

Eastern Illinois University

The Keep

Plan B Papers

Student Theses & Publications

1-1-1963

The Influence of Automation on Business Education at the Secondary Level

David K. Eberhart

Follow this and additional works at: https://thekeep.eiu.edu/plan_b

Recommended Citation

Eberhart, David K., "The Influence of Automation on Business Education at the Secondary Level" (1963). *Plan B Papers*. 335.

https://thekeep.eiu.edu/plan_b/335

This Dissertation/Thesis is brought to you for free and open access by the Student Theses & Publications at The Keep. It has been accepted for inclusion in Plan B Papers by an authorized administrator of The Keep. For more information, please contact tabruns@eiu.edu.

The Influence of Automation on Business

Education at the Secondary Level

(TITLE)

BY

David K. Eberhart

PLAN B PAPER

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE MASTER OF SCIENCE IN EDUCATION
AND PREPARED IN COURSE

Business 545--Problems in Business Education

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY,
CHARLESTON, ILLINOIS

1963

YEAR

I HEREBY RECOMMEND THIS PLAN B PAPER BE ACCEPTED AS
FULFILLING THIS PART OF THE DEGREE, M.S. IN ED.

8/5/63
DATE

[REDACTED]
ADVISER

Aug 5, 1963
DATE

[REDACTED]
DEPARTMENT HEAD

ACKNOWLEDGMENTS

The writer wishes to express his appreciation to Dr. George K. Cooper, Eastern Illinois University, for the valuable assistance he provided in the writing of this paper, and to Mr. Roland D. Spaul, Eastern Illinois University, for supplying part of the source material used in the text of this report.

TABLE OF CONTENTS

I.	Introduction	1
A.	Concept of Automation.	1
B.	Impact of Automation on the Economy.	1
C.	Need for Modification in Course of Study	2
D.	Purpose of this Report	3
II.	General Influence of Automation.	4
A.	Influence on Job Opportunities and Requirements for High School Graduates	4
1.	Impact on employment and unemployment.	4
2.	Influence on jobs in the business office , ,	6
3.	Influence on requirements for office jobs	9
B.	The Influence on the Equipment and Facilities Needed in the High School	12
1.	Need for more training on electrified office equipment	12
2.	High school's responsibility for machine training	12
3.	Effect of standardization on the training role of the high school	13
C.	Influence on Teachers.	15
1.	Present implication to teachers.	15
2.	Need for change in teacher training and preparation.	15
3.	The challenge facing business teachers	18
D.	Influence on the Business Curriculum in General	19

1.	Shortcomings of present curriculum	19
2.	Requirements for a successful business curriculum.	20
E.	Influence on Specific Courses.	22
1.	Bookkeeping.	22
a.	importance of bookkeeping knowledge for employment	22
b.	need for teaching new concepts and ideas.	23
2.	Typewriting.	25
a.	greater demands for better typists	25
b.	changes needed in typewriting instruction.	26
3.	Shorthand.	29
a.	effects on value of shorthand skill.	29
b.	effects of dictating machines on shorthand instruction	30
4.	General business	32
a.	nature of the course in relation to automation.	32
b.	effects of automation on the purpose of the course.	33
III.	Conclusions.	35
A.	General Implications of Automation	35
B.	Tasks for Business Educators	36
	Bibliography	38

INTRODUCTION

Concept of Automation

Automation is a relatively new word and concept. Many people today do not understand or at least have a misconception of what automation means and the effects it is having on the American economy. Some are choosing to ignore that automation exists and is increasingly an integral part of the economy.

Automation is not merely a process by which new and improved machines are added to an old business for the purpose of reducing the number of employees necessary, resulting in a decrease in labor costs. It is an entirely new concept which requires, in many cases, a complete reorganization of the business system for proper utilization.

