



School's Out

The hyperlearning revolution will replace public education

By Lewis J. Perelman

Dear Information Industry Executive:

Could your business benefit from a few hundred billion dollars in new sales? Good. Let's talk.

We all know that the world economy is going through what some call a "second industrial revolution" as knowledge-based businesses replace production-based businesses at the core of economic activity. In the trenches of this revolution a host of companies are scrambling to capture the high ground of the new multimedia, telecomputing mega- industry that is springing up from the digital integration of many diverse enterprises.

But contrary to what you have heard during the recent election, schools are one of the principal barriers to the growth of not only this new industry, but the whole world economy. Replacing the bureaucratic empire of educational institutions with a high-tech commercial industry will pull the cork out of the knowledge-age bottleneck - opening up an annual market worth \$450 billion in the US alone.

Recent campaign rhetoric aside, the real threat posed to our economy by education, schools and colleges is not inadequacy, but excess: too much schooling at too high a cost.

The conventional "technology" of the classroom is a thousand-year-old invention initially adopted to discipline an esoteric cadre of acetic monks. The institution of contemporary, "public" education is a 19th- century innovation designed as a worker-factory for an industrial economy. Both have as much utility in today's modern economy of advanced information technology as the Conestoga wagon or the blacksmith shop.

America currently has the most schooled workforce in its history: In the last two decades, the number of college graduates absorbed by the US workforce soared from less than 11 percent to more than 21 percent. In a recession that has dragged on for nearly three years, the most educated workers have borne a disproportionate share of unemployment. A white- collar middle manager is about two-and-a-half times more likely to become unemployed now than the average worker. Dan Lacey, editor of Workplace Trends, estimates that 70 percent of the unemployed in the ongoing wave of corporate staff cuts are managers, professionals, and technicians, most of whom hold college degrees.

Because the cuts are permanent, fewer than 25 percent of these people will find similar new jobs today, down from 90 percent a decade ago. Economist Gary Schilling expects that at least 10 percent of all

college grads will be unemployed during the '90s; recent Labor Department studies indicate that another 25 percent to 50 percent will wind up "underemployed" in jobs for which their diplomas are irrelevant.

As for the myth that a greater "investment" in education will yield the "high skills" that promise "high wages," the recent collapse of the Soviet Union means that US companies such as Sun Microsystems, AT&T, and Corning Glass now can employ world-class scientists and technicians in Russia and other countries for salaries of \$60 a month. And India promises to add another 400,000 new engineering graduates a year to the world pool of educated talent.

So the value of academia's diplomas is deflating even as their cost continues to balloon. The nearly \$450 billion America spent on schools and colleges in 1992 represents an inflation-adjusted increase of 40 percent, or \$100 billion, in education spending in the last 10 years. That's half again more than what's spent on defense or the federal deficit, for services of dubious and declining worth.

Why is the education sector - equal with health care as the largest industry in our economy - a center of declining productivity, while advancing technology is making every other information business more efficient?

The answer is clear: Education is the last great bastion of socialist economics. Public education is a redundant term: More than 90 percent of the services provided by educational institutions in the US are owned, operated, subsidized, and/or regulated by government. Schools and colleges are as productive and innovative as Soviet collective farms.

You may be starting to get a glimmer of why the shut-down and replacement of education is the greatest business opportunity since Rockefeller found oil: At the same time America is barely scrounging up the capital to afford the \$80 billion to \$100 billion it will take to replace the national telecommunications infrastructure with fiber-optics, hundreds of billions of dollars are being shoveled annually into the black hole of education's socialist economy. America's biggest and most technologically archaic information market is squandering a treasure equivalent to the world's eighth-biggest national economy on the feckless paper chase for academic diplomas.

But wait a minute, you say: Don't the "knowledge workers" of the new economic age need to learn a lot more to be productive and competitive?

Sure. We all need to learn much more, much faster, and much better; not just to get ready for work, but to keep up with the electric changes and explosion of information that permeate our increasingly checkered careers. Moreover, learning is the work that two-thirds to three-quarters of US workers now get paid to do, and is, in fact, the central production process of the imminent knowledge-age economy.

