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Automation and Its Effect on Teaching Bookkeeping on the Secondary Level

Mary Marie Nelson

AUTOMATION AND ITS EFFECT ON TEACHING
BOOKKEEPING ON THE SECONDARY LEVEL

PRAIRIE VIEW AGRICULTURAL AND MECHANICAL COLLEGE
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BRIEF SUMMARY OF THESIS (OR ESSAY)
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should be written carefully).
    Automation is having a drastic effect on the teaching of book-
keeping.
    Methods must change and techniques must be up-dated, but the
basic concepts must remain static and applied in different perspectives.
Thus, our basic bookkeeping course must shift the emphasis from the
mastering of manual techniques to mastering concepts that apply to
all techniques, whether data is processed by hand, by machine or by
computer.
    Thus, business educators must modify the curriculum in order to
prepare the business students for the future.

AUTOMATION AND ITS EFFECT

ON TEACHING BOOKKEEPING ON THE SECONDARY LEVEL

A Thesis

Presented to

the Faculty of the Department of Business

Prairie View A & M College

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

by

Mary Marie Nelson

August 1969

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I am very grateful to my advisor, Dr. Kenneth Briggs, for his assistance in the construction of my paper.

<div align="right">M.M.N.</div>

DEDICATION

In appreciation, I humbly dedicate this paper to my mother, Mrs. Mary Nelson, my cousin, Mrs. Wilma F. W. Hinton, and my sister, Mrs. Berrye H. Nelson Steward for all the assistance and encouragement they have given me.

M.M.N.

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INTRODUCTION

As automation becomes more and more prevalent in the
business world, a knowledge of bookkeeping will become more
important than ever. With this in mind, business educators
MUST modify the business curriculum in order to meet the new
demands brought about. We MUST eradicate the misconceptions
about automation and introduce data processing on the sec-
ondary level. However, if a course cannot be set up, we can
integrate it easily into existing courses.

Regardless to the ultimate occupational choice a book-
keeping student should become thoroughly acquainted with
business practices and procedures in handling business records.
This can and MUST be done effectively on the secondary level.

CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

Automation has effected the teaching of the course book-keeping.

To be effective, high school bookkeeping must teach the students to master bookkeeping concepts, enabling him to cope with the data processing techniques of the business world.

A. THE PROBLEM

Statement of the problem. It is the purpose of this study (1) to show that automation has not changed the basic bookkeeping principlesl (2) there are many misconceptions about automation; (3) automation is not new; and (4) automation is having a drastic effect on teaching bookkeeping.

Importance of the study. Automation development has been misunderstood, feared, and avoided by many. However, it is not to be feared.

With this in mind, it is the duty of the business educators to better understand it, clear misconceptions, and modify the existing bookkeeping curriculum. Modification is the means of preparing the bookkeeping students for jobs after graduation.

After graduation, the high school student does not step into a specifically designed job; instead he steop into one of a series of related jobs that commulatively compose the data processing system.

B. DEFINITIONS OF TERMS USED

Automation. Automatically controlled operation of an apparatus, process, or system by mechanical or electronic devices.

Bookkeeping. A broak description of bookkeeping, equivalent to that given by the dictionary--the "art of practice of keeping a systematic record of business transactions."

CHAPTER II

REVIEW OF THE LITERATURE

Automation is not something that has come into being during the last five to ten years. However, attention is now being focused on it.

HISTORY

Since the beginning of recorded history, man has been processing information. In the past, this information was relatively easy to handle and interpret. Within the past few years, however, there has been a sharp increase in the quantity of information that is required of business. One of the ways that business has used in order to cope with this problem has been electronic data processing methods, including the computer. In order to compete successfully, business has attempted to increase the flow of information, and increase efficiency by automating many of the routine office tasks.[1]

The modern washing machine is an example of automation. The clothes are loaded, the dials are set, and the washer is set in motion. The machine then proceeds through a series of

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[1]Clair R. Parsh, "Data Processing Education," Journal of Business Education, 1967, p. 111.

steps that include washing, rinsing, and spinning dry. This is done with little or no additional attention from the operator. This is automation.[2]

We have used the motorized rotary calculator for a number of years. The dividend and the divisor can be entered onto the machine, the division key depressed, and the machine automatically continures through all the steps needed to complete the division function. This is automation.[3]

All of these facts and more prove that automation is not new.

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[2]Ralph M. Swanson, "The Teaching of Bookkeeping," Monograph 101, p. 44.

[3]Ibid.

CHAPTER III

REVIEW OF THE LITERATURE

A surprising amount of misinformation has accumulated about automation in its period of existence. The misinformation is not limited to automation as a cause of unemployment; it is also assumed that automation will be limited to large offices, that the machines can actually think; and that only employees with scientific and statistical backgrounds can be trained to operate the electronic computers.