Impact of Automation on the Economy

Automation is sometimes thought of as an extension of the Industrial Revolution; however, it differs in one major respect. The Industrial Revolution relieved man from many of the physical or manual aspects of the labor task. Automation, in addition to relieving man from

electronic invasion of the office, as one phase of automation, indicates changes not only in the offices themselves, but also in those schools concerned with training office personnel. Certainly the business curriculum will be among the first to reflect this trend if it is to continue its present vocational function in the high school. Indeed, its role in the formal educational process should ultimately increase in importance with the increase in use of automation!

Purposes of This Report

This paper will examine some of the general effects of automation as they apply to high school business education in its function of preparing high school students to meet the ever-changing requirements for employment. It is not intended to make any definite predictions as to what the eventual outcome of the "automation revolution" will be; for to do so at this time would be mere speculation. A few generalizations of interest to business teachers, school administrators, and personnel managers will be made in the third chapter of this paper.

GENERAL INFLUENCE OF AUTOMATION

Influence on Job Opportunities and Requirements for High School Graduates

The introduction of automated processes to the American economy is producing noticeable and sometimes radical changes in occupational opportunities and requirements. Some of the old familiar jobs are being eliminated, and many new jobs requiring different training are being created. A look at the influence automated processes are having on current jobs and requirements will give some indication of the purpose of business education in the future.

Impact on employment and unemployment

A common answer to a question concerning the effects of automation on the American economy would be increased unemployment. But is increased unemployment mainly due to automation? Many authorities feel the answer would be negative. "The impact of computers on present-day employees and on opportunities open to boys and girls now graduating from schools seems to be mild."¹

¹"Revolution in Office Work--Meaning for Jobs, Businesses," U.S. NEWS & WORLD REPORT, May 13, 1963, p.88.

is not a reduction in the use of automated equipment. The key to job security is education and technical training.

Those employees categorized as office workers and the duties they perform will be the ones chiefly affected by automation. The occupations least affected will be those that require considerable judgment and those that involve dealing with people. The use of computers by office workers will continue at an increasing rate to "take up the burdens of those clerical duties which are monotonous, repetitive, well-defined, and which demand nothing of the unique human quality called creativeness."⁶ The indication is that routine duties such as posting, sorting, filing, and checking tend to disappear as the office becomes automated.

Several trends have been noted in recent studies concerning the effect of automation on office employment. A recent study by NOMA indicated an average anticipated increase of 25 percent in 14 office job classifications. While the 14 job classifications were not specifically listed in this source, an increase is expected in all

⁶Harold Benvienu, "Economic Change and Basic Business," BUSINESS EDUCATION FORUM, January, 1960, p. 4.

classifications except those of bookkeeping machine operator, calculating machine operator, and general clerk, in which the demand is expected to decline.⁷

A study made in Syracuse, New York, indicated that of 14 job titles investigated, one out of every four workers is employed as a stenographer. The four job classifications employing the greatest numbers of workers were stenographer, general clerk, typist, and accounting clerk. These four classifications included 63 percent of the office employees reported. As predicted from this study, the greatest demand for new workers is expected among the classifications of stenographer, general clerk, typist, and accounting clerk. The smallest indicated demand for new workers was in the classifications telephone operator, payroll clerk, messenger-mail clerks, and duplicating machine operator.⁸

A study conducted by Doris H. Crank and Floyd L. Crank in 1962 indicated that the greatest increases in opportunities will be in the clerical positions of general clerk, accounting clerk, tabulating machine operator, and

⁷ Doris H. Crank and Floyd L. Crank, NEW PERSPECTIVES IN EDUCATION FOR BUSINESS, (Washington: National Business Education Association, 1963), p. 13.

⁸ Ibid., p. 14.

key punch operator. An increase in stenographic and secretarial positions was also indicated, especially in the position of secretary.⁹

While some persons have been and will continue to be displaced as a result of automation, a great number of new jobs have been and will continue to be created. Great demands will still be present for many of the old jobs that are familiar to the present business office. The myth that offices will be operated automatically is far from realistic. The new systems will require office workers with duties directed toward successful operation of the electronic equipment.