But schooling has become an obstacle to the kind of learning the modern workforce needs. Much of what the public widely believes about the function and value of schooling is not only wrong, but often the opposite of reality. Humans are genetically designed to be active learners; passively absorbing knowledge from an "expert" teacher just doesn't work. Research proves that the most effective human learning actually takes place in the context of real-life experience, not in classrooms. More than 99 percent of what the average American now learns in a lifetime is not learned in any classroom.

As the growing unemployment of our most schooled workers demonstrates, academic success is at best irrelevant and may even be harmful to working productively in the real world. The exploding information base and intelligent tools of the modern economy make thinking skills far more important than the memorization of facts or rote exercises. And, in contradiction to the one-dimensional notion of academic "aptitude" that's valued in the bogus currency of measures such as IQ or SAT scores, people have at least seven independent kinds of intelligence, or talent, and a dozen or more distinct yet effective "styles" of learning.

But schooling is still necessary for "socialization," right?

Nope. Research shows that many if not most of the actual socializing effects of schools are harmful: The losing majority of students get wounded self-esteem, while the "excellent" few percent of students get a false sense of superiority and security.

Think about it. In what other domain of work or social life is a premium placed on your ability to sit in rows of desks in a room, be talked at for 40 or 50 minutes, and then, when a bell rings, to walk down a hall to another room to repeat the same experience again and again during the day?

The good news is that a new wave of technology I call "hyperlearning," or HL for short, offers a technological replacement for today's educational morass.

HL is not a single device or process, but a universe of new technologies that both possesses and enhances intelligence. The "hyper" in hyperlearning refers not merely to the extraordinary speed and scope of new information technology, but to an unprecedented degree of connectedness of knowledge, experience, media, and brains - both human and non-human. The "learning" in HL refers most literally to the transformation of knowledge and behavior through experience.

Hyperlearning is weaving the fabric of a new economy out of four key technological threads:

- * First is the "smart" environment, where every artifact you touch or are touched by - cars, houses, toilets, clothes, tools, toys, whatever - is endowed with its own intelligence. The special significance of this intelligence is that it increasingly includes the ability not only to aid humans to learn, but to actively participate in the process of learning itself.
- * Second is what my colleague George Gilder calls the "telecosm" - the growing broadband communications infrastructure that makes all knowledge accessible to anyone, anywhere, anytime. For both human and non-human learning, the telecosm makes the "best and brightest" available everywhere.
- * The third thread is a kit of "hypermedia" software tools needed to navigate through a knowledge-dense universe. In relation to multimedia, hypermedia is an expanded, multi-dimensional version of a book index. Hypermedia provides the technical bridge that leads the user away from informing and toward understanding.
- * The fourth and last thread in the matrix of HL technology is brain technology, a broad category representing the application of biology and other sciences to thinking and sensing systems. In a sense, brain tech is the "wild card" in the HL deck. It contributes much of the basic science and technical tools that underlie the other three areas of hyperlearning technology. But it also offers a growing potential for biotechnology that can alter the learning process from the inside out.

The first major social impact of the HL revolution is to make schooling obsolete. That's no sci-fi scenario; it's happening today. For example: Two of the valuable features touted in an advertising brochure for Microsoft's new database program Access are "Wizards" and "Cue Cards." The brochure explains that the wizards take the place of "a professional programmer" by asking you questions about the form or report you want to create. Then "you simply click one button...and the wizard does the work for you."

The Cue Cards provide the service of an "online coach with infinite patience" to teach you how to use the program, without taking time off from the job: "You never have to stop work to page through a manual... You learn as you work with your own data," instead of "messing with...a canned tutorial."

These HL features are not breakthroughs, but examples of the "expert systems" and "embedded training" found in thousands of products in the marketplace today. You don't have to go to a professor

in a classroom to get expert "know-how" or training. The expertise and learning are immediately available "on demand" or "just in time."

The extinction of academic education also removes one of the key barriers to the economic opportunities in the knowledge age: credentialism. The main focus of traditional education is not learning, it is screening out; maximizing failure in the name of "standards" in order to label the minority of surviving students "excellent."

In the new economy, where mindcraft replaces handicraft as the main form of work, HL makes obsolete the teaching, testing, and failure on which academic credentialism rests. Automated instructional systems build real-time, continuous assessment and feedback into the learning processes that are ever more embedded in the many tools of the smart environment.

