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Computer Literacy: Necessity or Buzzword?

Scott Childers

While the concept of computer literacy has existed for some time, the name has certainly changed. Whatever the name, the concept of computer literacy still has merit. By looking at the history of the computer literacy movement for grounding, we can build a definition for the next century and affirm that learning computer basics is a good thing for library staff to do.

The term *computer literacy* seems to have faded from library literature, but has the belief that the general populace should possess a basic computer-skill level faded as well? Have we already achieved this nebulous goal, or has the goal been redefined into something else? Are the skills we used to define computer literacy now called computer competency or possibly one of a host of terms, such as digital literacy, computer skills, Internet literacy, Informatics, computer proficiency, and others that have been used for more than two decades?

Whatever the name, the concept of computer literacy still has merit. By looking at the history of the computer literacy movement for grounding, we can build a definition for the next century and know that learning computer basics is a good thing for library staff to do.

History of the Computer Literacy Movement

People have been trying to define computer literacy for some time. As early as 1968, the National Science Foundation (NSF), at the urging of President Nixon and Congress, took a leadership role by adding the study of computers to the science curriculum of the United States. NSF held a 1980 conference that gathered computer scientists and classroom teachers to make the first attempts at defining computer literacy, as well as indicating that it was a multifaceted idea.¹

Another component in the rise of the computer literacy movement was the marketing of desktop computers to both businesses and individuals in the early 1980s. The general populace was just being introduced to the idea of owning their own computers, corresponding with the introduction of the IBM and Macintosh Apple PCs to much fanfare. *Time Magazine* even named the computer its Man of the Year in 1982.² The eighties brought the com-

puter out of laboratories and into homes, setting the stage for a new era of thinking about these machines.

A brief look at the number of articles indexed under the heading "Computers—Study and Teaching," the subject heading most closely related to computer literacy in the *Reader's Guide to Periodical Literature*, shows a dramatic increase in the mid-1980s (see figure 1). In 1984 Donald Norman said:

Computer literacy is a common catch phrase, a popular slogan that whets the appetite of politicians and academics. But what does it mean? How would we produce it? Computer literacy can mean a hundred different things; there is not just a single concept involved, but a large variety of them.³

At this time he also proposed a scheme for four levels of computer literacy. The first level consisted of mastering what Norman believed to be basic, general concepts, to which the understanding of algorithms, architecture, and databases was key. The second level required an understanding of how to use a computer and accomplish something useful with it. The third level of computer literacy was the ability to program and the fourth level was the understanding of the science of computation, or "where the professional resides." Norman opined that everyone should achieve at least the second level of his computer literacy scale.⁴

Almost a decade later Howard Besser noted:

Anyone involved in discussions around the development of a computer literacy curriculum in the 1980s recognizes the ambiguity of the term. Courses in programming, word processing, and even in explanations of basic components (such as how to use a floppy disk) all were termed computer literacy.⁵

He also made the observation that most hardware and software being used train people would be obsolete in the future, just like Apple IIs and Wordstar are obsolete now, so it is better to teach computer concepts instead of specifics. "So what do computer literacy courses teach? Of course they teach familiarity with the computer, floppy disks, the mouse, and so on. But on a deeper level, one of the primary things they teach is how to think in the kind of linear, logical fashion that is currently necessary in order to interact with a computer."⁶ Also of interest was Besser's remark that, "few (if any) computer literacy programs discuss the social impact of computers in any meaningful way."⁷

Alfred Bork's statement summarizes the problem defining computer literacy: "Computer literacy is like motherhood in that most people are in favor of it. But unlike motherhood, it does not have a clear and precise definition."⁸ At the most basic level, computer literacy could be defined as *turn on, insert disk, run a program*. Ethical and moral problems should also be approached when defining computer literacy. Bork noted, "Toward

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the end of this historical phase, the term computer literacy begins to fall into ill repute. Sometimes it is replaced by other names. In Europe and in other countries the name Informatics is popular, although it often denotes a higher-level course than one associated with the term computer literacy."⁹

As the '90s ended, the concentration of computer literacy discussion focused on the computer literacy of educators. Even then the definition was split between the ability to program, having only a general awareness of how to use a computer, or some point in-between where the user can use most programs, but has no knowledge about the specific workings of computers or programming.¹⁰

The Decline

At the end of the century, computer literacy was a buzzword more than anything else. What is the current feeling toward computer literacy? While those in academia tend to consider the ability to use computers essential, the general public doesn't seem to care as much anymore, as evidenced by the drop in popular articles on the topic. The number of articles indexed in the 2000 *Reader's Guide to Periodical Literature* under the topic "Computers—Study and Teaching" is less than in the 1980s (see figure 1).

