



ICT FOR ADULT SKILL TRAINING: THE VICTORY OF SPONTANEOUS ACTION

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Many complain about the moribund nature of most traditional programs of adult skill training. Are they indeed dead, or are we looking for them at the wrong place? This chapter¹ proposes that adult skill training is well, exploits the technologies of the day, and was reinvented on the go by people who had never heard the term or read the books proposing it. In fact, it is happening everywhere, except where it was supposed to happen, namely, the adult education centers of the governments.

Due to the scarcity of research and data, most evidence in this chapter comes from the United States and Latin American countries, with which the author is more familiar. But one would expect the situation in other countries not to be much different.

WHERE IS ADULT SKILL TRAINING TAKING PLACE?

Extension Courses

In the United States, the catalogs for extension courses are several times thicker than those describing regular course offerings. In some cases, these courses are considered to be cash cows to cross-subsidize other levels of education. Each year, many American community colleges enroll the equivalent of 20% of the population of the towns where they are located. Adult education is a booming business.

In Latin America, there is much going on. In fact, leading business schools have taken this route. IESA (*Instituto de Estudios Superiores par la Administracion*), a business school in Venezuela, has 300 postgraduate students, no undergraduates, and 6,000 extension students enrolled in its short management courses. Business schools in Peru and Costa Rica have taken the same route.

Training and Retraining for Jobs

There is a progressive shift in training programs, from youth to mature adults and from preemployment to inservice training. In the United States, preemployment training has been erratic and often inadequate. To compensate for this casual and heterogeneous system, the United States has a vast array of training programs geared to adults and young adults. High schools and community colleges offer many evening courses to local residents. Many of them are in the traditional trades, such as auto

mechanics, welding, electricity, woodwork, and construction. In addition, office technology has become a popular area, with courses in computing, accounting, opening business, secretarial skills, and so on. Equivalent offerings come from municipalities and other government agencies. Many people taking these courses are immigrants.

Most Latin American countries have structured training systems run outside the regular education system and funded from a levy on the payroll. At least three-fourths of the funds, if not more, are allocated to activities that could be considered adult education, since the clients are adults who take the courses while they are employed. In Brazil, around 3 million people take courses in one of these institutions every year. One of the new agencies—in charge of training for the trucking industry—has rented time on a satellite and beams eight hours of courses a day to transportation company employees. Transmission is received in classrooms in transportation companies and now reaches more than 300,000 employees.

In the recent past, many ministries of labor have created training programs geared to young unemployed adults. In Chile, the *Proyecto Joven*, funded by an Inter-American Development Bank (IDB) loan, pioneered a new model of contracting courses with private or public institutions, conditioning the contracts on the existence of jobs or internships at the end of the course. There is a similar program operating in Argentina, and others are to follow. Brazil has a similar program, sponsored by the Ministry of Labor, which trains more than 300,000 workers each year.

The training budgets of the American armed forces have been estimated at US\$30 billion, and a large share of pilots, mechanics, and electronic technicians in the United States have received their training from the armed forces. In Brazil, most airplane mechanics received their training in the Air Force.

Countries like the United States have a thriving proprietary market for training. Hundreds of courses are offered in each major city in office technology, secretarial skills, and computers, and there is a multitude of short courses geared to the service sector. Exactly the same happens in Latin America, where in any city's downtown area, the signs for courses are as abundant as those for pharmacies or bars. In addition to the areas mentioned above, English-language training is popular. These are the typical second-floor schools in the downtown areas, with signs outside advertising their courses. As one could expect, their quality is varied, ranging from serious, to fly-by-night operations, often closed down by the police. Be that as it may, they

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offer services that people are willing to purchase year after year. It is unreasonable that consumers would take such courses if they were completely ineffective.

