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# Computer Literacy: Teach Yourself

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Feel a pressing need to become computer literate, whatever that might be? You're not alone. Many see the computer as a permanent addition to our world, increasingly affecting what is done, when, how, and by whom. Evidence supporting this view abounds: Computer-related articles are now common in professional publications and in the popular press; businesses, institutions, and individuals report growing use of computers; schools are introducing computer literacy programs for teachers and students.

Yet, becoming computer literate is, for most adults, strictly a do-it-yourself process. The first steps are by far the most difficult, but only because the concepts and vocabulary of the computer world were not part of the norm during the school days of most adults. The following is intended to help you start your own process for becoming computer literate and to give you some suggestions for continuing it. Although much is omitted, and significant elements only lightly touched upon, I hope you find this a useful orientation. Let's begin with a definition of computer literacy.

## What is Computer Literacy?

Computer literacy is variously defined. To some, it means learning to write programs, the sets of instructions computers follow while performing a task. To others, it merely means having a general awareness about some aspects of computers, such as a few of their uses. Still others see a definition of computer literacy falling some-

where between these two positions. Clearly, there is no consensus on the subject. Until one emerges, I believe people using the term are obliged to define it because the definition of computer literacy governs what they say on the subject.

The underlying premise, therefore, of what follows is that a computer literate person is one who at least:

1) can identify the major components of a computer system and describe the function of each;

2) is somewhat aware of what computers can do and of issues related to these capabilities;

3) is able to use a computer to meet personal needs.

Anyone meeting these three criteria, at even some minimal level, will be able to make more informed decisions about computers and computer-related matters. Note that being able to use a computer to meet personal needs does not necessarily include being able to program. More about that later.

Let's start your process of becoming computer literate. We'll begin by dividing the world of the computer into four major components: Computer hardware (the physical pieces of a computer system), computer software (the instructions or programs needed to operate computers), uses for computers, and significant issues related to computers. Next, we'll discuss each of these in turn.

## **Computer Hardware**

### **A. Types of Computers**

First, let's take a closer look at the computer itself. Currently, there are three general classes of computers:

1) microcomputers

2) minicomputers

3) mainframe computers

Mainframe computers can generally process larger volumes of information at greater speeds than can the smaller mini- and microcomputers. In turn, a minicomputer can usually process more information faster than a microcomputer. Because, however, of the rapidity of technological improvement, microcomputers today are more powerful than yesterday's mainframe computers, and are quite adequate

for many uses. Furthermore, increases in the power of microcomputers have been accompanied by a decrease in their costs. As a result, more and more people are finding the microcomputer a very useful personal tool, available at an increasingly affordable price.

## B. Parts of a Computer System

It's really more useful to talk about a computer system rather than just a computer. A computer alone is a machine only an electrical engineer can love. Although information is actually processed in a computer, some means of getting information into and out of the computer are necessary. This is done through devices, called peripherals, connected to the computer. A computer system, therefore, consists of input and output devices as well as the computer itself. In addition, some would include computer programs as part of the system. We'll discuss programs in the section on software.

*Input devices*, then, are a means of getting information into computers. For example, a keyboard similar to the familiar typewriter keyboard is one kind of input device. Another is a disk drive, a unit capable of reading information stored on a magnetic surface. Tape player/recorders are also used. There are other input devices, but these three are the most common.

*Output devices* are used to retrieve information from computers. Printers and video display units are among the most common output devices. CRTs (cathode ray tubes), often called monitors, are used with computers of all sizes as display devices. They look like TVs, but are incapable of receiving off-air broadcast signals. Home TV sets can serve as display devices for microcomputers, but many prefer monitors because of their sharper screen image.

The disk drives and tape recorders mentioned under input devices are also used as output devices. They can record information onto a magnetic surface as well as read information from one, just as cassette player-recorders can be used either to play music or to record it.

*The computer* itself contains places to store information and components to manipulate or process it. We need not be concerned with how information is processed here. The storage locations, or memory, require a closer look. You will frequently hear the terms ROM and RAM, and it is handy to know the difference.

ROM stands for read only memory. It is the computer's permanent memory, containing information that cannot be altered by users. The other computer memory is called RAM, or random access memory. Information is loaded into random access memory locations when the computer is in use. This is done by typing information through the keyboard or loading the information through another input device. Anything in RAM is lost when the computer is turned off or often when different information is loaded into the computer.