Influence on requirements for office jobs

Shifts in job requirements that are now showing up reflect just the first decade of the use of computers in the nation's business office. In the process of automating, companies are providing better jobs for those clerical workers who possess superior skills necessary to deal with technological changes. Future office workers must be trained in new and different job categories, with

⁹ Ibid., p. 15.

an emphasis on job traits and skills, especially accuracy.

At least a high school education will be essential to qualify for office jobs. Training in mathematics in high school will become more important as a means of developing the skill and precision needed in working with components of automated office systems.

General education for office workers is becoming increasingly more important for satisfactory performance of the office duties. "Mathematics, science, logical thinking, and care and accuracy are important general education requirements for the automated office worker of the future."¹⁰ The office employee, by virtue of his acquiring additional specialized skills, will become more important to the company's processing of data relating to current operations.

The future is almost unlimited for the office worker who is well trained and prepared for change. There is no doubt that many changes are needed in office education and that because educators and others concerned with office education are growing aware of the need, many changes will be made.¹¹

¹⁰Kriegbaum, loc. cit., p. 392.

¹¹Blackstone, loc. cit., p. 259.

John K. Swearingen, Computer Systems Manager for General Electric Company, Louisville, Kentucky, in an address at the Data Processing and Automated Business Systems Workshop at the University of Dayton during the summer of 1961 summarized the need for superior training of office employees by stating:

"The most important ingredient in a successful data processing operation is people. Until machines can think better than people, decide what work they want to do, and how they are going to do it, we can consider them of secondary importance. Our only concern for the machine is that it be adequate, but the people need to be more than adequate. They must be resourceful, ingenious, objective. They must be analytical and creative."¹²

For those students with less talent,, automated offices have many less demanding jobs available, such as tape handlers, coders, console operators, etc. The increasing use of electronic data processing (EDP) equipment does not mean that business educators will have no room in their classrooms for those students with only average ability. It means that more of the superior students will have to be attracted to the business classrooms to be prepared for those jobs demanding above average ability.

¹²Kriegbaum, loc. cit., p. 392.

Influence on the Equipment and Facilities Needed in the High School

Need for more training on electrified office equipment

EDP equipment must be made available if the high school and the business curriculum in particular are to be adequate in vocational preparation of workers for automated offices. The increasing use of dictating machines, calculators and EDP equipment in every office situation will force the high school to give more attention to training in these areas.

High school's responsibility for machine training

It has been noted that tremendous changes are occurring in manufacturing and personnel processes as a result of the use of EDP equipment. New equipment that is less expensive and more efficient is being developed at a rapid rate, making present machines obsolete. Much experimenting with electronic equipment has made standardization of future equipment and the training necessary to operate it a bit vague. This, plus the relatively high cost of electrified machinery, has forced the training program in the high school to remain at the exploration level. This leaves the major portion of the training

burden on the employing companies, to be done either by sending trainees to special schools or by on-the-job training.

The cost factor, which certainly warrants consideration, should not be the major determining factor in determining the kind of training on electronic equipment to be incorporated in the high school curriculum. The major concern should be whether or not the high school can properly give machine training to the students so as to leave further training required by the employer at a minimum. Until a decision can be made as to how much training the high school should give and on what machines, the high schools will be slow in accepting the responsibility for such training.

Effect of standardization on the training role of the high school

It is within the pattern of the automation revolution that standardization is coming. It won't be long until the high school will be called upon to train EDP personnel much as they have trained typists in the past. Enoch J. Haga states,

"In my opinion the problem of training electronic data processing technicians will

EZERASE

NOTION COPY

in time become no more difficult,....., as training typists. It certainly will be far less difficult than developing skilled competent secretaries.¹³

Communities must give more attention to the possibilities of new types of automated equipment becoming available to the high schools. The high school must be prepared to initiate the proper actions--acquiring proper equipment, maintaining a sufficiently trained instructional staff, etc.--to begin efficient preparation of the students when and if the business world decides what training the high school should provide. This calls not only for community awareness, but also for close cooperation between the high school and the business community.