MISCONCEPTIONS AND CLARIFICATIONS

Electronic computer systems are not limited to the very large offices. In their January, 1955, issue the editors of "Management Methods" states as a fact that "Virtually any firm employing more than 100 clerical workers is ripe for some form of electronic data processing." Nor do all installations cost a million dollars. Remington Rand equipment ranges from $75,000 for the Univac 60, to approximately $1,000,000 for the large-scale general purpose UNIVAC.[4]

It is true that a knowledge of electronic engineering is required for the construction and maintenance of electronic

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[4]James R. Meehan, "Automation and Business Education," Balance Sheet, Vol. XXXVII, No. 5, January, 1956, p. 101.

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computers, but the programmers need not have this background any more than the driver of an automobile needs to completely understand every function of the engine.

We must remember that machines cannot "think." Thus, automation can not completely replace the office worker. There is still a demand for "thinking office workers."

It is a fact that bookkeepers and bookkeeping workers continue to increase in number. The United States Bureau of Census reports in the Statistical Abstract of the United States[5] that there were 738,704 bookkeepers in 1950 and that during the latest census in 1960 there were 936,270 bookkeepers-- an increase of 26.7 per cent.

The Bureau of Labor Statistics of the United States Department of Labor in its 1968-69 edition of the Occupational Outlook Handbook predicts, "The number of bookkeeping workers is expected to increase moderately during the rest of the 1960's and through the 1970's.[6] It further states "...the need for bookkeeping workers will probably outpace the laborsaving impact of office machines over the next 10 to 15 years.[7]

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[5]U. S. Bureau of the Census, Statistical Abstract of the United States, 88th Edition (Washington, D. C.; Superintendent of Documents, 1967), pp. 232-235.

[6]Op. cit., p.254.

[7]Op. cit., p.254.

CHAPTER IV

REVIEW OF THE LITERATURE

Contrary to the opinion of many people, data processing
should be introduced on the secondary level. It can and MUST
be done. Equipment nor teacher certification should be a
factor of hinderance.

A. EQUIPMENT

Many teachers and administrators feel that the expensive
equipment limits the development of the course. However, it
isn't necessary to have a room full of expensive equipment.
All that would be necessary would be textbooks, overhead pro-
jectors and/or 16mm projector and some source material.

Development and use of automated equipment has grown
steadily in the past years. It appears that this trend will
accelerate as more offices will be able to install the less
expensive equipment now being on the market.[8]

Many companies, as well as high schools, lease their
equipment. Leasing permits the school and company to update
the equipment in current business usage.

Although there is limited equipment, it is not necessary

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[8]John C. Roman, The Business Curriculum, Monograph 100,
(Cincinnati: South Western Publishing Company, 1966) p. 47.

to take field trips to data processing installations. However, they sometime prove valuable. This trend sometimes tend to frighten the students and the teacher. Students nor teacher should be frightened.

B. TEACHER

Vernon Mussleman and a panel discussion group feel that the data processing teacher should meet the following require-[9] ments:

(1) Teachers should have a major in accounting.

(2) Teachers should have at least a minor in mathematics.

(3) Teachers should have actual business experience in the field of data processing in addition to meeting all the general teacher certification requirements.

(4) Teachers need only actual business experience in the area of data processing; other requirements can be wavied for them.

(5) Teachers need no special preparation in formal courses in data processing; they can learn what they need to know through independent study.

It appears obvious that there is a problem in the area of certification for teachers of data processing. There is a considerable demand for such teachers and the supply is most limited. The teacher certification standards must not be abolished. But neither should be established barriers that regularly certified

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[9]Vernon A. Mussleman, "Where Are We Headed in the Teaching of Data Processing," *Journal of Business Education*, Vol. XLI, No. 4, January, 1966, p. 139.

teachers cannot qualify. For the present, we must develop a flexible policy that will qualify teachers on a temporary basis while business educators determine what the real needs actually are.

CHAPTER V

REVIEW OF THE LITERATURE

Yes, automation has changed the "old bookkeeper"; it has changed his duties, his title, and his environment. And these changes must be reflected in any educational program that prepares students to work in business or that teaches students about business.

A. TEACHING THE USE OF BOOKKEEPING DATA

To be effective, high school bookkeeping must teach the students to master bookkeeping concepts, enabling him to cope with the data processing teacniques of the business world.

As a result in the changes in business, more emphasis should be placed on the teaching of data processing, manual procedures must be supplemented or replaced by the use of office machines, punched cards and punched tape equipment and computers. This can be done effectively by the introduction of data processing in the bookkeeping classes and other business classes.

Students who have been exposed to the modern techniques are able to understand the bookkeeping system and are alert office workers. He knows where he fits in and why his work is important.

A high school graduate soon becomes associated with all

phases of the world of business and needs the ability to express himself clearly in the affairs of business at various levels. A graduate becomes an employee, a consumer, a reader of publications, a participant in labor-management problems, an owner, and an invester. He needs to know how to use bookkeeping information as it pertains to his individual situation. He needs to know how to collect pertinent data, how to interpret their findings, and how to use these findings.

Thus, today's bookkeeping teacher should develop a program that permits a student to develop a methodical approach to making decisions.

