NEW APPROACHES TO COMPUTER ASSISTED TRAINING

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The Training Dilemma: Teaching People How To Use Computers

Our public school system does not have a monopoly on educational problems nor are children the only students being short-changed! Desktop computers have been a mixed blessing because of the many difficulties in teaching people to use them at all or begin to use them at all well. We can't be satisfied with the notion that learning to use computers is merely playing games, typing letters or entering data correctly. For tasks like data entry or production typing, quick and dirty training is possible and friendly interfaces are desirable. The simple and rather unfriendly truth is that "user friendly" is an advertising slogan for a vaguely defined objective, with an elusive meaning and easily changed goals. Many companies advertise that it is easy to navigate the Internet and while doing so accomplish great things--*if* you would only be so wise as to use their product.

There are many people who have the need to use complex programs in rather sophisticated ways but have little or no access to training experts on site. It does little good to marvel at how quickly some people, particularly children, can learn to play Nintendo and other computer games. Obviously, whatever skills are learned with games, there is limited carry-over to doing other computer tasks. Game developers have discovered that they can deliberately give little help and make learning a challenging part of the entertainment. No developer of a program for *real* work would want to do this notwithstanding that instructions, both the on-line help and in the manual, are too often written as if users are being dared to decipher some sort of secret code! The worn out Unix mantra is RTFM which provides little help if one's Jack Armstrong secret ring decoder is on the blink.

Some people have coped with this situation fairly well probably because others have provided alternatives. However, what there is of computer education has been riddled with stumbles and lost chances. Many software companies have played down these difficulties with their insistence, vital from their perspective, that their programs are easier to learn and come with oodles of help. Those who see the problem as real and pervasive are partly dismissed as having a stake in making the learning issue seem overly complex. In any case, these arguments appear in magazines which few computer users ever see. Part of the problem is simple. Adults with limited education about computers have had to learn skills and concepts which have been defined as vital for their jobs and economic well-being.

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Using a computer has its full share of frustration and people do resent the time spent and the difficulties encountered in learning how to use a new program. The resulting pressure for better information has meant that the simpler programs now often come with help adequate enough to learn by doing.   This improvement is due in no small measure to the Help Engine provided with Windows, made even better with one of the many add-on programs, and the rapidly growing use of common Windows program interface features.   The more complex programs, however, still leave many of us floundering when we want to take advantage of one of the more complex or less-used features. The amount of information can be overwhelming and the on-line help files can often be even drier and more boring than those textbooks we dearly loved. *Hypertext jumps are jazzy but they're only useful as technical aids and to navigate through a document.*

Help engines and API's do not write the words we see on the screen or construct the tutorials which will have us flying within a few hours. The standard and usual approach has not been enough, certainly not for the unschooled. Important elements are missing from the perspective of many who are critical of how we too often go about teaching. In learning computer programs, where is the fun in both teaching and learning which make it more gratifying and more likely to succeed? Where are the multiple methods of communication? Where is the needed interaction among the learners and between learner and teacher?

The alternatives available to teach or learn how to use software are quite limited. The StarTrek solution of just telling the darn thing what to do and it will do it is not imminent. We can read words; look at graphics and animations; watch and hear about the actions of a disembodied mouse on a captured set of screens; look at more movie-like films on the VCR or even our monitor; listen to teachers and cassettes; or learn by doing and by trial and error.   No way offers guaranteed results for all of us even though many of us manage somehow to discover our preferred way to learn. Relying on the normal combo of on-line help, trial and error and, if all else fails, the manual in the box and whoever we can find to ask questions does work...sometimes! The cost in time and struggle is unpredictable, and the quality of the result too often depends on keeping our criteria for success low enough to justify our claims.   For complex programs, people often add the step of giving up on the manual and finding a book which explains the manual. My favorites are those with titles like "X for Dummies"--both Alice and I refuse to buy them on principle--and those books which tell all in much less than half the official manual's length. I am enchanted by the authors' chutzpah!

Normal people, not teachers, who appear knowing are attractive alternatives to yet another book. They can be readily available, teach for free, commiserate with us, and may actually show us how to do some things. They also may not have enough time and get impatient or emotional with us. Even worse, they may know little more than we do and give wrong information, or not know much about how to teach....a common but excusable failing. It can also be a failing of authors of

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program manuals, programmers who provide on-line help, even authors of those replacement books we buy with such hope and finally--even people who conduct *classes.*

When knowledge is critically important, it makes sense to search for alternative methods and ways of finding teachers. Audio cassettes, films and lately even multimedia tutorials have been devised and sold in the hunt for new possibilities. It's no secret that one of the main obstacles to effective and creative use of computers is not simply teaching people how to use them well but teaching teachers the skills to communicate the complexity of the subject using easily understood language. It is for these reasons that this article focuses on computer tutorial programs which are available on CD-ROM.

