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How Computers Have Simplified Accounting

Curriculum Unit 89.07.06
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I. INTRODUCTION/RATIONALE

How did computers come into being? What can they do? Are we able to use them in the Accounting field? Do they simplify all the Accounting work? What's the outlook for computers in the future? These and many other questions have been crossing my mind. I have been afraid of the computers themselves, and thus have avoided their use in my subject area, Accounting. Literature everywhere is telling us that the computer simplifies everything. For Accounting students to become fully equipped to go out into the world of work, it is becoming necessary for them to understand how the ideas for the computer evolved over the years. It is becoming imperative that they understand how much simpler it is today to do Accounting on a computer. They must learn how to do their work on the computer.

This unit will include the history of the computer and all the ideas that led up to the computer of today. It will explain carefully how each idea evolved into a more simplified machine. It will detail the difficulties of Bookkeeping, using the "old methods and machines". It will include the use of a computer and a spreadsheet. Then, the student will be taught how to take manually compiled work and feed it into the computer. We will follow carefully the cycle used by accountants, so that we can see how much simpler the work is if it is computerized. This unit will also include comparisons of the advantages and disadvantages of both the manual Accounting and the electronic Accounting. Finally, it will show the students how the "real world" is doing their Accounting (eg. speakers, field trips).

It is very important in Accounting I that the student is taught the manual methods of Accounting first. They must know how to do the transactions first. Thus, I plan to teach the entire cycle of Accounting.

II. LEARNING GOALS

Upon completion of this unit the student will: 1. Know how the idea of the computer evolved through the centuries into the streamlined computer it is today.

2. Projected skill—knowledge of how to do everything manually in Accounting.
3. Projected skill—knowledge of how to run a computer.
4. Know the significance of an electronic spreadsheet.
5. Know how to use the computer in the cycle of accounting.
6. Know how to use the electronic spreadsheet.
7. Know the advantages and disadvantages of using the manual method of accounting.
8. Know the advantages and disadvantage of using the computer in accounting.
9. Know how companies are doing most of their Accounting

III. SUGGESTED TEACHING STRATEGIES

1. Discussion of the history of computers after
 - A. Video and/or slide presentation of historical material
 - B. Visit to museum with some of the historic machines
 - C. Lecture
 - D. Research
2. Discussion of the advantages and disadvantages of manual Accounting after
 - A. Hands-on experience
 - B. Speakers
3. Discussion of the advantages and disadvantages of using the computer in Accounting after
 - A. Hands-on experience
 - B. Speakers
4. Discussion of the capabilities of the spreadsheet after
 - A. Hands-on experience
 - B. Lecture— Speakers
5. “Real World” information about the computer in Accounting
 - A. Field trips
 - B. Speakers

Summary of Rationale

The Information Revolution is upon us. The starting point of the Information Revolution is the computer. Conceived by Charles Babbage and developed by many talented people including Blaise Pascal, Otto Steiger, Konrad Zuse, and Howard Aiken; the computer is the product of numerous human brains, which over centuries have analyzed, calculated and worked to perfect a machine that could extend our mental faculties, just as the Industrial Revolution extended our physical and mechanical faculties. There are four important features of the Industrial Revolution. They were:

1. Wide scale and scope of change—the Industrial Revolution brought immense shifts in all aspects of human society.

2. These changes took place with great rapidity.

3. Once the process of the revolution was fully underway, its dynamism grew remorselessly and no power, no man nor combination of men could set it against its course.

4. Hardly anyone foresaw its momentous coming nor envisioned its spectacular progress once it got under way. The information Revolution or Computer Revolution is a natural and proper successor to the Industrial Revolution. The features of the Industrial Revolution have also become the features of the Computer Revolution.

The history of computers is a fascinating area largely unknown to people. A knowledge of its evolution from its earliest beginnings to the present day and the social-economic pressures which brought them into being will help us to understand the nature of their inevitable evolution in the the future.

It is necessary to explain that the essence of computers is the fact that a number or quantity can be represented by a physical thing. Once numbers can be expressed in this physical way, it becomes possible to manipulate them or change their state and by doing so, cause them to represent different numbers or quantities. This means that it is possible to construct a machine to perform these manipulations and thus act as an automatic calculator.

IV. HISTORY OF COMPUTERS UNTIL 1900

The logical first step in becoming computer literate is to appreciate the origins of computers. Computers are the result of a long history of mathematical exploration and innovations. They have their earliest roots in primitive systems of counting that relied on fingers and toes or stones to enumerate objects.