What turned this necessity for our future into just another buzzword? Quite possibly it was the constant renegotiation of what computer literacy actually meant. As mentioned before, the meaning behind the term *computer literacy* kept changing and altering, with those writing about it being drawn toward one of two sides of the issue; one side being the complete understanding camp and the other campaigning for simply knowing how to use computers, but not how they work.

The public's loss of interest could also be a backlash against incorporating the word *literacy*. Even in the early days of the computer literacy movement, people called for a different terminology. They argued that calling it a literacy was a knee-jerk reaction, as there weren't any universally valuable computer skills and expertise did not equal literacy.¹¹

Another possible cause for the decline is the fact that children took to computers much faster than educators had predicted. In the early 1980s there was a push by educators to have children learn computers. Even the award-winning Schoolhouse Rock series developed their own shorts about computer basics, *Scooter Computer and Mr. Chips*, in response to the belief that the youth of that era would be afraid of computers. The fact that they only made four episodes may illustrate that the series wasn't a very successful endeavor. For children, computers went from being a mysterious machine to a simple tool in a very short span.

A fourth factor in the decline of the computer literacy movement could be the nature of computers themselves. Besser noted, "In fact, computer literacy curricula seems to fail even on the level of delivering meaningful vocational skills (due to the rapid technological developments that are changing the nature of computing skills on an almost annual basis)."¹² With computer and software constantly advancing, some late adapters might not get the footing they need and will always be trying to catch up.

Some of the computer literacy fervor has shifted to a concept termed *information literacy*. Information literacy is usually defined as the combination of traditional literacy concepts and fundamental computer-literacy skills.¹³ When some talk about information literacy, the computer skills component is usually assumed or a secondary thought after the skills of assessing and using information.

Why Have Computer Literacy Today?

An early argument from Besser for computer literacy was to be a good citizen. He reasoned that to be a productive member of society, an individual must know

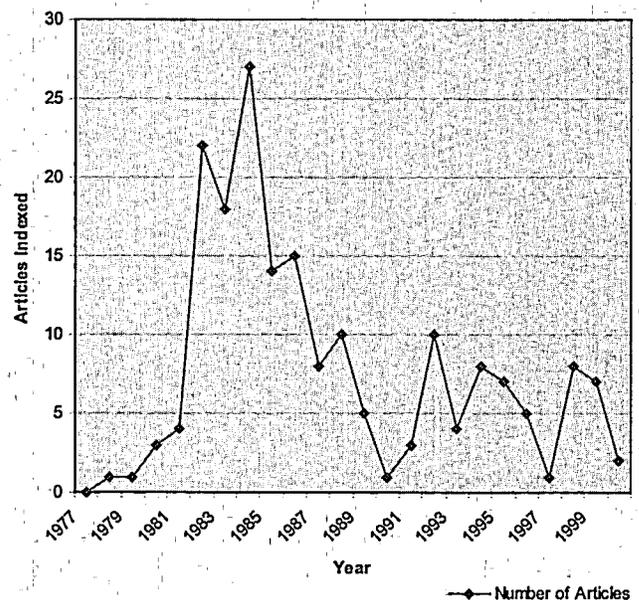


Figure 1. Articles with the Subject Computers—Study and Teaching

about computers. This argument also means that little to no vocational training would be needed to enter the job market.¹⁴

Bork stated, in a similar vein, "The argument is similar to that for language teaching: everyone will need to be computer literate in the society of the future because computers will be widely used in all activities."¹⁵ As cliché as the statement is, nothing sums it up better than *the future is today*. What once was an extraordinary knowledge is now a necessary skill in most homes and almost all workplaces. This qualifies this necessary skill set as a literacy, but is it truly separate from the classic reading and writing definition?