PERSONAL TRAINING SYSTEMS (PTS)

Personal Training Systems has a track record as a creator and seller of tutorials on audio cassettes. They have involved Peter Norton, a well regarded writer of books on computers, in their efforts. Recently, they completed a CD-ROM tutorial on Microsoft's Office for Professionals--Version 4.3. They also offer CD-ROM tutorials on PageMaker, Excel, Word for Windows, Access and Windows 3.1. Since Office is in fact four complex programs which are partially linked, the effort is ambitious. It is no mean feat to teach people the use of a full fledged word processor, spreadsheet, data base and presentation program in one sweep--even if you restrict it only to lessons for beginners. A number of assumptions and decisions have to be made. Some examples: (1) what features to include or omit from each lesson; (2)how slowly should the teacher speak (not a trivial concern); and (3) should you assume the ready availability of a teacher or at a minimum a mentor?

I got a clearer sense of their problems and assumptions when I saw that (1) basic lessons on Windows were included with the Office tutorial but (2) then it was assumed that these instructions were not learned well or would be skipped even by many people who needed them. This is the hoary and familiar pre-requisite headache in high schools and colleges. The stark reality for Personal Training Systems and others--not a criticism-- is that no-one could learn to use these complex programs without being first being quite easy with Windows. I would not have expected anyone to design a single set of beginning lessons intended for both Windows beginners and sophisticates for fear they would satisfy neither group. Perhaps I was naive.

The message to inexperienced learners is: if you learn the rudiments of working with Windows, you can jump right into a set of powerful programs. The message to the computer schooled is to patiently bear with the simple and familiar stuff on Windows. This approach is somewhat self-defeating since no-one is going to be very happy with the inevitable compromises. I am even more convinced of this

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after going through the tutorials. This mixing of audiences is typical in the earlier grades in school but to do this with learning programs for adults and older students goes too far. Yet this mix is also commonly done in computer classes sponsored by public high schools and even colleges. However, the tutorial teachers sensibly hedge their bets by assuming ignorance rather than knowledge. They frequently give quick basic instruction in elementary Windows 'moves' in the midst of teaching the applications. Inevitably these instructions must be repeated almost word for word as needed. People who know Windows need only be told to move a specific window. It is rather surprising to hear how many words must be said about this action to give clear instructions certain to be understood by someone struggling to learn. There is no apparent way of avoiding these instructions, except perhaps by fast forwarding? Much of the tutorial is like an audio cassette on a CD-ROM so you have controls which act like those on a tape player.

Analogous compromises surely had to be made about many other parts of the tutorials on the four applications. I presume that the choices again assumed sharp limits of knowledge among many users. You would have to expect that the beginner will have no tolerance for omissions, while the more experienced person would tolerate repetition. The choice of beginner topics, for example, were likely defined largely in terms of people who have hardly used any word processor or spreadsheet before. Don't misunderstand me --I know this can work if you do not ask awkward questions about boredom and frustration. However, we do *not* have to perpetuate the questionable education traditions of the past or do CD-ROM lessons have to be like frustrating classroom sessions often seen as too fast or too slow.

Good practical reasons like costs, earnings and likely sales must be the logic for teachers rejecting the more sensible approach of at least two versions which rely on differences in capacities and knowledge base. As in a computer classroom, they then make assumptions about how to make the best of a flawed scene. Since there *are* alternatives to the way they set up the tutorial, I suspect there might also be other less obvious reasons.

The better classroom teachers do manage to partly compensate for the one-for-all approach. Since only a handful of teachers are employed by companies like Personal Training Systems, they can choose from among the best, thus bypassing a major headache of more conventional education. There is no compelling reason for these tutorials to obey the flawed character of the classroom model unless the economics are compelling. It is possible to allow for interactive choices which go much beyond giving the user the option to skip sections, especially if a CD-ROM is being used. Even if the medium is a VCR film or the audio cassette Personal Training Systems has standardly used, there are options. In fairness, though, we might be running into the higher costs of providing options versus the sales potential for such tutorials.

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<u>I want to emphasize that this tutorial, given the choices, is not bad or even mediocre. Much of it is quite good !</u>It is clear as it takes you through many of the necessary steps. The teacher clearly knows her subject and what she is about. I even learned about useful options in programs I know well.   I got a clearer indication of the quality of the tutorial when I moved to programs with which I was barely
familiar.   Clearly, I was getting an excellent introduction not only to PowerPoint but to similar programs which enable you to create presentations.   I quickly and clearly saw that something I had vaguely thought to be beyond my capacities and interests could be learned and used. I am not being critical then of beginning lessons as such and realize that facile and creative use of PowerPoint would clearly demand more learning time and experience.

