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## The Future of Learning

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# The Future of Learning

*Robert B. Reich*

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*As part of UMass Boston's recent celebration to mark the inauguration of Chancellor Michael F. Collins, M.D., the Division of Corporate, Continuing and Distance Education (CCDE) hosted a "virtual symposium" featuring Robert B. Reich. Between April 24 and May 8, CCDE posted a streaming video and a downloadable audio file of a presentation that Professor Reich had delivered on April 11, 2006 at the national conference of the University Continuing Education Association. This talk was supplemented, on May 3, by a live teleconferencing Q&A session with Professor Reich and about fifty UMass Boston graduate students.*

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**A**s someone who has been involved with economic policy and who thinks a great deal about education and the economy, let me begin by assuring you that I believe the purpose of education is not primarily economic. Like you, I am engaged in education because it is a way not only to ensure that people have full lives, but also to help people become engaged members of their communities. If we lose sight of the function of education in preparing students to become whole people and better citizens, then we have ignored one of the most fundamental aspects of education. Having said that, I would like to address the economic aspects of the future of learning because that is an area in which I have expertise and interest.

What we are seeing in this country and around the world is a revolution in how education is thought about with regard to economic development, how education is provided utilizing new technologies, even how education is understood as a vehicle that enables people to participate in economic functions and assume economic roles. More than ever before, it is a vehicle of upward mobility at a time when upward mobility is more important than ever.

We can best understand this by discussing three major vectors or trends that are shaping continuing and higher education in this country and around

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the world. They are so central to education that we take them for granted; however, we often comprehend them inappropriately or wrongly.

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### **Globalization**

The first vector is globalization. It is rare that an expression goes from obscurity to meaninglessness without passing through coherence, but that has been the case with globalization. Most of us think in terms of trade between people over there — foreigners — and people over here — us. Whether we live in the United States, France, Germany, or the United Kingdom, we think in terms of national boundaries — “us” versus “them,” our companies versus everyone else’s. The cartoon version of globalization accentuates national competitiveness, a term repeatedly used. It implies that our ability to compete as a national entity is measured by how much more our firms and employees can sell to theirs, and that our economy will be successful if we sell more to them than they to us.

In cartoonland, only a limited number of jobs exist; if we do not get them, they will. The number of good jobs, by deduction, is even more limited. The way that we increase our share of jobs — at their expense — is by being better at selling and trading: More trade means more jobs, so in cartoonland the North American Free Trade Act means more jobs in and for the United States.

But what really happens? First, the idea that there are American companies or Japanese or French companies is less and less true, and, more important, less relevant. A decade ago, when I was Secretary of Labor, our family needed a car. I looked around and kicked tires, did some comparison shopping, and found a car that met our family’s needs — a Toyota. A considerate husband, I talked to my wife about it. She agreed that it was a fine car. But then she said, “Let me remind you that you’re Secretary of Labor . . . of the United States.” My wife is quite an astute politician. Inevitably, we went to an American showroom and ended up buying a Ford. I felt pretty good about having done the right thing. As we bought it, out of curiosity I asked the showroom dealer, “I know this has an American nameplate, but can you tell me, was this car made in the United States by American workers?” He looked at me for a long instant trying to decide where I was coming from, smiled, and said, “What’s your preference?” The reality is that these cars come from all over the world; their components come from everywhere through “global supply chains.” This is business-speak to describe how things are built, things are serviced, and services are added to the value of things all over the place. What it means is that your standard of living will depend less on the profitability of companies headquartered or doing business where you live — city, region, state, or country — and more on the value that we add to an increasingly global system of production.

This added value determines our compensation, wealth, income — our economic wellbeing. If we add a lot of value, we will do fine, no matter which companies do what. All of the talk about outsourcing fails to take this into account. While American-based firms are outsourcing, foreign firms are coming to the United States to make or buy things here. When I lived in Cambridge, Massachusetts, the German firm Siemens had a huge research facility not far from where I lived. Why? Because Cambridge is the home of Harvard and MIT. If you want to have a research facility, one of the choice locations is where Harvard and MIT are located; whether you are Siemens, Microsoft, Nokia, you want to be where the brains and human capital are. That is true of every large university community in the world; if you know it, they will come.

A few years ago, I had to have my hips replaced. The new hips are beautiful, just marvels of technology and medicine. After they were put in, I asked the people at Brigham and Women's Hospital where my hips had been made. I was told that my hips were designed in France and fabricated in Germany. So I now have French designer hips. But the total value of the hips was not only the French design and the German fabrication; it also included the service of putting in the hips. In fact, in terms of value added, most of the cost of the hips came from the extraordinary surgical skill of the doctors at an American hospital. People from all over the world come to Brigham and Women's for services like hip surgery.

The point is that the expertise in design, fabrication, and surgery is a worldwide phenomenon. I am literally the embodiment of an international system of production and services. People believe falsely that products are made wherever it can be done most cheaply; everyone assumes that is why China manufactures so many goods. But my hips were made in Germany, not China. Why? What's the difference between my hips and the things that you find in Wal-Mart? It is that global companies and global capital will make things wherever they will get the highest return on investment. Cheap labor is only one of the factors; expertise is the other. A huge amount of capital flows into Germany, the United States, France — places where the cost of labor is relatively high — because of the expertise, because of the value added by individuals possessing talent and knowledge.