Using a computer is almost like driving a car. Some choose not to learn to drive at all, while most learn just the basics; they know what results when you do certain things with pedal and levers. Others have an in-depth knowledge of the automobile and can do more than simply drive it. Then there is a final class, the professionals, who create and build the machines.

Can we consider a person computer literate even if they regard the computer as a proverbial black box? Some argue that being able to use the computer for a specific task, such as e-mail or a specialized program in the workplace, is not the same as being computer literate; using computers to meet immediate needs defines only the proficiency level of the user.¹⁶ Being able to do simple tasks does not mean the person is computer literate, but simply proficient in those simple tasks. This leads to the argument that computer literacy means being able to understand how the computer works.

On the other hand, the conventional definition of literacy does not include knowing how a book is printed or what scientific principles are used to put marks on a writing surface. Literacy is the learning and mastery of symbols and how to interpret them. This point of view suggests that computer literacy is a very basic understanding of how computers work, and that a person need not teach computer engineering or programming to be computer literate. This side of the argument matches more accurately with today's computer use and training methods.

Computer literacy should be considered a general measurement. People are deemed literate if they can read and write, but literacy is rarely qualified in everyday conversation beyond a grade-level proficiency. With this new definition of computer literacy, a person is either computer literate or not based on how proficient they are at some basic computer tasks. Literacy suggests understanding and the ability to adapt and increase that understanding.

Computer proficiency should describe the skills needed to do whatever tasks are necessary on the computer. Proficiency is not literacy, but the ability to do things based on rote memorization or using very little

adaptation. You can, however, use proficiencies to estimate a person's computer literacy.

What mix of proficiencies can estimate the literacy of a person? A new schematic is in order. The Computer Proficiencies chart in the appendix is a sample of what we could do. If a staff member performs the tasks in a certain proficiency level, their level of computer literacy can be estimated. Some staff members may be able to do most level 2 tasks, but may be missing some of the proficiencies in level 1; just as a person may be able to read at a higher level, but still not have a fully completed, basic lexicon.

Level 1 is the baseline proficiency level, and any skills that a staff member is lacking within this level should be approached and mastered as soon as possible. A staff member who is only at this proficiency level is in danger of falling behind as computer technology and software continue to change.

To be considered computer literate, a person should achieve at least the second, or *desired*, level of computer literacy. The second level is that of a barely computer-literate person, similar to the literacy of someone with a kindergarten reading level. This level of computer competency is the minimum level that the majority of the library staff should rate. Skills that an employee is lacking could be possibly ignored if their other job skills are high enough.

The third, or *target*, level is the level of computer proficiency that all library staff should try to achieve; however, staff members who do not have these skills should not be penalized. The more proficiencies a person has, the more literate we can assume they are and the more able to adapt and learn as computer technology and software change. Those achieving this level or greater can be of a great benefit to the library system in which they work.

Impact on Libraries

What does computer literacy mean for library staff—paraprofessionals and professionals alike? It has already been demonstrated that the demand for computer-related skills has moved from insignificant to critical for most academic library positions.¹⁷ Other types of libraries have shown this increased demand as well.

The most important impact on libraries should be an increased emphasis on training. Libraries must increase the amount of computer training available to their staff, professional and paraprofessional alike. Whether through in-house training or staff attendance of outside workshops—training must be an integral part of the libraries' staff development. There must also be a concerted effort to hire people with computer skills.¹⁸

If training is made an integral part of the library's mission, then the library should be aggressive at adopting

computer literacy and be willing to dedicate human and financial resources toward that end. They must also be able to keep up with technological changes.¹⁹

"Training should be viewed as a necessity, not a luxury; as mandatory, not voluntary; and as comprehensive, not superficial."²⁰ If library staffs fall behind in computer literacy, we may see libraries further threatened by extinction.

