

## **Towards An Interactive School**

**By Crawford Kilian**

### **Introduction**

In the past decade or so, the use of computers in education has expanded dramatically. So has the rhetoric of revolution, promising ever more astounding achievements as teachers and students gain proficiency with the machines and with the networks in which we have linked those machines.

The rhetoric is usually just that. We seem to be conducting business as usual, perhaps with an aging computer in the corner of the classroom. If it's actually linked to the Internet, it adds just another burden to the school's overtaxed phone lines. Many teachers have made a conscious decision to avoid computers altogether, at least for educational purposes, because they just don't see much advantage for themselves or their students.

Nonetheless, I think a genuine revolution is brewing. Computers have created the basic conditions for the revolution, yet they're not entirely needed for the revolution itself.

I began to sense the impending change while teaching online courses in the mid-1990s. The students were mostly computer-literate "early adopters," eager to try out a new medium of instruction. I expected them to whiz through the material in record time, unbound by timetables, and to achieve excellent marks.

Instead, a third of my students dropped out or simply ceased to log in. Another third did all right, but failed to submit all the assignments; they weren't active in online discussions either. But one third did fine in the new medium--and I soon realized that they would have done equally well in a regular classroom. Their inner motivation enabled them to ignore the many drawbacks of online education; this course was simply the shortest distance between themselves and their own personal goals.

This wasn't the outcome I'd expected, and when I reported it to colleagues in a listserv about online teaching, the near-universal response was: "Thank God I'm not the only one!" Across North America, pioneers had found that ordinary teaching and learning methods didn't seem to work on this new frontier. Meanwhile I had learned that there was nothing special or unique about me and my methods. What happened in my courses was happening elsewhere; within limits, I could generalize from my particular experience and develop theory from practice.

I began to notice changes in my own attitude as a teacher. I'd become much more flexible about deadlines; this was an asynchronous medium, after all, and computers are notorious for swallowing files or refusing to print them. I also found myself enjoying the one-on-one exchanges of email, at least as much as the give and take of classroom lecture and discussion. Increasingly, I was mentoring my students rather than teaching them.

Other surprises followed. When my wife asked me to find something about cougars on the World Wide Web (one of her adult ESL students was curious about them), one of the best sources I could turn up was an elementary student's term paper, which her school had proudly published on its Website. For years I've urged my students to write and publish articles; now schools themselves were becoming publishers.

Something was clearly happening both in classrooms and in cyberspace, but it wasn't the apocalyptic transformation some educators imagined. It now seems clear to me that a new kind of school, the interactive school, is evolving within the structure of the standard school.

In what follows, I want to compare Standard and Interactive models, but I don't for a moment want to imply that Standard is entirely bad or obsolete while Interactive is entirely good and new. Much in the Standard school is there because it works just fine, and much of what dazzles us in the Interactive school will soon seem as dated as the Cuisenaire rods and teaching machines of the 1960s. The Standard model reflects a majority view in society, and in the society of educators; only a minority see much value in the emerging Interactive model. Neither model is a Utopia. But if we look at some of the contrasts, I think it's clear that something new is emerging from the schools' experience with computers--especially networked computers.

## 1. The Two Cultures

Education systems have cultures, and the Standard and Interactive schools are culturally quite distinct. A key difference is that Standard schools are “Processive Conservative,” while Interactives are “Progressive Conservative.” This is more than just a play on the name of a Canadian political party. The Standard model is deeply concerned with process, with “getting through the material,” with framing policy and devising regulations to implement that policy. Process is critical to ensure some kind of standardization and predictability in teaching and learning. Without it, some students will learn far better than others, some teachers will work far harder than others, and we’ll have no assurance that everyone’s had a fair opportunity – which is important when public money is paying for that opportunity.