Correspondence schools are major players in the proprietary training business. Some are local branches of American schools, but the majority of them are local. They offer radio and TV repair, drafting, sewing, embroidery, electricity, and, more recently, computers. Like their second-floor counterparts, they get little respect, in the United States or Latin America; yet, they perform a social function, particularly for those who live far away from face-to-face programs. More than 3 million people have taken a course from the second-largest Brazilian correspondence school. Research conducted by this author indicates that they are very cost-effective for those students who graduate.²

One would expect the Internet to become a major force in such training, stand-alone or in conjunction with printed materials or personal encounters. This is already happening in the United States, and countries such as Brazil, Mexico, Chile, and Costa Rica should follow the same path.

Employer's Training

There is at least as much learning taking place at the work site as in regular schools, and many firms are using information technology to deliver their training. From IBM's two satellites beaming training around the world to its staff, to videotape in less formidable enterprises, the new media seem to be taking over industry. Videos and CD-ROMs are becoming more common as a means of delivering training in enterprises. Available evidence is scant, but trade fairs suggest vigorous production of training materials using the new media.

Probably the most spectacular development along these lines is the so-called corporate University (see chapter 18). Motorola University is well known, as is "Hamburger University," created by McDonald's, and the graduate school of public policy created by the Rand Corporation. But several other large organizations have similar institutions, whose number is approaching a thousand. The oil company of Venezuela (*Petróleos de Venezuela*) two years ago created a corporate university, *Centro Internacional de Educacion y Desarrollo* (CIED), along the lines of Motorola. Initial reports suggest that it is a well-run operation, with nine campuses and attracting professionals from other companies in the same industry.

Self-Learning and "Edutainment"

A lot of learning takes place throughout the life of citizens who received some education; consider that a very significant number of the books published in the United States

are in the "do-it-yourself" or "how-to" category. In addition, every little town, and every corner of big towns, has its own library, with all the usual magazines, reference books, how-to books, and classics as well as helpful librarians. One could well imagine that everything else pales next to the self-learning underway in mature societies.

But there is a lot more going on that is not strictly self-learning. Television and computers have created a new category of activities, sometimes called "edutainment" to connote the combination of education and entertainment. With the popularization of cable TV and satellites, the number of channels allows for greater specialization and lower costs. Some channels specialize in this mixture of culture, education, and entertainment. The Discovery Channel and The Learning Channel are typical examples of this new model. In general, these channels aim at a general audience that wants more intellectually sophisticated entertainment, such as archeology, history, geography, science, and technology. Documentaries about the petroleum industry or the theory of evolution also fall between education and pure entertainment.

In a more practical vein, cable channels have produced a large number of programs on cooking, woodworking, and household repairs. These have become genres on their own, with different characters and styles of presentation competing for the preference of Saturday TV viewers.

The new satellite channels are paving the way for dedicated education channels operated by commercial networks. This is a new chapter in edutainment TV: Venezuela, Brazil, and other countries are just beginning to operate commercial TV channels entirely dedicated to education.

The other noteworthy trend is in computers and the Internet. CD-ROMs and the Internet are true learning tools, and many people use them. Even in Latin America, the number of Internet connections is growing at unimaginable speeds. The practical uses of the Internet are not ignored by a large proportion of subscribers, even though chat rooms and e-mail remain the most widespread Internet activity.

WHY I LOVE (GOOD) TRAINING VIDEOS

Recently, videos and instructional CDs have become valuable tools for professionals who need their employees to be trained in specialized fields and practices. They are also excellent resources for those who wish to hone their own job skills or update their knowledge. Several companies specialize in providing educational materials for these purposes, ranging from the professions to generalized self-improvement (Box 17.1).

BOX 17.1 • INTERACTIVE MEDIA TRAINING³

Interactive software is out there, and it's not just for children. One of the most useful applications for multimedia (videos and CD-ROMs) is skill enhancement and training. Below is a sample of such products:

TECHNICAL TRAINING

Automation Studio (www.ttaweb.com) is a technical and interactive CD package that trains individuals in circuit design and automation technology. The software package is designed so users are able to outline, simulate, and animate their own circuits while using various methods of electrical controls, including hydraulics and pneumatics. Appropriate for engineers, teachers, and students alike, *Automation Studio* is available in English, Spanish, French, Italian, Japanese, and Portuguese.