Because most people don't want to retype information each time they need the computer to process it, the information for use in RAM locations is frequently stored outside the computer on some sort of material with a magnetic surface. The shape of this material can be stringy like that of familiar audio tape or round like a disk. The disks themselves can be hard (rigid) or floppy (flexible). Hard disks are mostly used on mainframe and minicomputer systems, floppy disks on microcomputers. These disks, used in conjunction with disk drives, are a popular way of handling computer input and output.

The size of a computer's memory is measured in units called bytes. The size of a computer's memory is expressed in terms of the number of thousands of bytes, or K (kilobytes), it can handle. A 48K microcomputer gives you enough computing power for many kinds of applications. As the price of memory keeps dropping, however, 64K and even 128K microcomputers are becoming more common.

There is little need to know much more about computer systems in order to use one. Finding out how to put a computer system to work comes next. This is done through software, which is usually stored on disk or tape.

## **Software**

The words software and computer program are synonymous, referring to the sets of instructions followed by computers in performing their tasks. Although there are advantages in being able to do some programming, it is not necessary in order to use a computer. Existing programs are generally available for your use regardless of the kind of computer you work on. If you use your institution's mainframe or minicomputer, you will use the programs available on it.

A variety of programs are commercially available for use on microcomputers. You can also find programs for micros in computer books and magazines. These programs are yours to use for the effort of typing them in at the micro's keyboard. The programs you buy will come on cassette tape or on the floppy disks mentioned earlier, and you'll want to store the ones you find in books or magazines this way, too. Disks have become very popular with users. Although disk drives are more expensive than cassette player/recorders, floppy disks are more reliable and much faster means of inputting and retrieving information.

## Floppy Disks

Recently, the popular 5 and one fourth inch floppy disk for microcomputers has been joined by 3 inch and 3 and one half inch ones packaged rather like audio cassette tapes. The smaller disks rival the larger ones in storage capacity. As of now, they are not in widespread use. As more disk drives of the right size become available for them, you will undoubtedly find a growing number of programs available on the smaller sizes. (Some will say more programs available on them will lead to more disk drives, but you get the idea.) Because of their packaging, these smaller disks are less vulnerable to damage.

## User-friendly

The quality of computer programs is as variable as the quality of books or anything else written by people. Novices can have a lot of difficulty using a program that runs smoothly on a computer because of not knowing how to use the program itself. Good documentation, or instructions for using the program, is essential. Even experienced users have difficulty without this. Especially valuable to newcomers are programs referred to as userfriendly. This means useful instructions and helpful features are readily available while you are using the program. For example, a program that begins by presenting a user with nothing but a question mark on the screen is clearly not very user-friendly. One that begins by presenting instructions is better. Best of all is one that begins by asking if instructions are wanted and gives you ready access to them as you use the program. If you have trouble

sometimes using programs, it may be because they are not user-friendly.

## **Uses For Computers**

### ***Word Processing***

Many people are still asking, "But what do you do with a computer?" Actually, you can do many things with a computer that you can do with a pencil, like write a paper. The computer has some big advantages here, significantly reducing the time required to produce a final manuscript. By using a computer instead of a pencil (or typewriter), either single characters or blocks of text can be inserted, deleted, or rearranged within a manuscript as a whole. Thus, revisions and corrections are much less time and labor consuming. This particular computer application is known as word processing. It is one of the most popular uses for computers — a welcome boon to all who do much writing. That's how this paper was written.

### ***CAI/CMI***

Then, of course, there are computer-aided instruction (CAI) and computer managed instruction (CMI). Discussions about the role computers in education and training are increasingly animated and appear in both professional and popular literature. So we won't dwell on the topic here.

### ***Data Bases***

You can also use computers to create electronic file cabinets or data bases. The advantage here is that you can very quickly revise your data or retrieve it in various ways. For example, if you were to keep a listing of your tape or record collection this way, you could quickly and easily retrieve information by composer, performer, type of music, playing length, and all other categories you designate when initially setting up the data base. With a sophisticated enough computer program, you could almost immediately have a list of all your phonograph records having Baroque music, 10 minutes long, performed by a particular group. You can project this kind of power, of course, to any

data base containing information of value to you, providing you use a sophisticated program.