¹³ Enoch J. Haga, "What Do Business Educators Think About Data Processing," BALANCE SHEET, May, 1959, p. 395.

Influence on Teachers

Present implication to teachers

The business teacher cannot choose to ignore the impact of the automation revolution on the American business system. To ignore automation would soon bring obsolescence to the knowledge taught by business teacher's classroom activities.

It is the duty of the business educator to prepare his students either to work in an automated office or to seek additional education or training that will qualify him for employment in such an office. He must teach students to think and to solve the problems that are within their present knowledge and ability.

Need for change in teacher training and preparation

A definite change is needed in the teacher's training to meet the changes brought about by the use of automation. The change needs to start on the college level in the preparation of business teachers, but it will also mean that present high school teachers will have to adapt to these changes. "Teachers must be willing to give up easy, well-known routines and study the new. There can

be no place in the age of automation for teachers unwilling to change, to study, and to improve."¹⁴

Ford Robinson, vice-president of Curtis Publishing Company, reported to Eastern Business Teachers Association in April, 1960, that, in order to prepare students for a business world that is driving toward automation, the teacher himself should (1) understand basic principles of automation, (2) know, moderately well, some of the applications, (3) have learned some techniques of reasoning, and (4) abandon to some extent the teaching of knowledge and strive to educate the mind to think.¹⁵

Teachers must keep conversant with current literature about office automation for purposes of vocational guidance and to keep office-training instruction abreast of the changing requirements. Visitations to business concerns having data-processing departments would be enlightening to business teachers. Studying new courses in electronic computer programming, conducting surveys of the business-employment community, studying "help

¹⁴Jane Clem, "The Influence of Automation on the Teaching of Typewriting," BUSINESS EDUCATION FORUM, April, 1960, p. 22.

¹⁵John C. Roman, "Automation's Challenge to Business Education," BUSINESS EDUCATION WORLD, November, 1961, p. 22.

wanted" sections of large metropolitan newspapers, will aid the teacher in keeping informed on automation and the changes that are being brought about by its use.

Business teachers must realize the needs of businessmen and relate these needs to classroom teaching. "If business education is to continue its role in educational leadership, it cannot wait for businessmen to communicate to the schools concerning the automation impact and its effect on the total training program. We business teachers must first become well informed and then be ready and willing to make the necessary changes in our program."¹⁶

All teachers, as well as business teachers, must make every effort to gain some insight into automation so they will be in a better position to decide how to train students "for new jobs that have been created; the overall curriculum changes which might be required; and the ability to recognize truisms and fallacies attributed to automation".¹⁷

¹⁶Thomas E. Holstead, "Preparing Students for the Automated Offices--the Role of the High School," AMERICAN BUSINESS EDUCATION, March, 1962, p. 151.

¹⁷Kriegbaum, loc. cit., p. 392.

¹⁸Ibid., p. 431.

need to be supplemented by the skills needed for automation, which require a different approach. For example, keypunching is a variation of typing and ten-key adding machine skill, but it requires a different emphasis. Precision and accuracy are vital in keypunch operation. An error in typing can be caught early, but errors in keypunching can lead to a multiplication of the original errors.

Requirements for a successful business curriculum

It will be necessary to attract the better students to the business curriculum. The business curriculum will become more complex, requiring a higher level of proficiency in various areas of learning. The business teacher should not have major responsibility for teaching English, mathematics, logical thinking, etc., for others trained in these areas are better qualified than the business teacher for this task. He should demand a reasonable proficiency in these areas before a student is allowed to enter the business curriculum. It will definitely take courage to make such demands at a time when pressures from science, mathematics, and entrance requirements to universities are threatening to limit the business

education curriculum, but it is fundamental to the survival of the curriculum that these demands be made.²⁰

The business curriculum must be projected ahead of the current needs so as to include future requirements and fulfill its obligation to the students. The curriculum must constantly be modernized and upgraded.