A bookkeeper becomes a more valuable employee when he feels that he participates in decision making. He contributes to making decisions. But to make decisions, he needs a background which will permit him to determine what is relevant and what is irrelevant. Today's students of bookkeeping must be given training in analyzing records.[10]

Today's bookkeeper does not work in a vacuum surrounded by journals and ledgers. A chart of accounts, for example, is not fixed, but is relative to the nature and size of the business as well as procedures that are constantly changing. Accounts and their titles must function as a steady and rapid source of pertinent information. Thus, today's student of bookkeeping should be given training in analyzing the types

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[10]David H. Weaver, "Let's Teach the "Use" of Bookkeeping Data," Business Education Forum, Vol. 20, No. 6, May 1966, p. 27.

and titles used in charts of accounts for various businesses.

It is educationally sound to prepare students for the method of keeping records they are likely to encounter. Bookkeeping classes which do not provide the opportunity to learn the automated methods of applying bookkeeping principles fall short of the needs of today's office work as more and more businesses convert to mechanical and electronic means of keeping records, there is an even greater need to teach about these methods of bookkeeping.

Most high school bookkeeping students will, in their initial jobs, be more involved with automated recording and processing data. A lack of understanding of the methods of data processing could be a severe handicap to the beginning bookkeeping employee; it could be a career tragedy.

The principles of keeping financial records will not change under the impact of the automated office. As has already been described, the change will be in tool use. Prospective bookkeepers once learned their work with the pen as a major tool. The typewriter and the calculator replaced the pen and pad. The bookkeeping machine helped to speed the recording functions. Through all these changes, the basic principles remain the same. The students will continue to learn to keep financial records in pen and ink on the typical forms. In addition he MUST learn about or become acquainted with the ways in which these records are maintained with automated tools.[11]

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[11]Hamden L. Forkner, The Teaching of Bookkeeping, Monograph 101, (Cincinnati: South Western Publishing Company, 1960), p. 45.

B. INTEGRATION OF DATA PROCESSING
INTO EXISTING SUBJECTS

If it is not possible to schedule a course in data
processing, units of instructions can be added to existing
courses. Time can be spent discussing data processing in
the general business, bookkeeping, business machines, and the
office practice classes. In addition, the typewriting classes
can include information about data processing in timed writings
and other copy materials. For example, integrate automation
when addressing envelopes. Introduce the OCR or the Optical
Character Reader. This is a machine that is used in large
United States Post Offices to sort the mail for speedier
delivery. This mechanical "eye" will sort the mail faster than
man, if the envelopes are addressed properly.

We must fully discuss the importance of saved space.
This can easily be done by the introduction of the two-letter
state abbreviations, typed without spaces and periods. This
discussion can be further extended by discussing the trend of
single spacing all addresses regardless to the number of lines.
Shorthand classes can also use this type of information for
dictation practice and transcribing practice.

Out of all the listed subjects, bookkeeping is perhaps
the easiest course to relate to data processing. The major
publishers of bookkeeping texts already have chapters on this
topic as well as references to data processing throughout the
text.[12]

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[12]Clair R. Rarsh, "Data Processing Education--Whose Respon-
sibility," _Journal_ _of_ _Business_ _Education_, Vol. XLIII, No. 3, p.111.

The materials can be supplemented by using some of the following devices:[13]

CHECKS AND BANK STATEMENTS--Get samples of local bank checks. If necessary get the bank clerk to explain how the coding, magnetic ink characters are useful. Have the bank employee explain the process in handling one of these MICR encoded checks.

STATEMENTS--Your local power company probably uses a punch card for a statement. Go to the business office and have them explain their coding system. Ask for an explanation which is punched into the card and why.

MERCHANDISE TAGS--Keep your eyes open for punched cards on merchandise. Some of these are just tiny tags--about one inch across and two inches long. The holes are little round ones about the size of a period. They contain information about size, cost prices, manufacturer, style, and etc. The merchant will have to explain what the code system is. If he does not, the hole will have little significane.

As further research is done, more illustrative materials can and MUST be collected and discussed fully.

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[13] Merele W. Wood, The Teaching of Automated Data Processing in the High School, Monograph 116, (Cincinnati: South Western Publishing Company, 1967), p. 4.

SUMMARY

Automation has changed the business curriculum and will continue to do so. Thus, business educators have the great responsibility of making the courses as realistic as possible.

In order to make bookkeeping more realistic, we should provide our bookkeeping students with as much automated equipment as possible.

We must also make our instructions realistic. We MUST correlate the student's learning experience to actual on-the-job training.

We must eradicate the misconception that a new tool will replace the office worker and etc. The development and introduction of computers is merely another and a very big step in mechanization. We should think of the computer as an answer to the need for great efficiency in the office, as a result of changes and pressures, not merely as a course of change.

We must remember that the machines cannot "think"; they must be operated by thinking people. Thus, we must get our bookkeeping students to think. Use every means of doing this. One good way is to use the cases for discussion in the text.

Once we eradicate fear, misconceptions and get our students to think, we must continue to prepare our students in order for them to cope with the problems ahead in the wide field of bookkeeping.

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