The Interactive school is conservative also. It holds to traditional values of literacy, scholarship, learning, and rational debate. It is less concerned about process, especially administrative process, and more concerned with results. Whether the student learns from full-frontal chalk & talk lecturing, or from a Website, or from library research in print media, is not the point; the point is what the student has learned and how that learning has been demonstrated. The Interactive model is progressive in its readiness to accept new teaching and learning methods, but on an incremental basis. Especially after the experience of the last twenty years, the Interactive school regards any new technology as a failure until proven otherwise.

### “Getting it across”

The two cultures use very different communication models as well. The Standard relies heavily on the “instrumental” model developed by electronics engineers half a century ago. In this model, information is a package designed to have some predictable effect on the recipient. In 1998, Federal Express was running TV commercials in which a horseman fords rivers, evades bandits, and finally hands a cardboard box to a woman who doesn’t even need to open the package to express mindless ecstasy. In the FedEx model, the recipient is essentially passive and need only sign for the package, buy the product, or vote for the candidate. We assume the package is fully meaningful to the recipient; if it is not, that’s the recipient’s problem.

Under the Standard school’s FedEx model, teachers “deliver” courses like so many shirts from L.L. Bean, and if the shirts don’t fit, that’s not the courier’s problem. Even students accept the FedEx model when they say of an inept teacher: “He knows the material but he can’t get it across.” The same model underlies another communication metaphor, the projectile: marketers like to “target” consumers. Politicians try to “get through” to voters as if ads and news releases were armor-piercing shells, and they fire cruise missiles at their enemies to “send them a message.” In all such cases, the underlying message of the communication – and the culture – is: “Do what I want.”

In the Interactive school, the communication model is “constructivist.” The teacher and student are constantly changing roles as each message influences its reply. In effect, both are construing the meaning of their communication, and both may be surprised (and educated) by the meaning that emerges from their dialogue. Under this model, learning outcomes are highly unpredictable; the teacher is therefore much less in control, and much more on terms of equality with the student. Both ways, the underlying message is not “Do what I want,” but: “Is this what you want?”

In Standard culture, the school is essentially a library – because knowledge is scarce and therefore needs to be stored in some convenient central location. This is a natural outcome of early technology, in which every recorded fact is one of a kind and hard to copy when your media are wet clay tablets or sheets of vellum. Even printed books are relatively expensive and most conveniently kept in one location where all can gain access to them. Teachers themselves are walking libraries, repositories of certified knowledge.

The Interactive school, by contrast, is essentially a generator of knowledge--a publishing house. Knowledge is everywhere, as close as the nearest networked computer. Finding what you want can be tricky, but it’s more important to add to the worldwide store of knowledge. Any school with a Website can disseminate its information right around the planet. For now, that information is mostly bureaucratic: how to apply for admission, what the course names are, what Professor Jones’s email address is. But like the grade school that published its student’s cougar essay, more schools will present the work of their students and teachers as original contributions to the world’s body of knowledge – that is, as information made meaningful.

Much of this material will of course be amateurish, redundant, or of very narrow interest. But some of it will be superb, and will make life more interesting for its readers. As school publications become more common, new kinds of online genres will evolve with their own standards and conventions. Students and teachers will strive to meet those standards.

More importantly, a huge population of children, young people, and mature students will have a voice in the general discourse of their communities, both local and worldwide. While much present Internet discourse seems ignorant, crude and even toxic, it will improve thanks to sheer competition.

### **Driven inward, driving outward**

As schools become knowledge generators, another aspect of their culture will change. The Standard school’s culture is relatively passive, driven inward upon itself by external influences. These may be the standards set by politicians and their bureaucracies, the desires of their local communities, or the pressures of professional groups and corporations. A political uproar may, for example, lead to imposing some new element in an already crowded curriculum; the schools have also seen several attempts to expose students to advertising messages in return for donations of free video equipment.