In general, the responsibilities of any business department might be simply stated to:

- "A. Keep up to date on the trends in automation.
- B. Continue to do a good job of teaching the skills, but with more reference to application in an automated office.
- C. Help keep the entire student body informed on the opportunities available in the modern office."²¹

The impact of automation on the high school business curriculum has resulted in confusion among business educators. This situation is beginning to clear up as business educators are getting a clearer insight into the nature of the problem they are facing. The need for a continuing business education program in the high schools is becoming increasingly more apparent.

²⁰Edward J. Laurie, "Implications of Computers for Business Education," BALANCE SHEET, March, 1963, p. 295.

²¹Holstead, loc. cit., p. 150.

Influence on Specific Courses

BOOKKEEPING

Importance of bookkeeping knowledge for employment

As automation becomes more and more prevalent in the business office, a knowledge of bookkeeping and accounting by the skilled office worker will become more important. The process of automation involves the adaptation of the work of the bookkeeping cycle to machine methods. The processes may be modified somewhat, but the reasons for the processes will change very gradually and very slightly.

Automated office machines are not capable of thinking for themselves without the aid of detailed programs. The entire bookkeeping cycle must, therefore, be programmed into the machine in a manner that will produce useful financial statements and supplementary reports. Students and teachers of business must realize that, "amazing changes have occurred in modern machine bookkeeping, but this in no way eliminates the need for a thorough knowledge of double entry bookkeeping."²²

²²Ibid., p. 151.

As yet, no one has devised a plan to teach the various steps in the bookkeeping process, whether the data are to be programmed for hand recording or on automated equipment, except through the study of bookkeeping principles and the application of those principles through vocabulary building exercises, drills, cases for discussion, problems and practice sets that apply the principles learned to hand data processing. Continued emphasis on the mastery of bookkeeping fundamentals is constantly urged.

"Because industry requires that office automation and accounting be co-ordinated with management, there is a great need for high school students to prepare for such positions with good, solid bookkeeping courses."²³

Need for teaching new concepts and ideas

Bookkeeping teachers will need to apply modern terminology of automation on their bookkeeping classes so that such terms as data processing, electronic data processing, and programming become a part of the daily vocabulary of the students. If the students realize that every bookkeeping operation is data processing,

²³Roman, loc. cit., p. 22.

Increased attention should be given to the development of fundamental skills, concepts, understandings, and principles in the bookkeeping classroom.

TYPEWRITING

Greater demands for better typists

Automation has not eliminated the need for typing skill, nor is it likely to do so. The typewritten message remains the most important means of communication in the business world.

"EDP will result in an upgrading of typists, among other things, because it would appear that in many cases the typist will be making the original entries."²⁶

The typist's job will change as routine typing is done by high speed printers. Much of the typist's work will consist of capturing data as they enter the business. Pertinent and reusable information will probably be collected on paper tape to be fed into an electronic typewriting device that would read the punched paper tape and produce the typed copy of the information.

The typewriting student must be a more proficient

²⁶Haga, loc. cit., p. 395.

typist. This means he must not only develop typewriting skill but he must develop the ability to apply the skill to the production of usable typewritten material.

The electronic age will demand more speed, more accuracy, and more production skill to keep up with automation. "We must send more students from beginning typing into the advanced typing classes, and then work harder with them when they get there."²⁷

Changes needed in typewriting instruction

Typewriting ability will continue to be one of the most used skills of an office worker. Automation is creating a great demand for accurate, skillful typists who might be trained as electronic typists. Since the typewriter will provide much of the raw data for the electronic machines, accuracy is of prime importance. In the classroom, "major emphasis should be given to numbers, rough drafts, and the use of a great variety of forms."²⁸

²⁷E. A. Patchen, "Automation Effects Secondary Business Education," JOURNAL OF BUSINESS EDUCATION, February, 1962, p. 193.

²⁸Holstead, loc. cit., p. 151.