Aircraft Systems Review (www.nolly.com/asrv.html) can be used to train pilots on unfamiliar aircraft and enables those in the aviation field to refresh their knowledge. The videos incorporate one-on-one instruction with visual explanations

and procedures, viewed from a pilot's perspective. These videos are also "generic" in the sense that they can be used universally despite an individual trainee's airline affiliation.

TPC Training Systems (www.tpctraining.com) offer an extensive video and interactive CD library. They specialize in machine and mechanical training and have provided training to more than 3 million employees. The training videos cover such topics such reading blueprints, schematics, and symbols; electronics and digital electronics education; and engine mechanics, hydraulics, and even heavy machinery use. The training CDs cover process instrumentation, mechanics maintenance, and air conditioning/refrigeration systems.

MEDICAL TRAINING

TUTOR Series (www.labmed.washington.edu/tutorproducts) is a set of interactive CDs produced by the University of Washington. They cover several different aspects of evaluating medical data and train individuals in interpreting multiple results. *ElectrophoresisTUTOR*, for example, is an interactive computer program that teaches electrophoresis interpretations of proteins in various body fluids. With its illustrations, charts, and tables, the CD is useful for instructing beginning students or evaluating competency levels. *PhlebotomyTUTOR* simply trains individuals in the appropriate methods and techniques of taking blood from a patient.

PedsLink (www.pedslink.com), a resource for pediatric health care, produces a series of training videos geared to home health clinicians and nurses who are in charge of providing care for infants and children with various illnesses. Videos, such as *Home Phototherapy for Infants*, take the care provider step-by-step through treatment methods and assessments and use specific procedural demonstrations.

I Am a Convert

During a recent storm, water began pouring into my living room, evidence of a problem with the roof. When I visited Home Depot, a home improvement store in the United States, I found a video explaining how to repair asphalt roofs. It was free with the shingles I bought for the repair. I watched the video twice and felt I was ready to climb up on the roof and start yanking the old shingles to reveal the rotten plywood underneath. During this time, a friend arrived to spend the weekend, an old school colleague turned venture capitalist. I offered him a tool, and we discovered that the damage was much worse than expected. We spent the entire weekend on the roof, but we did manage to fix it. Why this poor fellow remained my friend still baffles me. But coming from countries in which asphalt shingles are unknown objects, I learned from the video how to do a creditable repair on a leaky roof.

When the time came to install ceramic tiles in the kitchen, another video gave me the courage and the know-how—it was lots of work but quite a success. The same happened with laminate flooring in the family room. Changing a toilet and hanging wallpaper also were preceded by a video.

Altogether, videos allow me to tackle tasks successfully that I would not have dared to otherwise. And they truly show how to do things in a way that books cannot. Think of the words and drawings required to explain how to unfold the wallpaper on a table, spread glue, fold it, carry to the right place the entire goeey mess, line it up with the previous sheet, hold it with one hand, squeegee with the other, trim the edges, and so on. Minutes of video tell it all.

Recently, I bought a video from Taunton Press showing 13 different ways to make mortises and tenons. Now I am

looking for some task where a mortise and tenon are vitally needed.

Several years ago, I had to visit a dentistry school where I was shown an explicit videotape of surgery of the upper jaw. I hated every minute of it, but I had to agree with the dentist-cinematographer that I could see the surgery in the video much better than if I were a spectator trying to see something from behind the surgeon and the nurses (a completely unlikely event, but a reasonable hypothesis).

Seeing a video of arc welding, one can see a competent welder run a perfect bead of metal on the two surfaces being joined. This is much better than real-life attempts to see the same bead, with sparks flying and burning holes in your pants, all the while standing much farther away than the camera image brings us.