The mindcraft economy will replace degrees and diplomas with precise instruments that certify attainment of competency. Corporate teams linked by "groupware" networks will give little or no premium to what you did in school fifteen years ago, but they will be quite interested in what knowledge, skills, and talents you can bring to solving specific problems right now. The new, high-tech processes of certification will identify the nature and degree of specific abilities a worker may have, and then offer the most efficient learning resources needed to address any shortcomings.

The broader and perhaps more dramatic social impact of the hyperlearning revolution will be the large-scale displacement of traditional "employment" by a new form of human capitalism in which ownership of intellectual capital progressively replaces labor. This development dooms political promises of "jobs, jobs, jobs" to inevitable disappointment; but it also opens a hopeful new path to economic security.

In past economic revolutions, those workers displaced by technological innovation first shifted from jobs in agriculture to manufacturing, and then from manufacturing to services. The lack of productivity growth in the services sector has been the main culprit in the stagnation of US living standards for the past two decades, but ironically, this most recent recession clearly marks the realization of effective automation and very real productivity gains in the service industry. These improvements should be welcome progress, but the legions of white-collar service workers now being shed right and left by American corporations appear to have nowhere to go: We seem to have run out of new employment sectors.

The answer to this dilemma lies in the growth of the "knowledge sector" as a unique, fourth sector of the modern economy. The practical currency of the knowledge sector is intellectual property, or more simply, software. Unlike energy and materials, information is practically boundless. So in theory, the software-based knowledge sector need never run into "limits to growth."

Unlike most products, software can be taken without being lost. By the same token, information may be licensed or leased to a large number of people at the same time without its value being divided or diminished. This makes intellectual property, or software, extremely profitable to own and therefore very attractive to steal. So information's special nature also makes property law far more critical to information-based businesses, even as it makes enforcement of that law more complicated.

Knowledge-age technology makes the value of physical goods, as well as services, depend increasingly on their knowledge content. The creation of knowledge through learning and the embodiment of knowledge in software now hold the keys to wealth. So far, most economists and politicians remain relatively clueless about this new economic reality. Many still claim that manufacturing is the essential core of a "competitive" economy. The truth is that software is the most important business in the modern world.

The stock market understands what the politicians have yet to grasp: that Microsoft is worth as much as, or even more than, General Motors. GM's assets are measured in the megatons; most of Microsoft's assets could be stored on one or two compact CD-ROM discs, weighing only grams, and could be

carried in a coat pocket. More to the point, GM has hundreds of thousands of employees, while Microsoft has only a few thousand.

Ownership of capital, particularly in the form of intellectual property, from now onward will be progressively more important to personal and family income than the performance of "labor."

The core of full-time employees in our economy is shrinking to the vanishing point: The majority of the future "workforce" is destined to be made up of contractors and consultants, including temporaries and part-timers, whose role is more one of "supplier" than "employee." As intellectual property becomes more central to the valuation of businesses, and as most "production" work is eventually taken over by machines, workers in most fields will want compensation in the form of "points" and "residuals": that is, a share in the ownership of capital.

Obviously, replacing academia with a new commercial HL industry requires overcoming the political resistance of the seemingly prodigious education establishment. I say "prodigious" because anyone who has witnessed the bankrupting of the State of California by the school lobby knows how ruthless, potent, and destructive that resistance can be. I say "seemingly" because this is a battle that, with the right strategy, is eminently winnable.

One incentive for victory is the lucrative prize: a new market worth more than \$450 billion in the US and three to four times that amount worldwide. The potential HL market in the US alone is 50-percent larger than today's total world computer market. Unlike the long, sorry history of failed government "education reform" efforts, this strategy has the dynamo of the free market driving it.

While the HL revolution is inevitable and the HL industry is already developing today, its advance will be hampered and distorted by the massive waste of resources tied up in the academic empire. In particular, the well-off will continue to afford access to HL tools at work and at home no matter what public policies we pursue. A business-as-usual policy will only continue to isolate the poor, minorities, and disadvantaged from the HL revolution, further aggravating the economic polarization of our society.

For instance, more than half of US high school students in families with incomes of \$70,000 a year are now using computers to learn at home; but fewer than one out of 15 students have home computers in households with annual incomes below \$15,000.