"On the high school level, there are new types of abilities and skills that must be developed in students. Perhaps the greatest of these is the ability to think logically for themselves from facts. This can be taught in the typewriting class through the development of problem-solving ability in connection with the completion of problems and projects."²⁹

Typists will have to learn to use the electronic data processing machines in the performance of their duties. Manual typists can learn to use these machines, but operators trained on electric typewriters seem to have less trouble.

"This need for ability to operate the electric typewriter coupled with the fact that a business can obtain more and better typewriting with less fatigue from an operator of an electric typewriter, and one can see a trend toward teaching typing on electric machines."³⁰

Marion Wood looks at the influence of automation on the teaching of typewriting as a broadening of the objectives.

"Typewriting instruction will improve. The keyboard will be introduced in less time. Word level response will start in the very beginning lessons. More emphasis will be

²⁹Clem, loc. cit., p. 22.

³⁰E. Dana Gibson, "Automation and Business Education," BUSINESS EDUCATION FORUM, January, 1960, p. 32.

given to the short timed drills: one-two-three minute writing. Improved typewriting technique will be emphasized in all periods, not just in the first six weeks. Accuracy and rhythm will be stressed. Students will be encouraged to develop maximum utility from the service keys and the special devices built into the typewriter."³¹

Among those educators who feel that automation will have little effect on typewriting instruction, especially concerning the emphasis given to accuracy, are T. James Crawford and J. Marshall Hanna. Crawford observed, "Accuracy is not stable; we should have this objective now and not be forced by automation to have this objective."³² Hanna stated, "I assume we have always had emphasis on accuracy. It may be that we will put a little less emphasis on speed."³³

³¹Jerre E. Gratz, MAJOR ISSUES IN BUSINESS EDUCATION, ("Monograph 106"; South-Western Publishing Co., April, 1962), p. 17.

³²Ibid., pl 94.

³³Ibid., p. 94.

SHORTHAND

Effects on value of shorthand skill

Much concern has been given to the future of shorthand as a necessary skill of the future secretary and ultimately as a part of the business curriculum.

E. Dana Gibson feels that the computer and other equipment will not change shorthand itself except as new words and concepts come into general use. But for the secretary, dictation will be an increasingly smaller part of her work. Gibson feels that most dictation will eventually be done on dictation machines of one type or another because of lower expense and versatility.³⁴

Gibson, in another writing, goes a little further by stating, "Vocationally shorthand is a dead duck. No office today can afford the cost of dictating a letter to an expensive worker, when the same or better results can be obtained by dictating to a low-cost machine."³⁵

³⁴Gibson, loc. cit., p. 12.

³⁵E. Dana Gibson, "Automation: Revolution in Business Education," BUSINESS EDUCATION WORLD, March, 1959, p. 24.

On the other hand, many business educators feel that the shorthand course must be expanded and accelerated. Higher calibre students must be sought. Automation seems to have created a greater demand for more, and better trained stenographers. Lloyd V. Douglas reminds business educators that, "MANY people turn to the machine ONLY because they cannot get shorthand writers who can do the job."³⁶

Effect of dictating machines on shorthand instruction

The increasing use of the dictating machine by executives will mean that more attention will have to be given to proficient use of the voice-recording machine along with shorthand instruction. The machine pool will most likely continue to expand, and because of this, the stenographer or secretary will have to be able to handle proficiently the various transcribing machines.

Nolan and Hayden reported in their book, PRINCIPLES AND PROBLEMS OF BUSINESS EDUCATION, that it is true that tens of thousands of dictators are using dictation

³⁶Gratz, loc. cit., p. 75.

machines for routine letters, but a suprisingly large proportion of dictators prefer to dictate to stenographers.³⁷

Other business educators seem to feel that automation will have little or no influence on shorthand instruction. Some business educators and stenographers have expressed the opinion that dictating machines will replace the use of shorthand. George A. Wagoner states,

"In spite of the fact that dictating machines are increasing in use, no evidence is available that the demand for shorthand-trained students is decreasing."³⁸

Herbert A. Tonne defends shorthand instruction by saying,

"Dictating machines have been in use for many years, but there is little evidence that they will replace completely the use of manual shorthand."³⁹

It seems to be the consensus of opinion among business educators that for the present, shorthand instruction will not be greatly affected by automation

³⁷Ibid., p. 74.