But as they begin to speak for themselves, the schools will become internally driven outward. Students and teachers will call for change (or no change) from within the school, engaging the rest of the community in a debate it has rarely experienced before. This will make many authorities, from principals to school boards to teachers'-union bureaucrats, very nervous. As a former school trustee, I know how flustered boards can be if a school principal goes public about an issue without first clearing it with the board. A whole district full of whistle-blowers and complainers means more political headaches. They will not always be wholesome expressions of democracy: It's very easy to distort an issue, to libel an individual, or generally distract the public from genuine problems.

On balance, however, this change in school culture will be positive. One encouraging sign was the response of Columbine High School to the shootings that shocked the world in April 1999: the school's Website gave it a way to express its members' feelings, and those of people around the planet who emailed their condolences and good wishes. Even in far less dramatic circumstances, schools will be able to reach out and speak to their communities; the communities will be able to respond, creating a dialogue far more valuable than any one-way communication could be.

### **Catastrophic success**

A common criticism of education and educators is that they are pushovers for fads--and so are their political masters. Thirty years ago, it was the open-area classroom, in which several groups of students and teachers tried to function without distracting one another too much. More recently, some schools are promoting "work experience" to equip students for employment, while university professors complain that such experience only deprives students of the study time needed to prepare for post-secondary coursework. Politicians often find the schools more useful as a problem than as a solution, and alternately blast the schools' failings and impose faddish "cures."

This leads to what I call "dynamic stagnation," in which everyone runs around calling conferences, bringing in experts, developing policy papers and new curriculum--only to drop everything when the next government (or the next fad) comes along. Advocates of the last fad are embittered to see their hopes dashed; advocates of the next fad enjoy their brief glory; the majority of teachers, having been through so many of these uproars, ignore it all. To them, dynamic stagnation is like the political campaigns in China--something to occupy the elite while ordinary people get on with their lives and jobs.

With its roots in the computer revolution, the Interactive school is a kind of survivor of this love of fads. Politicians and school bureaucrats like to see shiny new computer labs with big monitors; they make good photo opportunities. It's less glamorous to fund staff training, hardware maintenance, and software updating, so many a school becomes a museum of ancient technology while its teachers return to chalk and talk (if they ever abandoned it in the first place).

An Interactive school, however, can't afford fads. Both progressive and conservative, it prefers incremental improvements on an established foundation. Rather than splurge on expensive new machines and software, it makes do with hard-drive upgrades and the next version of reliable software applications. Computer-loving teachers do not love uncritically. More than most, they know the limits of these stupid machines. They also know that the potential for computers in education is too good to waste on ill-considered projects; failure will only drive their colleagues back to the chalkboard. Therefore they move cautiously, in short steps, toward clearly defined and attainable goals.

### **Answers vs. questions**

Probably connected to the Standard school's role as knowledge repository is the cultural attitude that solutions are already in the library; the trick is in finding them. Hence the Standard school asks: "What's the right answer?" The Interactive school, intensely aware of all the information available, is far more cautious: it wants to know "What's the right question?" This is another cultural difference. In the Standard, teacher-centered school, the student must guess the magic words ("Open sesame," "Rumpelstiltskin," "Charles Darwin") to gain admission to the teacher's adult world of status, power and income. In the Interactive school, teachers and students alike are trying to define and create a world they can share, regardless of status.

Standard and Interactive schools don't just ask different questions; they look in different places for answers. Standard schools study success, while Interactive schools study failure. These are crucial differences. The Standard school doesn't just cut to the chase; it cuts to the clinch at the fadeout. Concerned with right answers, it doesn't want to chase down blind alleys. But in focusing on success, it ignores the lessons of failure, and can create an impression in students' minds that all previous progress was smooth, uninterrupted, and inevitable. If their own progress seems less smooth, students may blame themselves and withdraw from learning altogether – intimidated into failure by the contemplation of success, and thereby undercutting the success of the Standard school itself.