Historically, the most important early computing instrument is the abacus, which has been known and widely used for more than 2,000 years. It is simply a wooden rack holding parallel wires on which beads are strung. When these beads are manipulated (moved along the wire) according to “programming” rules that the user must memorize, all ordinary arithmetic operations can be performed. Another computing instrument, the astrolabe, was also in use about 2,000 years ago for navigation.

Blaise Pascal is widely credited with building the first “digital calculating machine” in 1642. It performed only the addition of numbers entered by means of dials and was intended to help Pascal’s father, who was a tax collector. In 1671, Gottfried Wilhelm von Leibniz invented a computer that was built in 1694. It could add, and by successive adding and shifting, multiply. Leibniz invented a special “stepped gear” mechanism for introducing the addend digits, and this mechanism is still used. The machine of Leibniz was in a sense a forerunner of the mechanical desk calculator invented by Charles X. de Comar in 1820.

The first real computer didn’t change the world. It was never built. It existed, in fantastic detail, in the mind of a grumpy English mathematics teacher named Charles Babbage around the time of our civil war. He loved problems and puzzles, as do computer people today. He taught himself arithmetic, and when he went to college, he knew more algebra than his teacher. He invented speedometers and a machine for playing tic-tac-toe. Later he built an adding machine that could solve a particular kind of problem. Then, he began to design an “analytical engine” that could solve any kind of arithmetic problem. Babbage put together the idea of instructions sorted in punched cards with the idea of a calculating machine. To set up the machine to solve a new problem—weave a new arithmetic pattern—he would just change cards. The two ideas added up to a sum vastly greater than its parts. Inside Babbage’s head was the first true computer. His design was practical, but it required cogwheels and gears and other parts that the machinists of his time could not make, and so the analytical engine had to wait a hundred years to be translated from a brilliant idea to working machine.

The next influential invention was the census machine of Herman Hollerith. In the late nineteenth century, census taking had become a major task; tabulation of such a vast amount of data was slow and problematical. In an effort to find a faster way to compile raw statistical data, the Census Bureau sponsored a contest. Herman Hollerith’s device was chosen the most effective and practical.

Hollerith had designed a device that read data from punched cards and kept track of the count. The keypunch system of data processing was popular for many years, although recently it has succumbed to faster and less cumbersome methods. Hollerith was so successful that he left the census Bureau in 1896 to form the International Business Machine corporation -IBM, a recognized leader in the field of data-processing technology even today.

This concept led to systems using electromechanical devices, in which electric power provided mechanical motion—such as for turning the wheels of an adding machine. Such systems soon included features to feed in automatically a specified number of cards from a “read-in” station; and feed out cards punched with results. By modern standards the punch-card was slow, typically processing from 50 to 250 cards per minute, with each card holding up to 80 decimal numbers. At the time, however, punched cards were an enormous step forward.

V. HISTORY OF COMPUTERS IN THE 20TH CENTURY

Vannevar Bush, a professor at MIT, built and demonstrated a differential analyzer in 1930. It was large, and had many gears, but it used electric motors. it worked, and could be programmed to perform many different types of calculating work. Bush’s machine was also the first to use titles. His machine could store numbers or quantities of electricity in one part of the system. This ability led some to name Bush the Father of the Electronic Computer. The day of the gear driven computer was almost over. Konrad Zuse, a German engineer, and Howard Aiken, a Harvard math professor, both built hybrid (part mechanical, part electronic) machines in

the period between 1930 and 1950. Both used binary arithmetic and both used electric relays to perform math operations.

Professor Aiken worked in conjunction with IBM and had discovered Babbage's work. The ideas were so close to Aiken's that he thought he had received a personal message from the past. Professor Aiken was building a computer named Mark I. Instead of punched cards, Professor Aiken used rolls of punched paper to tell the machine what to do. Electricity turned the counter wheels, and eight hundred thousand switches, buttons, and other electrical parts filled a room three times as big as an ordinary living room.

In 1942, two men and their associates were at work at the Moore School of the University of Pennsylvania on a machine which, while embodying enormous advances in automatic computing, was less famed than the Mark I if only because it was not operational until two months after the Japanese surrender and therefore did not get credit for helping to win World War II. The co-inventors of ENIAC (Electronic Numerical Integrator and Calculator) which was actually the world's first electric computer were Dr. J. Prosper Eckert, an electrical engineer, and Dr. John Mauchly, a physicist. It would have been easily possible for them to build ENIAC twelve to fifteen years earlier, as it would have been possible to build the Mark I—all of the components and the theory required were in existence except for the fact that nobody put up the money or had the incentive to do so. The patron of ENIAC was the United States government, more specifically, the Army.