Thus, I am a convert. Videos are a powerful tool for learning practical things, tasks where words are not helpful. Videos are cheap. The ones I mentioned cost US\$10 and still provide profits to their producers. There is an endless supply of such videos in industrialized countries.

There are thousands of videos on how to do every possible task on the face of the earth, from tai chi to embroidery. They are so ubiquitous and unassuming that we tend to look down on them, but no high-tech gimmick, no flickering Internet video clip can achieve the same training feats. For teaching such practical endeavors, the Internet is a glorified farce. No other technology can beat a good how-to video; often, not even a live teacher.

Good Videos and Bad Videos

Having praised training videos (and by extension their former incarnation, films), let me add some qualifications to my infatuation. Surely, not all videos are good. In fact, most videos are plain bad and useless. How many silly sunsets have we had to endure before anything interesting happens? How many images of flowers and grass waving in the wind? How many teachers preaching to idiotic-looking students? How many images of busy students sitting in front of computers? How many robots crowding downtown streets or highway interchanges? Unfortunately, too many. The average video is slow, takes too long to deliver its message, uses the medium poorly, and fails to serve any practical purpose. My daughter wrote to several New England preparatory schools asking for information, and just about all of them also sent a video. They were all slick, full of pretty autumn scenery, and utterly uninformative—a complete waste of time.

So, what makes for a good video? We need to understand the language, or languages, of video. We take for granted that printed paper is used for bibles, pornography, novels, newspapers, scientific journals, advertising, and so on. Why would videos have one single specific language or style? They don't. There are many video languages, some better than others, depending on how they are used. A dull speaker—a “talking head”—in a video is worse than a paper saying the same thing, primarily because it takes longer to listen than to read.

Rummaging through mountains of videos, we can identify two cases in which they are particularly useful.

The first is when they are a means to transmit human charisma or magnetism. Some people are endowed with the power to teach, to persuade, to convey ideas. They are the super-teachers. With one of those rare people in front of the camera, the bells and whistles of TV production truly are not necessary; the super-teachers are a show by themselves. Tom Rollins, founder of The Teaching Company, hit on a winning formula along these lines. He finds the most persuasive teachers in American universities and invites them to give a series of lectures on the topics in which they excel. Production is plain and unsophisticated to an extreme, but the personality and charm of the super-teachers is what matters.

The second case is more difficult to explain but no less important. Let us think of two real videos.

- > The first video demonstrates how to remove the bones from a trout. The maître d'hôtel, in formal dress, tackles the fish as an actor performing in front of a full house. His movements are swift and precise, not one second is wasted. In no time, the bones are extracted, and the fish is reassembled as if by magic.
- > The second video is Julia Child, the upper-class American converted to French chef. She searches for the right word, stops to ponder what she is going to do next, fumbles with the knife, drops the food, looks for a towel to clean her hands, discusses alternatives, and looks a bit worried about the results when removing the finished dish from the oven.

The first is useless as an instructional video. No student can relate to that perfection or even hope to approximate it. The video hides the difficulties and the path to learning the tricks of the trade. It is pure theater when something different is needed. By contrast, Julia Child created a new video/TV language. She was asked to do one or two programs for a Boston education TV in the early 1960s, when such programs were live. Once the cameras were on, no matter what happened, they were not turned off until the end of the program. She

had to talk and cook at the same time, thus exposing the viewers to all the real-life difficulties and accidents. She explained, improvised, fixed the mistakes, and elaborated on how to deal with the everyday problems of a kitchen. Not being a professional cook who had spent thousands of hours repeating the same gestures, she fumbled more than a full-time chef would.