³⁸George A. Wagoner, "Shorthand: Past, Present, and Future," BUSINESS EDUCATION FORUM, May, 1957, p. 18.

³⁹Hervert A. Tonne, "The Present and Future of Shorthand," BUSINESS EDUCATION FORUM, October, 1960, p. 11.

except that requirements as to speed and accuracy might be increased. For many years, dictating machines and other related equipment have been used, but the number of stenographers employed has continued to grow rapidly.

GENERAL BUSINESS

Nature of the course in relation to automation

The general business course has always been a difficult course to confine to the covers of a textbook. There are units to be taught that can be more effectively presented if outside references are used.

General business is probably the most flexible course in the high school business program. For this reason, the general business course would be an ideal place in which to introduce a unit on automation-- what it means, what it can and cannot do, and an explanation of common technical terms that students might come in contact with in their daily life.

Concepts and effects of automation could be effectively taught and expanded in a general or basic business class. This does not, and should not, mean

that data processing and business system information should not be incorporated into other classes as conducive situations arise.

Effects of automation on the purpose of the course

Milton C. Olson has suggested that there might be two effects of automation on general business courses depending on the objectives of the students.

"If the course is a basic business course for students who will later specialize in business, an introduction to a study of the functions of machines in the office is important. If one of the purposes of the course is to provide a vehicle for educational and vocational guidance, it is important that a new set of job possibilities opened up by automation be considered."⁴⁰

A general business course should definitely include some general information on automation to be considered up-to-date-. However, because of the uncertainty of the purpose of a general business course it has been difficult for business educators to agree on the effects of automation on the course content and method of teaching.

⁴⁰Milton C. Olsen, "The Effect of Automation on Business Teachers," BALANCE SHEET, February, 1958, p. 254.

"An interpretation of the responses to this issue that automation will have little or no effect at the present time seems to foster a 'let's wait and see' attitude. Perhaps this is as it should be."⁴¹

If the above statement is indicative of the true attitude among business educators today, then it remains for the business teacher to become familiar with the implications of the automated activities of businesses and relay this information on to the students.

⁴¹Gratz, loc. cit., p. 40.

CONCLUSIONS

General Implications of Automation

It is not hard to find business educators who have definite convictions concerning the influence that automation of office activities has had on business education at the present and the influence that it will have in the future. At the same time, there seems to be no consensus of opinion.

The increased use of automation by businessmen has, however, clearly indicated that there is a great demand for more and better qualified office personnel. Continued emphasis seems to be on typewriting, shorthand, and bookkeeping skills, but the application of automation is requiring more than these skills of successful office workers. Future employees in automated offices will be required to possess a thorough understanding of business and economic principles and procedures. Greater importance will be placed on a high level of literacy, ability to reason abstractly, and to think logically. Business educators will be responsible for developing students who are humanly warm, responsive, responsible, and intelligently curious.

Tasks for Business Educators

The primary task of educators, business educators in particular, is to prepare students for life in a rapidly changing world in which it is impossible to predict with any great degree of accuracy what that world will be like when they are adults. This difficult task requires that business educators initiate a change of perspective in the business curriculum so that more attention is given to problem solving, research, leadership, self-discipline, self-direction, decision making, and creative thinking. Teachers must be cautious so as not to prepare students for jobs that will be outmoded by the time they are ready to enter their chosen occupation.

There is a stronger need than ever before for students to be aware of the technical processes being used in modern society. Throughout their schooling, students should be kept abreast of the vast technological world and the changes being made in it. Closer co-operation will be required between business educators and business if this information is to be effectively and reliably supplied.

It is becoming apparent that businessmen will depend more and more on business educators to meet the increasing demands for well qualified workers trained in clerical skills with sound concepts of the business world and how it is operating.