While doing the tutorials, my biggest problems were: (1) a growing impatience with the inability to skip the repetition of points common to Windows programs; (2) being reminded that I had not installed all the Office graphics files where the program assumes them to be; and (3) finding some of those tiny toolbar icons quickly enough from the teacher's verbal description. A small point perhaps, but I often had to pause the tutorial--a somewhat awkward procedure when you have minimized the audio control window, as you must do, in order to have the screen largely available for the application itself. The real gap is the almost complete lack of any graphics on this CD-ROM, the inability to get visual help from either photos or animations. I know that they intend to change this in the new version of this tutorial due in the Spring but I do not know the directions they will take and how well they will capitalize on the strengths of a CD-ROM. They did use simple graphics in the Windows tutorial, screen captures of how tasks and commands are done with the mouse, and plan to make more use of this technique. Their approach works well within the boundaries they established but the limits are unnecessarily narrow given the complexity of the programs, the varied needs of their clients, and the option of anyone to skip any lesson they do not need.

The structure of the approach is straight-forward, simple and useful. You can have the application operational, hear the instructions at your pace and learn mostly from being told what to do and then doing it. You can easily repeat any part of any lesson--or the whole section--as often as you want, repeating your error until you finally catch on. You go through the tutorial largely at your own speed; pause and restart at any point; go back to any of the sections at any time for a refresher or skip around at will. I have to caution that my work has necessarily made me a quick learner in many areas in the process of evaluating tools as decent learning devices for young adults who are aiming for a variety of professions. This has provided me with experiences and biases that may not be the best for determining the value of this tool for other 'kinds' of people. Reliable evaluations of the pros and cons of the tutorials for any intended audience are only possible with an actual trial with real learners. This would

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have to include observations, interviews and discussions with the users. In effect, this means doing a relevant and useful Beta test. The cost, complexity and tricky nature of such evaluations explain why these tutorials are seldom evaluated very thoroughly. Instead, we depend on word-of-mouth, names, endorsements, and personalized judgments. However, the situation is just about the same if we look at the more conventional ways of teaching computer programs. We do not demand nor are we accustomed to looking at these issues as carefully as is done by so many magazines for computer software and hardware. A somewhat curious state of affairs given our collective search for better public education and the projections of great growth in the use of computers

My most serious criticism is that these tutorials rarely explain anything; rather, they show you what to do. They take you through the steps making sure you know about the existence of most of the commands available in the menus and through toolbar icons by using quick assertions--so fast and terse that they will be hard to remember or understand. It's as though people taking beginning lessons are not supposed to be interested in understanding as opposed to just learning how to do things. Perhaps it is assumed that employers who provide their employees with these tutorials want the trainers 'help' not to waste time or money helping students to get insight? The consequence remains that to stint on training costs can create unknown and negative prices to pay later.

Yes, I want that new version. Even better will be those CD-ROM tutorials which I know can be created and likely will be--rather soon. The new learning tools will aim for an audience of many skill levels so that it will give people the latitude to individualize their learning. One disk will meet a variety of needs and the learner can return to it after she has become competent enough with the program to be ready for more complexity. Such developments depend upon potential purchasers, developers and users demanding and prepared to pay for more comprehensive and sophisticated tools. Already we use CD-ROMS for very elaborate multimedia encyclopedias and for convoluted games and puzzles. We author and produce books which cover the complexities of programming languages and of major programs. We can therefore do analogous things to enable more people to learn and use tools which are rapidly becoming critically important to their economic well-being.

The alternative is to fall back on the over-optimistic fantasies of voice commands to Hal-like computers. It is of limited value to define*beginning lessons* so restrictively that it drastically limits a tutorial's value. Too much of the serious tougher stuff can be easily omitted, left for self-teaching or for others to handle. Too often this approach does not work very well. Many people--granted, not the majority-- are trying to learn concepts and get knowledge about computers-- more than just task skills. Even those curious people with good learning talents or reasons for wanting to go from the*how* to the *why*, and who want to be able to do complex tasks, will get too limited help from tools focused only on beginners.

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People do not get too many opportunities to learn and the time should not be thrown away on rote learning of rudimentary tasks. Individual differences are a normal fact of life and one I hope the tutorial creators will heed. Many employers, large and small, who could make good use of computer tutorials would prefer to use them to train professional and semi-professional employees, not just entry level people who largely do data entry.

The Multimedia Tutorial on CD-ROM

Why would an individual, small organization or school spend money for computer program tutorials on CD-ROM given the extra costs. Are such tools cost-effective only for larger organizations with considerable turn-over? Training people quickly to use new software is a not an insignificant cost.