### ***Spreadsheets***

Most of us who aren't accountants or financial managers have lived happy lives without even knowing what a spreadsheet is, much less using one. Then someone was inspired to write a spreadsheet program for microcomputers. Suddenly, more and more people began using them, often in novel ways. Now there is a flood of books and magazine articles about them. Some spreadsheets even have publications devoted exclusively to their use.

Basically, a spreadsheet consists of a hundred or more rows and columns. The places where they intersect are called cells. In the computer version, each cell functions like a little calculator, and herein is the reason for the electronic spreadsheet's growing popularity. It is now possible to have data instantly recalculated by revising computational formulas. This lets people ask many "What if..?" questions without having to do tedious and error-prone hand calculations. It's also much easier to keep track of the effects of variables that change over time, like the price of a stock. So, in addition to the traditional uses, individuals are using spreadsheets for tracking personal finances, preparing their taxes, keeping records, and so on. Instead of asking, "What are you supposed to do with a spreadsheet?", more people are asking, "How can I make this most useful to me?"

### ***Graphics***

Computers are also handy for generating graphs, charts, pictures, and other forms of visuals. So, if you want to supplement the paper you wrote using word processing with say, a bar chart, the computer can produce it for you from your data. Again, you need a program to do this. Sometimes people also add special graphics hardware to their computer systems.

### ***Super Program***

The great boon appearing now is the single program incorporating some or all of the following: word processor, data base, spreadsheet,

and graphics routines. With such a program, it is very convenient to incorporate information into one document. In some cases, you can achieve the same effect using separate, related programs, but not as conveniently.

### ***Your Investment***

How difficult is all this? Really not very — but you do have to make a personal time investment to become competent. A week of evenings will get most people able to use a word processor well enough to write a short document. Once you can do that, it is fairly easy to learn the more complex features of a particular word processor as you need them. The payback in time saved is very fast for anyone doing much writing. A similar time investment will get you started using other kinds of computer programs. Remember, you can learn to do all these things *without* learning to program. At the same time, keep in mind that programming is a handy, rather trivial skill you might want to teach yourself sometime. Many books have been written to help you do just that.

### **Issues**

It is easy in the excitement of learning about computers and how to use them to overlook significant issues related to their use. Yet, computers, like all new technology, require people to address new issues. A few of the more compelling computer-related issues include:

- 1) What are the political, social, and economic implications of computer technology?
- 2) What precautions are needed to guard against unacceptable uses of computers?
- 3) Are there health and safety aspects related to computers?
- 4) Who should have access to computers?
- 5) Who should provide access to computers?
- 6) Who should pay for their use?

To be more specific: Politically, many are concerned about the privacy of information stored by the government and the uses being made of that information. Economically, people are concerned about job loss and the need for retraining many in the work force. Socially,

educators are concerned about providing all students with an opportunity to learn about computers and how to use them. The computer is too powerful a tool for us to ignore these and other issues.

## Next Steps

You now have some idea about what computers are, their capabilities, what they might be used for, and how you can use them through existing programs. You're aware of some issues related to computers. Where do you go from here?

User groups, computer magazines, and books written for beginners abound. With a bit of luck, you'll find a microcomputer user group in your area. They consist of people drawn together by mutual interest. Some groups identify with a particular profession so you'll find educators' or teachers' user groups. Others identify with a particular computer, hence you'll also find groups for the Apple, TRS-80, and so on. Within any group, you'll likely find novices like yourself as well as people very knowledgeable about computers. Much mutual learning and teaching occurs. How can you find a user group? Ask at computer stores in your area, and ask people who have computers.

Reading computer magazines is another way to help yourself become computer literate. A good approach is to browse through several different ones at your local library, computer store, or newsstand looking for those you can read comfortably. For novices, some of the magazines hardly seem to be written in English; others are written with you in mind. You'll find some magazines aimed at general readers, people in various professions, owners of specific computers, devotees of particular computer languages, and technically-oriented readers.

Many books have been written for computer novices, and more seem to come out daily. Depending on the topics they cover, they might date quickly. Until you are surer of your knowledge, be wary of those even a year old, particularly as they discuss hardware. Again, your local library is one source for books on computers. Some computer stores also carry a good selection of books.

I haven't recommended any particular books or magazines. For one thing, such a list is quickly dated. For another, any item of value

to one novice has little value to another. If you have difficulty locating this kind of material, however, please contact me. I'll be glad to try and help. Happy computing.