES 80 MISSING CASES 2

3 JUL 85 CLEAN PAGE 3
14 48 07 WORD PROCESSING

LAWA to acc wp dsk wrk

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
very seldom	1	6	7 3	7 5	7 5
seldom	2	1	1 2	1 2	8 7
some	3	9	11 0	11 2	20 0
frequently	4	17	20 7	21 2	41 2
very frequently	5	47	57 3	58 7	100 0
		2	2 4	MISSING	
	TOTAL	82	100 0	100 0	

VALID CASES 80 MISSING CASES 2

LAWP to acc wp dsk prod

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
inadequate	2	1	1 2	1 2	1 2
no image or ade	3	6	7 3	7 5	8 7
adequate	4	28	34 1	35 0	43 8
very adequate	5	45	54 9	56 3	100 0
		2	2 4	MISSING	
	TOTAL	82	100 0	100 0	

VALID CASES 80 MISSING CASES 2

3 JUL 85 CLEAN PAGE 32
14 48 07 WORD PROCESSING

IDW init disk wrk

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
very seldom	1	18	22 0	23 1	23 1
seldom	2	4	4 9	5 1	28 2
some	3	20	24 4	25 6	53 8
frequently	4	16	19 5	20 5	74 4
very frequently	5	19	23 2	24 4	98 7
never	6	1	1 2	1 3	100 0
		4	4 9	MISSING	
	TOTAL	82	100 0	100 0	

VALID CASES 78 MISSING CASES 4

IDP init disk prod

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
very inadequate	1	6	7 3	7 7	7 7
inadequate	2	7	8 5	9 0	16 7
no image or ade	3	16	19 5	20 5	37 2
adequate	4	23	28 0	29 5	66 7
very adequate	5	25	30 5	32 1	98 7
never	6	1	1 2	1 3	100 0
		4	4 9	MISSING	
	TOTAL	82	100 0	100 0	

VALID CASES 78 MISSING CASES 4

UANKW alb nu key wrk

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
Very seldom	2	2	2 4	2 5	2 5
Some	3	14	17 1	17 7	20 3
Frequently	4	15	18 3	18 0	38 2
Very frequent	5	48	58 5	60 8	100 0
		3	3 7	MISSING	
	TOTAL	82	100 0	100 0	

VALID CASES 79 MISSING CASES 3

UANKP alb nu key prep

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
Very inadequate	1	2	2 4	2 5	2 5
Inadequate	2	2	2 4	2 5	5 1
Barely inade or ade	3	10	12 2	13 0	18 2
Adequate	4	23	28 0	29 9	48 1
Very adequate	5	40	48 8	51 9	100 0
		5	6	MISSING	
	TOTAL	82	100 0	100 0	

VALID CASES 77 MISSING CASES 5

UCFKW co fun key wrk

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
Very seldom	1	2	2 4	2 5	2 5
Seldom	2	1	1 2	1 2	3 7
Some	3	5	6 1	6 2	9 9
Frequently	4	29	35 4	35 8	45 7
Very frequently	5	44	53 7	54 3	100 0
		1	1 2	MISSING	
	TOTAL	82	100 0	100 0	

VALID CASES 81 MISSING CASES 1

UCFKP co fun key prep

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
Barely inade or ade	3	5	6 1	6 3	6 3
Adequate	4	31	37 8	38 2	45 6
Very adequate	5	43	52 4	54 4	100 0
		3	3 7	MISSING	
	TOTAL	82	100 0	100 0	

VALID CASES 79 MISSING CASES 3

UCLKW cur lo key wrk

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
Very seldom	1	2	2 4	2 5	2 5
Some	3	1	1 2	1 2	3 7
Frequently	4	13	15 9	16 2	20 0
Very frequently	5	64	78 0	80 0	100 0
		2	2 4	MISSING	
	TOTAL	82	100 0	100 0	