As explained before, the key to breaking down the existing academic empire is to eliminate credentialism. In practice, that means getting the majority of employers to stop taking academic diplomas into consideration when making hiring, promotion, or other employment decisions. Simply put, people's economic opportunities should depend on only what people know and what people can do. Standard business practice should reflect this reality: There is no job in this economy that truly requires an academic diploma or degree for its successful performance.

Eliminating the currency of diplomas would lead to a huge demand for effective tools to accurately assess applicants' and employees' know-how. Sophisticated assessment tools already exist, and they are being used by leading employers such as the US Army, Corning Glass, and Toyota.

For example, a multimedia workstation used by Allstate Insurance Co. to teach the 12 essential skills needed by an effective claims agent also can be used to evaluate applicants for agent jobs. After an applicant spends two hours working on what is basically a specialized video game, both the applicant and Allstate find out precisely how the applicant's abilities match the 12 key skill requirements. Because interactive multimedia training is far more cost-effective than classes, the applicant may need only a few hours of training on the workstation to make up any shortcomings - a far cry from being sent back to get another diploma.

Today, this kind of training and assessment technology is used primarily by the largest corporate and military employers. Making competency-based employment a universal business practice would provoke

the rapid growth of commercial HL. The ferment of competition would quickly drive costs down while expanding the range and quality of applications.

Funding for the research and development and venture capital needed to nurture this new industry would come from a fraction of the hundreds of billions of dollars that would be saved when tax and tuition payers were freed from paying fruitless tribute to the diploma mills.

So abolishing credentialism itself would go a long way to stimulate the growth of the new HL industry, even as the source of the education lobby's political clout is cut off at the root. But that nascent industry will not be able to grow fast enough to satisfy the public need for education's replacement unless the \$450 billion a year that the education sector now absorbs is liberated to follow the consumer.

This leads to another essential step in the HL revolution: commercialization. Families and students must have freedom of choice when it comes to spending their money in the marketplace. But "choice" is not enough. Government-controlled institutions need to be replaced by private enterprises; although "privatization" is not sufficient, either. In addition, the profit motive is essential to driving technical innovation forward.

In recent years, school choice has become a hot issue. But choice alone is an inadequate strategy to achieve the benefits of a market economy in the learning sector, or to unleash the growth of the strategically crucial HL industry. Because classroom teaching is obsolete in the HL era, choice offered in the form of "vouchers" to pay tuition for schools are as irrelevant to hyperlearning as choices of horses are to modern transportation.

Instead, we need to form a coalition that demands the commercial privatization of the entire education sector, based on a strategy of microchoice using a financing mechanism of microvouchers.

If your choice in television programming worked the way school choice is proposed, changing channels from HBO to CNN would require unplugging the TV set, taking it back to the store, exchanging it for a different model, and moving to a new neighborhood. In reality, of course, video choice among dozens or even hundreds of options requires no more effort than pushing a button. Similarly, modern HL technology can offer the individual even more choices of "teachers" and "schools" than a cable TV has channels. HL's broadband, intelligent, multimedia systems permit anyone to learn anything, anywhere, anytime - and with grade A results - by matching learning resources precisely with personal needs and learning styles.

Using modern electronic card-account technology, microvouchers can allow individual families or students to choose specific learning products and services not just once a year or once a semester, but by the week, day, or hour. Unlike vouchers for school or college tuition, microvouchers will create a true, wide-open, location-free, competitive market for learning which has the elasticity to efficiently and quickly match supply and demand.

The hyperlearning revolution is inevitable: It is being driven by the unstoppable, onrushing advance of knowledge-age technology. The businesses that seize the HL initiative today are the ones most likely to attain leadership in the new economy.

Revolutionary changes in American history have almost always come from the grass roots up, not from Washington down. Abolishing credentialism by implementing HL in the workplace, commercializing learning through a new growth industry, and demanding real choice in learning environments are all processes that can take place in the free market - independent of the government.

So there you have it. Hyperlearning offers information industry leaders one of the most rewarding opportunities any business can hope for: solving some of the world's most critical social problems, building the key industry of a new age, opening the floodgates to a worldwide economic boom, and, in the process, creating billions of dollars in new sales and profits for your stockholders.

Are you ready to get started? Great. Let's do lunch.

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