The most significant feature of ENIAC was that it introduced vacuum tube technology, and no longer were calculations and operations performed by moving mechanical parts. This feature allowed for greatly increased speed of performance.

The next computer was developed by Mauchly, Eckert, and others and was called the Electronic Discrete Variable Automatic Computer (EDVAC). It was smaller and more powerful than its predecessors. It also had two other important features: it used binary numbering systems, and it could internally sort instructions in numerical form. Today, all data and programs are stored in binary form. This method of storing instructions inside the computer is far more efficient than paper tape storage used in earlier devices.

Another member of the first generation of computers was the Electronic Delayed Storage Automatic Computer (EDSAC) built at Cambridge University in England. This computer introduced the concept of stored programs. Before this, computers often had to be rewired to be used for various operations. Their memories were incapable of storing more than one program at a time. EDSAC helped eliminate time consuming and costly rewiring procedures.

In 1946, Mauchly and Eckert formed a corporation to build computers for commercial use; the UNIVAC (1951) was the first electronic computer used by large business firms. This launched the major growth of computers into the business field.

The first generation of computers, which thrived from 1951 until 1964, was characterized by vacuum tube technology. Although they were amazing devices in their time, they were large, took up valuable space, were expensive to operate, and required almost constant maintenance to function properly. The next generation of computers attempted to resolve some of these problems.

The second generation of computers extended from 1959 until 1964 and were characterized by transistor technology. The transistor was developed by John Bardeen and others at the Bell Laboratories in New Jersey. Bardeen studied substances that permitted a limited amount of electricity through them—semiconductors. Transistors using semiconductor material could perform the work of vacuum tubes and took up less space.

Because transistors were smaller, the distance between operating parts was reduced and speed of performance was increased significantly. Transistors were also much cooler than vacuum tubes, reducing the need for expensive air conditioning in areas where computers were housed.

Transistors did present several problems, though. They were relatively expensive because each transistor and its related parts had to be individually inserted into holes in a plastic board. Also, wires had to be fastened by floating boards in a pool of molten solder. Even though the distance between individual parts was reduced, it was still great enough to limit speed of computer operations. The next generation of computers helped to alleviate some of these problems.

The development of integrated circuits in 1963 spawned the third generation of computers, lasting from 1964 to 1975. Integrated circuits developed from a need to mass produce transistors in a few simple production steps. The production process begins when tubes of silicon are sliced into wafer thin disks that are chemically pure and cannot hold electrical charge. Then a preconceived design is etched onto the surface of the wafer with the use of light rays.

The integrated circuit continued the trend toward miniaturization that has resulted in the popularity of the microcomputer and the personal computer system. Integrated circuit technology spawned a generation of computers that had greater storage capacity and technically increased speeds of performance. Many accessory devices were developed and marketed, such as magnetic tape drives and disc drives. Popular programming languages were developed and refined, many of which are still in use today.

Third generation computers are not aimed at specific applications such as business or scientific use. Rather, they were designed as general purpose computers. They represented a giant leap forward in the data processing field. Not only were speed and reliability enhanced, but power consumption was decreased markedly. Computers became smaller and less expensive, putting computer power into the hands of a greater number of users than ever before. Computer Technology began to snowball.

Engineers were not satisfied with the degree of miniaturization that resulted from the integrated circuit. Also, the integrated circuits of the third generation were designed primarily with chips having the only function. As engineers learned how to manufacture chips more easily, they conceived the idea of grouping an assortment of functions on a single chip, creating a microelectronic “system” capable of performing various tasks required for a single job. This technology became known as Large Scale Integration (LSI). Thus, the fourth generation of computers was born in the mid-1970’s.

LSI technology has also been responsible for the recent popularity of the microcomputer. These “Little giants” fit easily on a desk top and put computer power in the hands of an increased number of people. Declining prices of powerful computer systems have also encouraged development of the electronics field in general. LSI turned computer technology into big business, and this trend will certainly continue in the foreseeable future.

A hint of tomorrow’s computer capability can be found in the IBM 3081, introduced in 1980. This computer is twice as powerful as its immediate predecessor. It was designed with Very Large Scale Integrated (VLSI) circuitry further increases the speed at which computers are able to function. Multiprocessing—the simultaneous running of several programs by one computer is likely to develop further in the fifth generation of computers. Computers will continue to get smaller as well as prices becoming lower.