The Interactive school lives by Edison's slogan: "I failed my way to success." Critical analysis thrives on problems, failures, and mistakes. Knowing what went wrong leads to further thought about what might go right next time. Far from being intimidated by failure, Interactive students are energized by it, like players of some multi-level computer game doggedly trying to get to the next level. Perhaps because computers themselves have so often disappointed their users, Interactive schools are also alert to "catastrophic success" – getting what you thought you wanted, and finding yourself unprepared to deal with the conditions you've created.

### **Future or present?**

Standard and Interactive cultures vary in another crucial respect as well. The Standard school is powerfully oriented toward the future, toward laying down foundations for success long after today. Much of the coursework even in elementary schools is academic job-training, designed to equip some tiny fraction of their students to become Ph.D.'s. The vast majority will enter the future with skills that are irrelevant or actually harmful: graduates who accept academic values may think they're failures because they pursue unscholarly lives. Worse yet, they will have learned that learning is not for its own sake, but for some future demand – next semester, next year, next decade – that may never come.

No doubt the readiness to defer gratification is a virtue, but computers are conditioning us for impatience, for getting results right now. The Interactive school likes “just-in-time” learning, when knowledge is immediately applicable and feedback is rapid. The Interactive learner is preparing to meet her own demands, not those of some future thesis supervisor, so she judges the value of what she learns by very different criteria.

## **2. The Roles Of Teachers And Students**

Early in the computer revolution, educators and observers saw that access to online information meant a decentralized school system in which the teacher's role would change from “sage on the stage” to “guide on the side.” Like many insights, this one has taken some time to sink in, and many educators are still wrestling with it – or trying to avoid it altogether. Too often they think the computer threatens them with obsolescence, when it actually makes them more important than ever.

As the central figure in the classroom, the teacher writes the script, sets the stage, provides the props, and directs the actors; in graduate school, the teacher even picks the cast. Being the boss is a burden, but one that millions of educators gladly bear. It also means that students learn early to accept bossing and to carry out orders whose purpose they don't always understand.

This is of course very convenient for their future employers, both civilian and military, because for most of the past century the industrial nations have operated under the “scientific management” theories of Frederick Winslow Taylor. But Taylor, as economist Peter Drucker has pointed out, was concerned with improving productivity of manual workers; in the knowledge-based economy now emerging, Taylorist education is precisely the wrong approach. It is concerned with the process of doing work; for knowledge workers, education should enable them – not their bosses – to define what work is worth doing, and how to go about doing it.

From the Standard-school viewpoint, the Interactive teacher seems to have abdicated responsibility and loosed mere anarchy upon the world. As guide rather than sage, the teacher now appears to let students do whatever they please, regardless of scholarly standards or the needs of future employers.

It is not quite that criminal a reversion to the Summerhill utopianism of the 1960s. A good wilderness guide, after all, doesn't let the clients get into needless trouble. The client may set the destination or experience desired; the guide's job is to advise on the wisdom of that choice and the best means of attaining it. The guide also shares the burdens of the journey, rather than staying back in camp. Far from becoming obsolete, then, the Interactive teacher is more important to the student than ever.

Since the Interactive school still exists in the real world, students have to learn real-world skills, including scholarship, defining and solving problems, and how to get along with one's boss and colleagues. The guide on the side is modeling such skills in the very act of interactive teaching. Most important, the teacher is now modeling *learner* behavior. The learner in turn is learning that learning never stops. Nor does learning stop being surprising, fascinating, and a reliable way to solve problems.

### **Carrot vs. stick**

This leads to a very different role for the student. In the Standard school, fear of failure is a key motivator: Know Chapter 6 by Monday, or the quiz will kill you. Get your report in by Friday or you lose at least one letter grade. Make at least a B average or you'll never get into a decent university.

The Interactive school worries about failure too, but its key motivator is success. Get your facts right, organize them well, use good English, and your report will be good enough to put on the school Website--or in a commercial Webzine. Use what you've learned to create a knockout portfolio, and take your pick of universities and employers. Or start your own business, built on solid information you've researched, analyzed, and judged reliable.