Training also must include more than the basics. There must be continual effort for skills improvement. Basic computer literacy for library staff is the goal, but there is no end game. Technology changes and the better trained a staff is, the better they can handle those changes. The amount of training a computer-literate staff needs is less than a staff who only has a step-by-step or rote memorization-based skill set.

Conclusion

A computer-literate library staff is a necessity. With the continuing increase of reliance on computers and networks, library staff of all levels need to be able to adapt to this ever-changing technology instead of being locked into a certain skill set based on a rote memorization of steps that will become obsolete when hardware is updated or the next version of software is introduced.

This does not mean, however, that all library staff members have to become system managers. Achieving the target level of computer literacy is not a hard goal to accomplish if you commit to it. The level of computer proficiency that a person needs to be computer literate in the early days of this millennium is still relatively low. Achieving library-wide baseline literacy is only the beginning; continuous training at higher proficiency levels helps create a more adaptable workforce.

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Appendix: Computer Proficiencies Chart

Note: Much of this chart was derived from the Basic Computer Equipment Competencies List created by the Library Network Technology Committee at tech.tln.lib.mi.us/finalbasic.htm; accessed Jan. 13, 2003.

Level 1: Baseline

- Basic workstation start-up
 - General
 - Know location of equipment power buttons
 - Know what sequence equipment needs to be turned on in order to operate
 - Know passwords and where to find them
 - Basic operating
 - Familiar with how screens are supposed to look
 - Shut down
 - Know how to shut down the computer properly
 - Know the sequence equipment needs to be shut down
 - Know what equipment needs to be shut down every night or just on weekends
- Printers
 - Know how to turn the printer on
 - Know how to add paper
 - Ability to print specific pages (rather than the entire document)

- Web browser
 - General
 - Know how to open and close browser
 - Know how to use the menu and toolbar buttons
 - Able to change options and preferences
 - Able to add, use, and edit bookmarks
 - Searching
 - Know how to open a URL
 - Know how to use a variety of search engines and subject directories
 - Able to understand a variety of error messages
- Computer security
 - Know how to respond to computer virus, parasite, or hacking incidents.
- E-mail
 - Know how to send and receive attachments
 - Know how to resend bounced messages
- Operating system
 - Know how to navigate in the folder, directory, and drive system
 - Know how to create or delete a folder
 - Understand the differences between files and folders
 - Understand various save options
 - Know how to navigate without the mouse
 - Know the common menu items in applications

Level 2: Desired

- Basic workstation start-up
 - Know the start-up commands computers go through and the common errors
 - Aware if equipment is plugged into surge protectors in case those get turned off
 - Know where power cords are so connections can be checked if there is no response from the equipment
- Printers
 - Know how to change the toner cartridge or ribbon
- Computer security
 - General
 - Able to differentiate between legitimate security threats and those that are not, such as hoaxes
 - E-mail
 - Aware of potential security and privacy threats while using e-mail, including:
 - Attachments
 - Chain letters
 - Hoaxes
 - Spam
 - Viruses

- Web browser
 - Know the differences between various Internet browsers and their different versions
 - Have a basic understanding of different terms (such as telnet, chat rooms, etc.)
 - Able to diagnose and correct printing problems
 - Know how to deal with frames when printing e-mail
 - Know how to send mass e-mail
 - Recognize questionable attachments as possible viruses.
- Operating system
 - Know how to toggle or use the task bar to move between multiple open applications
 - Know how to select multiple files or folders
 - Know how to copy and paste, and drag and drop within files and folders
 - Understand the file naming conventions and extensions
 - Know the right-click mouse options (in Windows environments)
 - Know how to navigate in the file structure to open, save, or delete

Level 3: Target

- Printers
 - Know how to clear a paper jam
 - Know how to check and clear the print queue (if applicable)
 - Ability to print white text (when dark background is on screen)
 - Ability to check the printer set-up for proper configuration
- Computer security
 - General
 - Understand how the security software protects computer
 - Aware of the potential security problems that can arise in patron usage of library computers
 - Understand the various ways in which security can be compromised
 - Internet
 - Aware of the potential security and privacy threats while using the Internet, including:
 - Cookies
 - Downloading malicious or unauthorized files
 - Unsecured communication of private information
 - Viruses