VI. OLD METHODS AND MACHINES USED IN ACCOUNTING

The most common method of keeping the financial records of a company was manually. A bookkeeper kept the journals, the accounts receivable, the accounts payable and the ledgers in his best possible penmanship. In later years, an accounting machine, which was capable of performing normal bookkeeping functions, such as tabulating in vertical columns, performing arithmetic functions, and typing horizontal rows was used. The billing machine, which was designed to typewrite names, addresses, and descriptions, to multiply and extend, to compute discounts, and to add net total, posting the requisite data to the proper accounts, and so to prepare a customer's bill automatically once the operator has entered the necessary information, was used. Early accounting machines were marvels of mechanical complexity, often combining a typewriter and various kinds of calculator elements. The refinements in speed and capacity made possible by advances in electronics and operating complexity of these machines. Many of the newer "generations" of accounting machines are operated by a computer to which they are permanently connected.

VII. USE OF COMPUTERS IN ACCOUNTING

Because of the minute by minute change in finances, accurate record keeping is critical. Computerizing a business's general ledger, payroll, and other accounting tasks increases office efficiency. With a computer, you can request and receive an in house balance sheet, an income statement, or other accounting reports at a moment's notice. While keeping your checkbook on a computer may not be practical, computers are great for handling complex home financial records. You can get statements on net worth and year's tax deductible expenses within minutes.

A. Spreadsheets

Electronic spreadsheets allow you to do anything that you would normally do with a calculator, pencil and columnar scratch pad. Spreadsheets were primarily designed for managers who in the process of planning must do "what if" calculations. Due to their flexibility, electronic spreadsheets have found their way into small businesses and, to a lesser extent to homes. A typical integrated double entry accounting system will contain some or all of the following components: accounts receivable, accounts payable, general ledger, inventory, order entry, payroll, time, and billing.

It takes its name from the accountant's spreadsheet—a sheet of paper with rules for rows and columns—on which such work was usually done. Spreadsheet programs are much faster, more accurate, and easier to use than traditional accounting techniques. The programs are widely used on personal computers for keeping sales, expense and inventory records, and for budgeting and forecasting future sales and expenses. As a result of these and many other applications, computer spreadsheets have become the most important of all software tools for modern businesses.

Early programs such as VisiCalc provided 254 rows and 63 columns for entering data and formulas for calculations. Some modern programs for computers with large memories provide thousands of rows and hundreds of columns. VisiCalc was introduced by Robert Frankston, a young computer programmer, and Dan Bricklin, a Harvard Business School student who was looking for a way to use the power of a computer to simplify complex time-consuming financial analyses. VisiCalc proved so useful in such applications that it provided an entry for personal computers into the business world. In 1980, the Sorcim Corporation introduced

SuperCalc, a similar spreadsheet program for personal computers using the CPM operating system.

A new generation of computer software for business began with integrated spreadsheet programs, which can be used to prepare spreadsheets, create graphs, and manage data. In such programs, for example, it is easy to display spreadsheet data in the form of a graph or to transfer data from a data base to a spreadsheet. One of the first such programs was Lotus 1-2-3, an immediate success following its introduction in 1983.

In the third generation of integrated business software, spreadsheet, graphics, and data management capabilities were supplemented by word processing and communications capabilities. With such comprehensive programs, it became possible to create multiple windows on the computer display. Each window could contain a different application—a graph in one, a spreadsheet in another, and word processing in a third. The window capabilities of integrated programs such as Symphony and Framework make it easy, for example, to transfer a spreadsheet or a data-base report to word processing for styling and formatting before printing.

In testing the use of a spreadsheet, I did a manual spreadsheet using mileage information. This spreadsheet took me 12 minutes to set up and 18 minutes to perform the computations. (See Appendix A) It took another person, who is familiar with the software, a total of 30 seconds to load the spreadsheet; 4 minutes to input the information; and less than one second for it to be tabulated and printed. (See Appendix B) This was a very simple program. Imagine if it were extremely involved. I have observed people spending hours trying to find an error in a spreadsheet, because the columns would not rationalize. This could not happen with a computer. However, neither one of these is useful if incorrect information is put into them.

B. General Ledger

General Ledger is a labor saving device for the preparation of financial statements and for establishing multiple income and cost entries.