VALID CASES 80 MISSING CASES 2

3 JUL 85 CLEAN PAGE 56
16 46 07 WORD PROCESSING

LCLKP cur lc key prod

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
not made of ads	3	1	1 2	1 2	1 2
adequate	4	23	28 0	28 4	30 0
very adequate	5	56	68 3	70 0	100 0
		2	2 4	MISSING	
	TOTAL	82	100 0	100 0	

VALID CASES 80 MISSING CASES 2

USSKW spec sy ky wrk

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
very seldom	1	5	6 1	6 3	6 3
seldom	2	5	6 1	6 3	13 2
some	3	16	19 5	20 3	35 4
frequently	4	21	25 6	26 6	62 0
very frequently	5	29	35 4	36 7	98 7
never	6	1	1 2	1 3	100 0
		3	3 7	MISSING	
	TOTAL	82	100 0	100 0	

VALID CASES 79 MISSING CASES 3

3 JUL 85 CLEAN PAGE 56
16 46 07 WORD PROCESSING

USSKP spec sy ky prod

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
very inadequate	1	2	2 4	2 5	2 5
inadequate	2	1	1 2	1 3	3 8
not made of ads	3	23	28 0	26 3	34 2
adequate	4	31	37 8	40 8	75 0
very adequate	5	18	22 0	23 7	98 7
never	6	1	1 2	1 3	100 0
		6	7 3	MISSING	
	TOTAL	82	100 0	100 0	

VALID CASES 76 MISSING CASES 6

SWAW word wrap wrk

VALUE LABEL	VALUE	FREQUENCY	PERCENT	VALID PERCENT	CUM PERCENT
very seldom	1	6	7 3	7 6	7 6
seldom	2	2	2 4	2 5	10 1
some	3	6	7 3	7 6	17 7
frequently	4	9	11 0	11 4	29 1
very frequently	5	55	67 1	69 6	98 7
never	6	1	1 2	1 3	100 0
		3	3 7	MISSING	
	TOTAL	82	100 0	100 0	

VALID CASES 79 MISSING CASES 3

APPENDIX IV

In this appendix can be found a description of the institutions that comprise the delivery system for institutional non-university post-secondary education in Alberta that come under the jurisdiction of Alberta Advanced Education.

Institutional Non-University Post-Secondary Education in Alberta

The structure of post secondary education in Alberta includes university education and non-university education which is directed and coordinated by Alberta Advanced Education. Non-university education includes those institutions and agencies that offer either a certificate or diploma or certification as a journeyman. (the apprentice system). Provincially administered institutions, technical institutes, public colleges, and private colleges are part of the instructional delivery system of the non-university sector that were established to meet the diverse educational needs of adult Albertans in all regions of the province. (Alberta Department of Advanced Education and Manpower, Annual Report, 1982-1983, p. 57)

Provincially Administered Institutions

In Alberta there are six provincially administered institutions which are administered and supported directly by the Alberta Department of Advanced Education through operating and capital grants. Included in these institutions are: four vocational centres which are referred to as Alberta Vocational Centres and are located at Calgary, Edmonton, Grouard, and Lac La Biche; a number of Community Vocational Centres located in northern Alberta; and the Alberta Petroleum Industry Training Centre (APITC). (Alberta Department of Advanced Education and Manpower, Annual Report, p. 57) The heads of all provincially

administered institutions report to the Assistant Deputy Minister of the Field Services Division of the Alberta Department of Advanced Education.

These provincially-administered institutions offer short, intensive and specialized programs to adults who often have less than a high school diploma. The main purpose of the Alberta Vocational Centres:

> are made available to those adults who are underemployed or unemployed and who are socially, economically, physically, or geographically disadvantaged and provide these individuals with the basic communications skills for entry into industry. Programs vary in length, running from six weeks to a maximum of 40 weeks. (Preitz, 1979, p. 5)

Each centre has a range of courses relevant to the needs of the region it serves. For students who do not have enough academic training to begin an occupational program, academic upgrading from Grade 1 to 12 is offered by each Centre. Students are placed individually at their own level in this program and progress at their own pace. Academic upgrading may continue as long as the student makes progress--to college, technical institute and university entrance levels. Vocational counselling and testing are available from all the Vocational Centres including possible financial assistance. (Alberta Department of Manpower, "It's About Time," 1983, p. 36)