Expecting success doesn't mean shrugging off the threat of failing. As I've noted, Interactive students like to learn from failure. But student motivation in an Interactive school relies far more on the carrot than the stick. The student is fully aware of hazards, and is informed enough to avoid them.

### **Low maintenance vs. high maintenance**

Such behavior reflects two very different changes in the student's attitude, which demand both more and less from the teacher. In the Standard school, "low-maintenance" students are preferred; they listen to the lecture, they read the text, they do well on the quizzes and term papers, and they go away. Like the pioneer housewife, they receive the package happily and don't ask questions or complain.

Low-maintenance students, however, also include those who suffer in silence, who are baffled by the course but discouraged from saying so. Many scrape by with passing grades but emerge no wiser. Only if they flunk does the teacher learn that something went terribly wrong for such students. The FedEx model exempts the teacher from any part in the failure: "I taught him that, but he didn't learn it."

In the Interactive school, however, students make pests of themselves. They are forever raising questions, clarifying issues, cross-examining the teacher. In a Standard classroom such students would be considered an occupational hazard, slowing down the brighter (or less demanding) students and wasting everyone's time. In fact, high-maintenance students are keeping the teacher honest and in tune with the realities of this particular class and its students. This takes a lot of time and energy, but it results in teachers who know just where their students are, and students who know just where their teachers want to go.

### **The self-propelled student**

The second change in student attitude is what I call "self-propulsion." In the Standard school, the teacher is prime mover. We define teaching excellence as "inspirational," some mix of qualities that motivates students to outdo themselves. The qualities may include hectoring, intimidation, flattery, or a gift for standup comedy; invariably they reflect a FedEx, projectile kind of communication that "gets through" the students' passive defenses to achieve the desired results. In effect, the teacher is a superb Taylorist manager, manipulating his workers to maximize productivity and morale whether they want to or not. These results can be impressive, but if the teacher leaves, the student is adrift. We have all experienced the letdown of moving from an inspirational teacher in one class to a dullard in another.

The Interactive school is certainly prepared to prod its students, but it prefers the self-propelled student who is trying to satisfy an inner urge rather than to placate the entertaining tyrant at the front of the classroom. Using the Internet's resources is far easier for the self-propelled, who are likely to be more patient and more determined to hunt down the needed information. It may also be that using the Net actually encourages self-propulsion, by giving students so many opportunities to explore on their own.

If so, many traditional full-frontal teachers are likely to be in trouble. A self-propelled student who is voluntarily in your class is going to do brilliantly because your class is the shortest path to where the student wants to go. But a self-propelled student who must enroll to meet some arbitrary requirement is going to fight you every step of the way.

### **3. The Learning Process**

Given these changes in school culture and the roles of teachers and students, it's predictable that the learning process will change as well. The changes affect administration, direction, and emphasis.

The Standard school runs to a compartmentalized timetable: So many minutes per week for English, biology, history, and math; so many hours per credit; so many credits per semester and to a degree; so much time for the final exam or completion of the dissertation. Everyone scrambles to "cover the material" in the time available, and time is always scarce.

Tasks, not timetables, drive the Interactive school. One does not pull a cake half-baked out of the oven, or stop a sonata in the middle, just because some arbitrary amount of time has passed. One does not compartmentalize skills and tasks; that may aid efficiency on the Taylorist assembly line, but in the medieval craft guild or the modern think tank, everyone can do everything. The American educator Lewis Perelman has advocated “just in time” learning, where students and teachers master facts and skills as they become necessary to completion of some major task – precisely the time when facts and skills are easiest to learn and remember.

### **Timetable vs. task**

Just-in-time learning has an important implication. In Standard schools, learning tends to move from the theoretical to the practical. We learn the principles of multiplication and then apply them to real-world problems like the number of passengers who will fit into three 30-seat buses.