BIBLIOGRAPHY

Books

Crank, Doris H. and Crank, Floyd L. NEW PERSPECTIVES
IN EDUCATION FOR BUSINESS. Washington, D. C.:
National Business Education Association, 1963.

Articles and Periodicals

- Baldwin, Leland. "Data Processing: in Perspective,"
BALANCE SHEET, October, 1962, 52-53.
- Bienvenu, Harold J. "Economic Change and Basic Business
Education," BUSINESS EDUCATION FORUM, January, 1960,
14-15.
- Blackstone, Bruce L. "Education for Office Occupations,"
BALANCE SHEET, February, 1961, 244-45, 259.
- Carlson, Arthur E. "Automation and Bookkeeping,"
BUSINESS EDUCATION FORUM, October, 1961, 30, 34.
- Clem, Jane E. "The Influence of Automation on the
Teaching of Typewriting," BUSINESS EDUCATION FORUM,
April, 1960, 22.
- Edwards, M. Lloyd. "Automation in Business Education,"
BUSINESS EDUCATION NEWSLETTER, April, 1960, 3-5.
- Forkner, Hamden L. "Bookkeeping is Data Processing,"
BALANCE SHEET, February, 1962, 268-69.
- Gibson, E. Dana. "Automation and Business Education,"
BUSINESS EDUCATION FORUM, January, 1960, 11-13.
- Gibson, E. Dana. "Automation: Revolution in Business
Education," BUSINESS EDUCATION WORLD, March, 1959,
24-25, 34-35.
- Haga, Enoch J. "What Do Business Educators Think About
Data Processing," BALANCE SHEET, May, 1959, 394-
95, 397.

- Holstead, Thomas E. "Preparing Students for the Automated Offices--the Role of the High School," AMERICAN BUSINESS EDUCATION, March, 1962, 150-51.
- Kallaus, Norman F. "Automation and Business Education: Problems, Progress, Predictions," BUSINESS EDUCATION WORLD, June, 1962, 9-;;, 31.
- Kriegbaum, Robert. "A New Twist in Business Education-- Data Processing and Business Systems," BALANCE SHEET, May, 1962, 388-92, 431.
- Kulp, Evelyn R. "Let's Teach Automation Plus," BALANCE SHEET, March, 1960, 291.
- Laurie, Edward J. "Implications of Computers for Business Education," BALANCE SHEET, March, 1963, 294-96, 324.
- Lomax, Paul S. "What Should Business Teachers Do About Office Automation," BUSINESS EDUCATION WORLD, May, 1959, 14, 33.
- Olsen, Milton C. "The Effect of Automation on Business Teachers," BALANCE SHEET, February, 1958, 252-54, 286.
- Patchen, E. A. "Automation Effects Secondary Business Education," JOURNAL OF BUSINESS EDUCATION, February, 1962, 193-94.
- "Revolution in Office Work--Meaning for Jobs, Business," U.S. NEWS & WORLD REPORT, May 13, 1963, 88.
- Roman, John C. "Automation's Challenge to Business Education," BUSINESS EDUCATION WORLD, November, 1961, 21-22.
- Tonne, Herbert A. "The Present and Future of Shorthand," BUSINESS EDUCATION FORUM, October, 1960, 11-13.

Vogel, Fredrick G. "Office Automation: Its Meaning, Functions, and Effects on Employees," BALANCE SHEET, October, 1957, 52-56.

Wagoner, George A. "Shorthand: Past, Present, and Future," BUSINESS EDUCATION FORUM, May, 1957, 18-19.

Wood, Helen. "Trends in Clerical Employment," BUSINESS EDUCATION WORLD, November, 1961, 18-21.

Monographs

Gratz, Jerre E. MAJOR ISSUES IN BUSINESS EDUCATION, Monograph No. 106. Cincinnati: South-Western Publishing Company, April, 1962.

MILLERS FALLS

EZERA SE

COTTON CONTENT