Technical Institutes

During the 1981-82 year and effective April, 1982 the Technical Institutes Act was modified to provide for a

transition of governance of the Northern Alberta Institute of Technology (Edmonton), the Southern Alberta Institute of Technology (Calgary), and the Westerra Institute of Technology of Stony Plain from provincially administered institutions to board governed institutions. (Alberta Department of Advanced Education and Manpower, Annual Report, 1982-1983, p. 57)

Programs offered by the technical institutes include either one-year certificate or two-year diploma programs as well as apprenticeship and continuing education programs. Their main categories of study are: engineering, medical science, and life resources technologies; business, commercial and service occupations; and industrial and commercial trades, including the apprenticeship trades. Each program has an advisory committee made up of people from business, industry, education and government which advises the institution on the numbers of trained people required in each field, and on the changing competencies and knowledge graduates should possess. Academic upgrading courses are also available for those who do not fully meet the entrance requirements for their chosen programs. (Alberta Department of Manpower, "It's About Time," 1983, p. 31)

Public and Private Colleges

Alberta has a number of non-affiliated independent colleges established by private acts of the Legislature. Alberta College is categorized as a non-affiliated

independent college and offers a full range of programs in academic upgrading, business education and continuing education in day and evening classes. Although this college is not affiliated with other universities or colleges in the province it does offer unique post-secondary education programs, and is an other alternative for Alberta post-secondary students to pursue their educational goals. Although the independent colleges in the province are not affiliated with universities or colleges in Alberta, some are affiliated with colleges in the United States, with the Canadian or American Associations of Bible Colleges, or with the Association of Theological Schools in the United States and Canada. (Alberta Department of Manpower, "It's About Time," 1983, p. 30)

There are ten public colleges in the province, one of which is Grant MacEwan Community College in the City of Edmonton. The courses in these colleges range from general interest and academic upgrading to vocational training and university transfer. All attempt to respond to the needs of their various communities. The usual requirement for college entrance is a high school diploma or "adult status" (a minimum of 18 years of age). (Alberta Department of Manpower, "It's About Time," p. 23)

These colleges offer one-year certificate and two-year diploma programs, often designed in consultation with local employers. Some colleges offer one or two years of course work which is transferable to an Alberta university where degree requirements may be completed.

Alberta's public colleges are supported by the province through operating and capital grants, and their programs are coordinated under policies administered by the Minister of the Alberta Department of Advanced Education.

Each college declared to come under the Colleges Act is a separate legal entity and are governed by a Board of Governors appointed by the Department of Advanced Education.

V I T A

Name: Jeannette M. Marchand

Birth: January 2, 1950; Windsor, Ontario

Education: 1985, University of Alberta, M.Ed.

1979, University of Alberta, B.Ed.

Teacher Certification: Alberta Permanent Professional Certificate

Positions: Curriculum Consultant: Alberta Vocational Centre, 1985;

Instructor: Alberta Vocational Centre, 1980-85;

Teacher: Edmonton Public School Board, 1979-80;

Instructor: C.U.S.O. (Canadian University Services Overseas), 1974-76;

Practical Office Experience, 1968-74.

Memberships: Alberta Business Education Association;
Alberta Society for Computers in Education;
Phi Delta Kappa (Alberta Chapter);
Epsilon Pi Tau (Alberta Chapter).

Offices: Word Processing Coordinator, 1981-84; Committee Member of a Task Force For Educational Issues, 1984; Curriculum Development Committee Member, A.V.C., 1984.

Travel: Gr. Britain/Eire, Holland, Sudan, Zambia, Malawi, Mozambique, Tanzania, Kenya, Botswanna, South Africa, Lesotho, Seychelles, Sri Lanka, Singapore, Malaysia, Thailand, Phillipines, Hong Kong, Macow, Japan, Mexico, Swaziland, Canada, and the United States.