The learning process in the Interactive school, however, moves from the practical to the theoretical. Having experienced some task, teachers and students then pull back from it to see what it shares with other experiences. We can draw here on the scientific “principle of mediocrity”: We are nothing special, so we can assume until evidence shows otherwise that what happens to us will happen to everyone. Having seen how many passengers fit into a bus, we extrapolate the number that will fill three buses.

This approach has its pitfalls, of course. In many cases we may be relying too heavily on a small sample, on anecdotal evidence. But we can test our theory with more practical experience, and change theory when empirical evidence obliges us to.

Another change in the learning process is increased reliance on multimedia over print and chalk. Some students clearly learn better through images or sounds or physical activity; the Standard school tends to discriminate against them, and uses film and audio chiefly as a way to entertain them while the good readers and writers do more serious study in books and other print media.

This is not to say that pointing and clicking one’s way through a CD-ROM encyclopedia, or a Website, is inherently better than paging through a print encyclopedia or magazine article. But the Standard system prefers print-oriented students, some of whom become print-oriented teachers who continue the selection process. As we begin to understand the reality of Howard Gardner’s “multiple intelligences,” we should be developing new methods for teaching to those intelligences. Far from dumbing down our course content, we will be smartening it up.

### **Who defines curriculum?**

The knowledge worker, Peter Drucker tells us, does best under conditions of autonomy, with constant innovation and learning built into the job. So while the Standard teacher defines curriculum, the Interactive teacher is prepared to let students define it – at least older students. Where the teacher clearly has superior knowledge, curriculum is still the teacher’s domain. But it is curriculum in the service of the student and the student’s goals, not in the service of universities, employers, or other outsiders.

Under the Standard model, this seems like a prescription for disaster. The Standard school expects that at the first obstacle, the student will decide, “This is not for me, and I won’t study it unless I have to.” So it makes life very hard for those who don’t apply themselves. In doing so, of course, it teaches students that they should study only under duress. Before long, duress is the only condition under which they can study at all.

But the Interactive school has been encouraging self-propulsion, and has helped to ensure success by treating failures as learning experiences. Show-stopping, demoralizing failures should be rare, and should lead to student self-examination: If I really want to be a physicist, and I really can’t master calculus, what are my motives for becoming a physicist? Can I learn some other body of knowledge that will give me the kind of reward I imagined physics would offer?

### **The skeptical inquirer**

Yet another difference in learning is a move from the Standard emphasis on exposition and narrative to Interactive analysis and skepticism. The Standard school begins with “elementary” principles and chronological sequences, and education critics are often horrified when students display ignorance of, say, the axioms of geometry or the date of the Battle of Hastings. In the Interactive school, students turn to elementary principles and chronology when they need to understand the reasons for their experiences. How do I calculate the area of this field? Why is Chaucer’s language so different from that of the author of Beowulf?

Skepticism is integral to the Interactive learning style. Half a century of TV has taught some of us to believe nothing we see on the screen, and the credibility of the Web is equally dubious. Charlatans, cranks, criminals, bigots and fools have found cyberspace a very liar-friendly environment, and the Interactive school must equip its teachers and students with powerful BS detectors. The Standard school often preaches the virtues of “critical thinking,” but teachers know they would be the first targets of students seriously trained as critical thinkers. Students must then cynically distrust everything they see, hear, and read, which leads them to the ironic apathy of the slacker: “Yeah, right. Whatever.” This is the response of someone who feels no control over his own education, or even of his life.

#### **4. The Politics Of Education**

The shift from Standard to Interactive schools has major political implications both for the schools and for their communities. Traditionally the school has been socially detached, an ivory tower where scholars can contemplate eternal truths without the distractions of the “real world.” A few major economists and scientists may be seconded to government jobs or other real-world duties (not always with happy results), but most are left to contemplate in peace. If they do take part in the political life of their communities, it is on their own time and as a private activity.