C. Accounts Receivable

Accounts receivable, when computerized, can get your bills out the same day you've performed a service. An accounts receivable module prepares invoices and customer accounts, adds credit charges where appropriate, handles incoming payments, flags your attention to customers that are delinquent, and produces dunning notices. It allows you to have daily cash control. You get out the bills on time, yet you avoid errors such as billing a customer twice for the same item. The further advantage is that debits and credits are posted automatically to the general ledger, order entry, and in some instances inventory, once they are entered in accounts receivable.

D. Accounts Payable

Accounts payable, when computerized, will provide for purchase order control, invoice processing, payment selection and handling, check writing and control, cash-requirements, forecasting, and Form 1099 preparation. It will also double-check the accuracy of the vendor's invoice, and some software systems will cross-check it against the purchase order and the inventory module.

E. Inventory Control

Inventory Control module has multiple functions, including tracking inventory for both costing and tax purposes, controlling purchasing (and the overall level of expenditure) and minimizing the investment in inventory (and subsequent loss of cash flow). The payroll module prepares and prints payroll checks, including

all itemized deductions. It is integrated with the general ledger so you automatically set aside the correct amount for FICA and withholding.

F. Point of Sale

Point of sale module captures all sales information at (or in place of) the cash register, including salesperson, date, customer, credit information, items, and quantity sold. It can produce sales slips or sales invoices, plus it reports on items, customer, and salesperson activity.

G. Purchasing and Receiving

Purchasing and receiving module can represent an invaluable addition. It can generate purchase orders and track their fulfillment. You can find out which vendors are delivering on time and saving you the expense of having to follow up on partial and incomplete orders.

H. Time and Billing Module

Time and billing module reduces manual and clerical work, simplifies the billing process, prompts you and your partners to bill on time, reduces unbilled work-in progress, minimizes unreported time, reduces unbilled time, measures and analyzes nonchargeable time and provides criteria to analyze staff performance. Because a computerized accounting system is basically a computerized data management system, the disposition of labor is almost the same. One staff member must serve as a data-base manager and be in charge of setting up the chart of accounts, establishing the interrelationships among the files and establishing and maintaining an audit trail.

VIII. ADVANTAGES OF USING THE COMPUTER IN ACCOUNTING

The most important advantage of using the computer is the speed with which we can get Accounting done. In addition, we find that it is very easy to do accounting functions. Posting to the ledger, a tedious task of double entry, when done directly from the general ledger module, can be largely automated when done through special purpose modules like accounts payable or accounts receivable. With an accounts receivable module, you just need to enter the actual cash totals of items purchased and the software distributes these amounts to the general ledger so they become credits to corresponding revenue accounts. At the same time, an offsetting entry is made automatically to the accounts receivable account.

With a computer, one can receive a balance sheet, income statement or other accounting reports at a moment's notice. We also find that some day to day data entry can be turned over to relatively unskilled workers.

IX. DISADVANTAGES OF USING THE COMPUTER IN ACCOUNTING

When you use a computer, it is possible that data can be lost because of hardware or software damage. Since the computer has no judgement of its own, it does not pick up on errors as a human being does. There can be loss of data due to accidents like fire etc.. There can be loss of data or change of data due to fraud or embezzlement. There can be loss or unavailability of data due to loss of staff. Inaccurate data may be due to

clerical error or mistakes in programming. Total security is economically unachievable and some failures must be expected. The right level of expenditure on security measures will minimize the sum of the cost of the measures and the expected loss. There will always be some risks that are best shared through insurance, rather than prevented or avoided.

Much computer-related crime is opportunist: people who were not seeking any advantage had temptation thrust under their noses. Copies of computer printouts get mis-directed, or thrown in a waste paper basket in a public place. Magnetic tapes from bankrupt companies have been sold with data still on them. Often a programming error reveals a system flaw: someone who by chance reads a magnetic tape file that he should have been writing discovers interesting data on it.

Sabotage, vandalism, malicious damage, and arson tend to be even more destructive than the Acts of God they emulate. Political and industrial action, riots and civil commotions, may not be aimed specifically at the computer but they can be very effective in preventing its operation.

Fraud and embezzlement are usually achieved on a computer system by altering data or programs. There are numerous techniques, varying from additions and deletions to input data, through changing the standing information files, modifying the behavior of programs, to duplicating or suppressing output. Although most frauds that have been reported had gone on for some time, it could be that 'one shot' frauds have been more frequent but more often escape detection.