There is probably only one good reason for even thinking of doing this--a feeling, belief or evidence that the manual and help files are simply not sufficient and that buying additional books will not suffice. How can one sensibly cost out the original purchase and employee training time in these terms?

Perhaps the real choice is between a classroom situation or working alone with a tutorial program--a disembodied teacher "at your side". Personal Training Systems describes their effort as the "best way to learn to use a program is to have an expert talk you through it...to be at your side." The cost factor then favors computer assisted learning, especially when more than one person will use the tutorial. There *is* a catch: tutorials of presumably high quality are available for only a handful of programs. The classroom with a live teacher is still liable to win out in the face of uncertainty and ambiguity, primarily because it's a familiar and safer choice. As a business, the whole idea looks like a loser except for three facts: (1) some companies have been successfully selling learning tools; (2) CD-ROMS seem to hold promise beyond what books, audio cassettes and VCR's offer; and (3) the major training costs are employee time rather than the differences in price between a book and a CD-ROM.

Schools Using Tutorials

Teachers of young adults and high school students usually want them to learn more than the basics. The better schools are painfully aware of the huge differences in motivation, readiness, and other factors affecting the ability to learn which make it so difficult to close knowledge gaps. These schools are a major potential market for companies like Personal Training Systems for both the basics and beyond. The MS Office tutorial, for example, makes it possible for many students--not all by any means--to get most of their instruction without a teacher, only someone available to answer questions. This should not be seen as a threat but as one of the better uses of a school computer lab. All kinds of schools have difficulty finding good teachers on the use of computers and programs.

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Neither Departments of Education or Computer Science train people to do this competently nor, in fact, does anyone else. In truth, few schools even seek to hire such people. Yet computer literacy is becoming more vital and valued. It must include knowledge of an operating system, how to use the important general purpose programs, and finally, the increased ability and skill to learn additional programs, as needed, through self-study. This is a classic chicken-egg situation in which enterprising companies might find rewarding opportunities. There is the corporate market *and* an interesting and exciting potential in smaller commercial and non-profit enterprises. Schools and libraries represent an almost untapped depository for training tools on content, teaching people to be computer trainers and for mentoring purposes.

Tutorials, be they videos, cassettes or CD-ROMS, can also be useful to high schools, junior colleges and other colleges responsible for adult-education programs covering a wide range of topics using the computer as a tool for self study. The institutions offering these courses are effectively the only ones which can meet the computer education needs for many people, but they do have some real dilemmas: (1) how to find local people for low paid part-time work who have both the needed knowledge of content and teaching skills; and (2) finding the means to purchase multiple copies of the tutorial and the associated program. Efforts to teach people how to use software could be much enhanced by the use of expert teachers to produce tutorials which get wide distribution within a given system. The local teacher could meet the vital needs of answering questions so people do not get hung up and giving individualized brief tutoring sessions as needed. The important need in learning to use computers is doing and trying while moving at a comfortable speed--which is not necessarily the group pace defined by a teacher. The important skills for the teacher should be knowledge and ability to advise and consult, as opposed to lecturing skills and following a prescribed curriculum..

Perhaps software companies need to strengthen their standards for site licensing to make multiple copies of many of their programs *more* available to teaching institutions and their students at special rates. This could be an important addition to software standards more commonly in use and would be a prudent economic and social investment. We must also rethink distribution of the tutorials themselves so that they are available at affordable prices for wide use in the education process. For example, could videos and CD-ROMS be made available to borrow from libraries and used in school computer labs equipped properly. This would be an educationally useful extension of the computer lab now common in many American colleges and could make computer literacy a mainstream expectation and reality.

How can smaller companies producing these tutorials be helped to improve their capacity to distribute their products at prices significantly lower than those offered to business? These are not software giants. What would it take to

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arrange for sensible distribution of the applications and the tutorials, without loss to the companies and without special government subsidies, for the benefit of both young people in school and the many adults who need to learn these skills for better jobs?

There are obviously many questions, a need for new practices and procedures, and a tradition not conducive to this kind of thinking. There are also solid opportunities for meaningful change to prepare people to qualify for employment where computer skills are required. Computer assisted learning with tutorials on CD-ROMS are not magic pills nor are they the only means to enable us to deal with some real social dilemmas. Some years ago, a new company which has since become a major producer of both computers and software, made a serious effort to get computers into schools at quite low cost. Perhaps it is time for other computer companies and their experts to make the effort to effect serious change in the educational process for the use of computers.

Personal Training for Office by Personal Training Systems retails at $90 for a single copy. The training cassettes retail for $37.00. The street price for both of these items are somewhat less. They will soon release a major upgrade for their CD-ROM THE MICROSOFT OFFICE PROFESSIONAL   including training at various skill levels. They can be reached at 800-832-2499 for more information and orders.

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