The Interactive school is very different. It is socially engaged, learning history not only from books but from the Websites of the Zapatistas and the Serbs. Its metaphor is not the ivory tower but the crowded marketplace, where ideas compete and some unknown innovator may change everything before the day is over.

#### **Reactive or pro-active**

I mentioned earlier that the Standard school is externally driven inward; its politics are therefore reactive, attempts to answer demands from the larger world. The schools desegregate when the courts tell them to; they offer anger-management workshops when student violence and bullying come to public attention. In the Standard culture, no news about the schools is good news, and many educators are actively hostile to any kind of media attention. When outside critics attack the schools, then, educators are automatically in reactive, defensive mode.

In the Interactive school, by contrast, politics is pro-active. Students and teachers alike are publishing their views to the larger community, and those views are sometimes a challenge to the standards and convictions of that community. Debate may be intense, even bitter, but it is an inevitable outcome of a school that reaches out to the world to engage it in a constructive dialogue. This is not to say the school will always be right, or politically more “advanced” than its larger community; when we test new ideas, we often find them wrong. Until they’re actually subjected to debate, however, wrong ideas can look very attractive. Watching them fail is as instructive as any other failure.

#### **The new community**

Traditionally, schools tend to serve specific geographic communities. The elementary serves the neighborhood; the secondary serves the town; the college or university serves the state or province. Only a handful of schools, most of them top universities, might be considered national or international. The Interactive school is equally tied to a geographic community, but it also links to what are called “communities of practice.” Such voluntary associations have been with us for centuries in the form of literary societies, hobbyist groups, or associations based on some shared interest or concern.

Now, however, communities of practice can reach around the planet. They can share ideas and opinions in online listservs, newsgroups, and Websites. A ten-year-old girl in Sundre, Alberta can ask questions of experts in New York or New Delhi – and get answers. The community of practice thrives just as long as its members wish it to. Sometimes that’s just a few weeks, but it may well last for years. The community sets its own standards of discourse, welcomes everyone who meets those standards, and both generates and disseminates new knowledge.

The Interactive school inevitably connects to such communities of practice and makes them part of everyone's education. Teachers share professional concerns (often with student members of teacher listservs). Students go to scholars currently active in the students' fields of interest, and often pick up the scholars' enthusiasm in sharing new discoveries.

As part of this global community, the Interactive school addresses its local community with a new, sometimes threatening confidence. Local standards and values may conflict with those promoted in communities of practice. Students and teachers alike may sometimes feel alienated from their own neighbours by what they've learned from distant colleagues. One person's world authority may be another person's outside troublemaker.

Social alienation may spring from the very existence of communities of practice, regardless of their intellectual content. First, communities of practice enable isolated individuals to find kindred souls far away. The one kid in the school who's interested in Mayan archaeology can now meet dozens of new friends who share his interest; he may therefore care less about his local classmates and teachers.

Second, and probably more critical, communities of practice are very "horizontal." Kids and seniors, amateurs and professionals can all mingle on terms of equality. Where some individuals enjoy more status, it's a kind of meritocracy operated from below: the apprentices and novices defer to the expert solely on grounds of demonstrated expertise. The expert in turn expects to learn from the novices.

This kind of horizontal society is the antithesis of the Standard school's hierarchical politics – and not just because communities of practice don't have bureaucracies. One of the ironies of Standard education is that it awards status to those who don't actually do much or any real educating. School administrators enjoy more prestige and higher incomes than do school teachers. College teachers enjoy more money and status than their elementary and secondary colleagues, while carrying a lower teaching load. University professors teach still less, and enjoy still better status than college teachers. Age is also a factor: the younger the students, the less status in teaching them. Hence the exalted status of the university president. He doesn't teach at all, and the people he doesn't teach are adults.