Eavesdropping and stealing information by tapping telecommunications lines requires the sort of technical skill which is very widely available (to the surprise of those without technical education). It is possible to emulate a legitimate user of a system, or discover his password through trickery or as the result of carelessness, and thus have access to the information he would have, such access can be very important for setting up more profitable operations, such as taking money out of little used bank accounts, or concealing changes made in files. There are other ways of trespassing, without using wire tapping. For example, the magnetically encoded cards often used as keys to systems can be copied and altered, giving the villain access to credit, cash or other valuable assets.

Wherever a computer is used to handle an organization's accounts, it can be used as a means of attacking the funds it controls. In most computerized bookkeeping systems, it is the computer which effectively causes credit transfer; so by establishing false accounts, or diverting some of the contents of the real ones, credit can reach a false beneficiary. The system can also be used to conceal a change in the cost, or the illegitimate acquisition or the destruction of tangible goods and services.

X. DEFENSES AGAINST DISADVANTAGES OF THE COMPUTER

Dispersion, which is designed to minimize losses in the event of deliberate or accidental threat, can be used. Duplication is designed to ensure that the system survives damage to any individual part. Duplication is also the fundamental method of detecting errors in processing. Defense in depth is designed to make the attacker overcome a series of barriers before he can damage any vital part of the system. In addition, most companies have computer auditors who ensure the integrity and accuracy of the organizations records, protect and conserve the organization's assets and prevent fraud, theft and error. These auditors also ensure that systems will survive the hazards to which they are exposed.

XI. SAMPLE LESSON PLANS

SAMPLE LESSON #1

History of the Computer

Objective *The student will be able to:*

1. Identify the leaders of the Computer Revolution
2. Identify the changes in the computer in the last twenty years
3. Project what future improvements in the computer will do to change our society

Materials Needed *Video of History of the Computer Materials regarding the History of the computer*

Vocabulary *abacus, astrolabe, digital calculating machine, census machine, keypunch system, analyzer, electronic computer, hybrid machines, ENIAC, vacuum tube technology, EDVAC, EDSAC, UNIVAC, transistors, integrated circuits, magnetic tape drives, disk drives, microcomputers, VLSI*

Brainstorming Questions

1. Why do they call this time, the Information Revolution?
2. Where does the idea of today's computer come from?
3. What company was associated with the computer in the 1930's?

Procedure

1. Show film about History of computers
2. Review vocabulary and meanings

Related Activity *Students go to the library and do a report on one of the major contributors to the discovery of today's computer*

Students present their report to the class

SAMPLE LESSON # 2

History of the Computer

Objective *The student will be able to:*

1. Identify the machines that led up to the computer of today.
2. Realize the great strides that have been made in the 1900's.

Material Needed *Drawing paper, color pencil, model construction material.*

Vocabulary *As learned in previous lesson.*

Brainstorming Questions

1. Do you know what the abacus looked like?
- 2 Do you know what Pascal's calculating machine looked like?
3. What about the spiral slide rule?
4. What about Sir Charles Babbage's machine for calculation?
5. What about the Gem Calculator?
6. What about the Comptograph ?
7. What about the early computers?

Procedure

1. Take a field trip to a computer museum
2. Go to the library and look at pictures of the different machine

Related Activity

1. Go to the library and choose the machine you are the most interested in
2. Make a model of this machine
3. Display the model so that all the students can see them

SAMPLE LESSON #3

Advantages and Disadvantages of Manual Accounting

Objective *The students will be able to:*

1. Identify the advantages of doing manual Accounting
2. Identify the disadvantages of doing manual Accounting

Material needed *Ledgers, Cash journal, Accounts Receivable, Accounts Payable, worksheets, Income statements, Balance Sheets, billing machine, accounting machine example*

Vocabulary *As already learned in Accounting I*

Brainstorming Questions

1. What is the regular Accounting cycle
2. What is the advantage of doing Accounting manually
3. What is the disadvantage of doing Accounting manually

Procedure

1. Bring in an Accountant (speaker) from the enclosed list of speakers. Have him discuss the advantages and disadvantages that businesses find in using manual accounting

Related Activity

1. Have students do Accounting procedures using the entire Accounting cycle in a manual fashion
2. List the advantages and disadvantages he/she finds in doing the project manually
3. Have class discuss their findings

SAMPLE LESSON #4

Advantages and Disadvantages of electronic Accounting

Objective *The student will be able to.:*

1. Identify the advantages of Electronic Accounting
2. Identify the disadvantages of electronic Accounting

Material Needed *Computers, software, project done manually*

Vocabulary *CPU, cursor, disk drive, DOS, DRAM, floppy disc, hard disk, hardware, keyboard, menu, memory, RAM, software spreadsheet, scanning*