The Theory of the Practice

Without suspecting that she was creating a style, Julia Child truly found a very important area between theory and practice. Donald Schon, in a fascinating book, *The Reflective Practitioner*,⁴ discusses this intermediate space between theory and practice. Practitioners master a large repertoire of skills and strategies that are strictly required to perform a task. But these skills usually are not verbalized or explained in formal situations. Sometimes there is not even full consciousness of the techniques; they are performed but are not brought to the level of conceptualization and description with formal words. This is the “knowing in action” mentioned by Schon.

Learning a trade means learning this “theory of the practice,” usually with the help of someone who is a master of that trade, but not necessarily able to verbalize this in-between knowledge. This is what is not in the books, because it is not part of the official “theory.” This is what Julia Child brings to the art of making videos. She probably would not have invented the style had she started with videos rather than live television where one cannot stop the camera and start again. But once invented, her spontaneous, somewhat fumbling style became popular and was imitated worldwide. Being a highly educated woman, capable of expressing with words what most cooks omit; she explored the “theory of the practice.” She also made a point of showing details often omitted, such as how to hold a knife, which fingers go where, etc. She was able to bring to her cooking classes what was omitted from the run-of-the-mill cooking lesson, where great cooks showed off their skills but failed to delve into this fuzzy and evanescent space between cold descriptions of procedures and well-rehearsed gestures. Her style is emulated by TV cooks today, to the benefit of all those who expect to learn from television something about cooking.

Hence, good videos on training are those that explore this uncharted territory of the little details, the feeling for the job, the in-between knowledge. The above examples focus on a hobby—cooking—but the ideas apply as well to other areas where theory of the practice is important.

Forgone Media in Less-Developed Countries

Videos are more affordable than computers and the Internet. It is a pity that they have not been used more extensively in

poorer countries. While VCRs are found in very modest households in very modest countries, the availability of practical, how-to videos remains quite limited. Arnold Schwarzenegger is easy to find, how to unclog a pipe or how to hang a door is not.

The problem is simple but misleading. Developing countries are not well endowed with cinematographers who like or respect manual or technical work. Hence, the tendency is to sneer at such applications and produce philosophical discourses on the ethics of work. How to guide the piece of wood to the circular saw is too trite a subject for all but those who have lost their fingers in this operation.

MORE THAN WE THOUGHT; NOT WHERE WE THOUGHT

Adult skill training for lifetime is taking place where it is not expected to, and it is failing where it is supposed to succeed. None of the programs and tools discussed above is considered official “adult education,” yet, this is what has made lifelong training stronger and more enmeshed in our lives than anybody could have imagined. This effort is not coordinated and defies coordination. There is no planning, no blueprint, and no governance. It is a form of anarchy, perhaps an “organized anarchy.” The systems adjust and readjust by the force of markets, quasi-markets, and random events. There is little if any quality control.

What is blooming is lifelong skill training for the affluent, the modest, and the almost poor. Charity and equity failed. The market won, and we are far better off than we would have been without it. But the poor remain illiterate and unable to find the lifelong training promised by different international initiatives. The use of media such as radio and television allows for very low-cost programs with proven effectiveness to reach many times more people than conventional methods. Helping the barely literate poor with some of these programs seems more promising than efforts to produce traditional versions of basic adult functional literacy and training.

ENDNOTES

¹ This chapter is an adaptation of two articles by the author: Adult Education in the Americas: The Victory of Spontaneous Action, and Why I Love (Good) Training Videos. (September/October 2000). *TechKnowLogia*. Available at: www.TechKnowLogia.org. Used by permission.

² Guarany, L., & de Moura Castro, C. (1979). *Ensino por Correspondência: Uma estratégia de desenvolvimento educacional no Brasil*. IPEA: Rio de Janeiro.

³ Excerpts from Lewis, J. (July/August 2000). Enhancing Vocational Skills: Interactive Media Training. *TechKnowLogia*. Available at: www.TechKnowLogia.org. Used by permission.

⁴ Schon, D. (1984). *The Reflective Practitioner*. New York: Basic Books.