In the community of practice, however, status is strictly a function of knowing (and doing) more than others with a similar interest. It may be very hard, therefore, for students and teachers in Interactive schools to maintain much respect for the Standard hierarchy.

### **Centrality or marginality**

Geography affects school politics in another important way. Traditionally, schools have felt themselves either central or marginal. Big-city schools tend to get more money, more programs, better teachers – even better experts to deal with the problems of big-city education.

Small-town and rural schools must compete for what's left over, and understandably feel at a disadvantage. When a school district tries to lure teachers with the promise of good hunting and fishing, or a relaxed lifestyle, it's admitting that its schools offer few professional growth opportunities.

The central/marginal conflict operates even outside big cities. When giving a talk in British Columbia's Cariboo region some years ago, I learned that teachers in the tiny schools of Alexis Creek and Lac La Hache were resentful of the resources enjoyed by metropolitan 100 Mile House – a town of just a few thousand inhabitants. Marginality also seems to aggravate itself. The brightest rural students go off to the big-city colleges and universities, and then to big-city careers; after all, the market for their new skills is in the city.

But the Interactive school no longer operates under the metaphor of the page, in which the important material is in the center while the margin is a blank. A school in Alexis Creek could become a world "center" for discussion of cattle ranching or ozone depletion or Latin American magic realism. Big-city students might bookmark the little school's Website as a research source for such topics (perhaps while complaining about their own school's lack of enterprise).

This offers a great opportunity for small-town and rural schools. They will be able to offer relaxed lifestyles plus access to the world's intellectual resources. Who would choose big-city smog and traffic jams if the city's resources were instantly available online in tranquil Alexis Creek? Millions already telecommute; "telecommunities" are emerging that have little reference to geography.

### **5. A New Utopia?**

Of course no school is "pure" Standard, and no school will ever be "pure" Interactive. I have exaggerated the traits of the two, though not by much. I am not advocating the mass conversion of our Standard schools into some Interactively utopian system. The Standard system has much to recommend it, and its stubborn conservatism, beneath all the fads, make it likely to survive for a long time to come. The Interactive system, for all its attractions, depends for success on teachers and students highly motivated by the prospect of success. Without such prospects, teachers and students alike will lapse back into motivation by fear of failure.

Nor is the Interactive system some inevitable outcome of ever-improving technology. The argument from historical determinism went out with Marxism, and it is no more persuasive when it comes from advocates of free-market theology or from technophiles. Interactive schools will arise and flourish if teachers and students (and their communities) find a genuine benefit in them.

Surprisingly, the greatest benefit may not come from the ability to link to Websites in Zanzibar and Auckland, but from a renewed understanding, in the Standard schools, of the limits of the FedEx communication model. When we have learned to construe new meanings by discourse with people in cyberspace, and surprised ourselves with what we've learned, we may pay more attention to the discourse of people in our own classrooms. What we have learned in communities of practice will enable us to live more intensely and humanely, whatever the geographical community we may be living in. And that, in turn, may lead to construing a new meaning not only for education, but for the way we live both individually and in communities – freely, openly, courageously.

**Standard Instrumental versus Interactive Constructivist  
Communication Models**

**Standard Model**

FedEx delivery (one-way)  
Library/Knowledge repository  
What's the right answer?  
Learn from success  
Future-oriented

Sage on the stage/Boss

Motivation: fear of failure  
Low maintenance  
Boss-propelled

Theory to practice  
Authority-defined curriculum

Ivory tower  
Reactive  
Hierarchical  
"Do as I say!"

**Interactive Model**

**Culture:**

Conversation (two-way)  
Publisher/Knowledge generator  
What's the right question?  
Learn from failure  
Present-oriented

**Authority:**

Guide on the side/Mentor

**Worker:**

Motivation: prospect of success  
High maintenance  
Self-propelled

**Learning:**

Practice to theory  
Worker-defined curriculum

**Politics:**

Marketplace  
Pro-active  
Horizontal  
"Is this what you want?"