Brainstorming Questions

1. What is the advantage of using electronic Accounting
2. What is the disadvantage of using electronic Accounting

Procedures

1. Bring in an accountant (from the enclosed list of speakers). Have him discuss the advantages and disadvantages that businesses find in using electronic Accounting

Related Activity

1. Have do a project similar to the one done for manual accounting but use a computer program
2. List the advantages and disadvantages he/she finds in using electronic Accounting

Vocabulary

CPU

Central Processing Unit: the part of a computer that executes the functions of arithmetic and logic interprets instructions, and maintains control over hardware.

Cursor

A movable mark (usually an underline) on a display screen that indicates where the next entered instruction will be displayed.

Disk Drive

The hardware that places information on or retrieves information from a floppy disk or hard disk

DOS

Disc Operating System: a popular operating system designed for IBM Computers

DRAM

Dynamic Random Access Memory: a semiconductor memory chip that stores information on a very short-term basis and that is constantly recharged

Floppy Disk

A flexible, magnetic disk, used for external memory storage

Hard Disk

A hard magnetic disk used for internal memory storage

Hardware

The tangible features of a computer system: CPU, disc drive, printer, and so on

RAM

Random Access Memory: a memory unit to which data can be constantly added or from which data can be constantly removed, in a random manner (as opposed to sequentially)

Software

Computer software instructions or programs that are in a computer's memory

Spreadsheet

An applications program designed for the easy evaluation of data in the form of words, numbers, or graphs

Scanning

This word usually refers to the very rapid examining of every item in a computer's list of data to see if some condition is met

XII. SPEAKERS

1. Barry Broden, Director of Tax Institute and Master of Science in Taxation Program
2. George Generas, Assistant Professor of Accounting, U. of Hartford
3. Robert Heger, Treasurer and Comptroller, Scovill, Inc.
4. Bill Harris, Vice President, G. General Electro Components, Glastonbury

5. Lester La Shombe, Jr., Credit Manager, Pratt & Whitney Machine Tool
6. Ann Rich, Associate Professor of Accounting, Director of U. of Hartford Center for Professional Accountants

XIII. Bibliography for Teachers

Auditing Automatic Data Processing , A. B. Frielink, Elsevier Publishing Company, Netherlands, 1959.

This book contains information about ways to make data more safe and secure in the computer.

The Beginners Guide To Computers , Robin Bradbeer, Peter DeBono, & Peter Laurie, Addison Wesley Publishing Co. Reading, Mass, 1982.

This book explains the many uses of the computer, including all aspects of Accounting.

Breakthrough To Computer Age , Harry Wulforst, Charles Scribner & Sons, New York, 1982.

This book deals with the history of computers.

Computer: The Mind Stretcher , Weyman Jones, The Dial Press, New York, 1969.

This book deals with the uses of computers.

Computer Insecurity , Adrian R. D. Norman. London and New York, Chapman & Hall, 1983

This book deals with the ways to make the use of computers more safe and secure.

Computers and People , John A. Postley, McGraw-Hill, New York, 1960.

This book deals with how people use the computers.

Computers, Teaching & Learning , Jerry W. Willis, Johnson, D. LaMont, Dixon, Dilithium Press, Beaverton, Orgeon, 1983..

This book deals with ways that teachers use computers in the classroom.

Computers—Their Impact and Use ,Robert E. Lynch, Robert R. Rice, Holt, Rinehard & Winston, 1977.

This book deals with uses of the computer, including Accounting uses.

Computers & Their Uses , William H. Desmonde, Prentice Hall, Inc., 1964.

This book deals with uses of the computer, including Accounting uses.

Computerize Your Business , Phillip I. Goodod, Chilton Book. Co., Radnor, PA, 1984.

This book includes ways to use the computer in Accounting.

Think William Robers (A Biography of the Watsons & IBM) Stein & Day, New York, 1969.

This book deals with IBM and its development of the computer's.

Using a Microcomputer in the Classroom , Gary G. Bitter & Ruth A. Camuse, Reston Publishing Co., Virginia, 1984.

This book deals with ways the teachers are using the computer in the classroom.

XIV. STUDENT BIBLIOGRAPHY

Accounting By Electronic Methods , issued by the Council of the Institute of Chartered Accountants, England & Wales, July 1958.

This article deals with ways to use computer in Accounting.

The Auditor Encounters Electronic Data Processing , prepared by Price, Waterhouse & Co., IBM Corp., New York, 1956.

This article deals with some of the problems encountered in Electronic Accounting.

Computers: Their History and How They Work , Richard B. Rusch, Simons & Schuster, 1969.

This book deals with the history of the computer.

Computer Abuse: Risks and Defensive Measures , Rainer von zur Muhlen and V. Hamann, Bit, April 1973.

This book deals with problems that one occurs when using a computer

Guidelines for Security of Computer Applications , Federal Information Processing Standard Publication No. 73, June 30, 1980

This pamphlet deals with ways to protect your data on a computer

The Making of the Micro , Christopher Evans, Van Nostrand Reinhold, New York, 1981.

This book deals with the history of the computer.

Programming Computers for Business Applications , Ned Chapin, PH D., McGraw-Hill, New York, 1961.

This book deals with uses of the computer in Accounting.

XV CLASSROOM MATERIALS NEEDED

Video: *Introduction to Computers* Can be ordered from: The Knowledge Collection, 2611 Garden Rd., Monterey CA. 93940. (CEO16—30 minutes—\$29.95 plus \$3.50 postage)

The history of the computers from the first programmable computer in 1824 microchip revolution of the 1970's. The modern microcomputer is examined, including the keyboard, video screen, memory systems, printer and modem.

Software: *Spreadsheet Accounting for the Microcomputer* , IBM Tandy Version, Copyright 1990, (available Summer 1989).

Allen and Klooster, Southwestern Publishing Co., 5101 Madison Rd., Cincinnati, Ohio 45227. 1168-8C—Combination Microtools Program Diskette, IBM PC PCjr, 128K minimum

Tandy 1000 256 Minimum. \$49.50

This text-workbook software package contains spreadsheet exercises for both first-year and advance accounting courses. Students learn how electronic spreadsheets function and solve a variety of common business problems using the spreadsheet software and template diskette. The complete package was designed specifically for classroom use, and the easy-to-use spreadsheet software is similar in concept and operation to popular commercial spreadsheets. Exercises range from simple data gathering and reporting to complicated financial planning and analysis and “what if” situations. The template diskettes contain exercise data for both first-year and advanced textbook problems. Completion time is approximately 25-30 hrs.

Software: *Outfitter Electronics: An Automated Accounting Simulation* , Second Edition, Copyright 1988. Klooster and

Allen, Southeastern Publishing Co., 5101 Madison Rd., Cincinnati, Ohio 45227. BA17BF81—Individual Diskette, IBM PC and IBM PCjr, 128K Minimum; Tandy 1000, 256K Minimum—\$42.50

This automated accounting simulation “employs” students in a wholesale electronics supply company specializing in the sale and service of electronics equipment. Students will use the microcomputer to process accounting transactions that involve purchases and sales on accounts, correction and adjustment of entries, sales discounts, credit terms, and purchase discounts. Students work with data from integrated general ledger, integrated accounts payable, and integrated accounts receivable systems. The diskettes include a chart of accounts, a customer file, a vendor file and opening balances to provide added realism. Students can progress through the material at their own pace following the. step-by-step illustrated instructions and sample transaction input forms. Approximately 5-7 class hours.

Manual simulation: *Maxwell Jewelry* , Copyright 1987 Southwestern Publishing Co., 5101 Madison Rd., Cincinnati Ohio 4445227. B415—Manual simulation with source documents, expanded journal, and general and subsidiary ledgers; B416—Manual simulation with narrative, expanded journal, and general and subsidiary ledgers—\$5.70 & \$4.30.

Maxwell Jewelry is a merchandising business organized as a partnership that sells jewelry, and giftware. One month's transactions are recorded. An audit test master, from which the teacher may reproduce quantities of the test for students, is provided. This simulation is available in both manual and automated versions. The manual version comes in 2 forms.

Museum showing history of computers with all the models: The Computer Museum, 300 Congress Street, Museum Wharf, Boston, MA 22110. (617) 426-2800.

This museum has over 50 interactive exhibits, hands-on learning. It is open Tuesday—Sunday; daily in summer.

Appendix A

(figure available in print form)

Appendix B

(figure available in print form)

Appendix C

(figure available in print form)

Appendix D

(figure available in print form)

Appendix E

(figure available in print form)

Appendix F

(figure available in print form)

Appendix G

(figure available in print form)

Appendix H

(figure available in print form)

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