Our world is not engaged in a race to the bottom in terms of wages; if this were true, Bangladesh would be the manufacturing and service capital of the world. China itself is moving some production to Vietnam because Chinese wages are rising. But more important, the Chinese are starting to do different kinds of work, not necessarily losing jobs. In India, Bangalore has centers of high technology for research and development and advanced software design and production. Every company in the world is going to places like Bangalore and China in search of talent, weighing the variables of cost and expertise. If they can get very low cost and good expertise or

exceptional expertise at medium cost, that is where they will go. And if they can only get the expertise they need at high wages, then they will end up there.

Companies also consider proximity to customers. They want to be close to customers who are demanding, always wanting complicated features for which they might be willing to pay more. So we need not worry about outsourcing or insourcing; they are characteristics of worldwide value-added chains. Every company in the world is going every place. The value that we add — the expertise, insight, problem-solving — will determine the standard of living.

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### **Technology**

The second vector has to do with technological change. Everyone talks about it, but few understand what it means. Yesterday, to get here by plane, I went to a kiosk to check myself in. Nowadays, most people do not have to deal with airline personnel to check in; compared to a couple of years ago, there is almost no one at the counter. When I tell my students that it was not so long ago that I had to deal with a person in order to get money or put it into my account, they find it hard to believe. Telephone operators, bank tellers, airline counter clerks, service station attendants — all sorts of people have been replaced by technology, by computers and software.

Consider the manufacturing sector. Thirty years ago, about 20 percent of our economy was based on manufacturing; in our present-day economy, the part of our gross domestic product based on manufacturing is about 20 percent. How can that be? Manufacturing is shrinking in terms of jobs, but not in terms of output. Agriculture is still a big percentage of our output, though only three percent of Americans work on farms. Why is that? It is because productivity soared.

One of the great myths is that the United States lost manufacturing jobs to Mexico and China. It is true that some companies put manufacturing jobs in places where they could be done more cheaply, but we also lost jobs because of robots and numerically controlled machine tools. Not too long ago I was asked to preside at a ribbon-cutting ceremony of a new factory in the Midwest. The governor of the state was proud of having won the bidding war among states to lure the company from Europe. Even before I arrived for the ceremony, the factory was running at full capacity. When I went into the facility to see what was going on, I naturally looked for people — assembly line workers, the kind who used to work in factories. In all, I counted eleven warm bodies, all technicians sitting in front of screens, working to improve the algorithms that were running the manufacturing process. The robots and the tools did all the production.

Anyone who believes that we are losing jobs because production headed to Mexico or China has no clue about what is going on within the facilities that are left here. Even if we could erect a wall to manufacturing here in the United States, we would still lose jobs because technology is taking them away. China is losing manufacturing jobs. How is this possible? It is because until fifteen years ago, Chinese factories were inefficient state-run enterprises. But as more technology is finding its way into Chinese factories, they are becoming more efficient and productive. When productivity goes up, it means that fewer people are needed to produce the same volume of goods. So although China is doing more of the world's manufacturing, the number of people responsible for manufacturing is decreasing.

Technology is a massive agent of change that cannot be divorced from globalization. One reason that we have a tight, interwoven network of global relationships that allows capital to flow quickly to where it can do something the most cheaply and best is improved telecommunications; everyone is within reach. A typical American organization of the 1950s or 1960s, whether in business or higher education, resembled a pyramid. At the top, a few people were the fount of all wisdom and insight. Beneath them were middle-level managers whose job was to implement the wise initiatives of the people at the top. At the bottom were a lot of people doing the same thing over and over. Most organizations were dominated by the theory of economies of scale: the more identical things you could produce, the lower the fixed costs because fixed costs could be amortized over more items.

This was the central creed of American business in the 1950s and 1960s: high-volume production that was standardized and stable, mass production. This created an economy of mass consumption by the 1950s. Within this system of mass production were unionized workers; 35 percent of the American workforce was unionized during the 1950s, a sufficiently large percentage to set wages for most of the country. Big business was content and able to settle for fairly generous wages and benefits during this period because there were not that many competitors in every industry, and most of the competitors in the automotive, chemical manufacturing, steelmaking, and appliance-making industries dealt with the same unions. The cost of wage and benefit agreements could be passed along to consumers. By no means was it a golden age, certainly not for women and minorities, who were having a difficult time breaking into the system, but the basic economic model worked well: The system of mass production generated high wages for the middle class, who could use the wages to buy the products of the system.

That model no longer works, mainly because of technology. Technology allows smaller production runs with the same economies of production scale. New technologies allow companies to make more tailored products for particular end uses without sacrificing economies of scale. Computers and software allow as few as ten of a product to be made at low cost. That means

that anyone can enter anyone else's business arena. Economies of scale are no longer terribly important. Perhaps they matter to Wal-Mart when it negotiates with suppliers, but economies of scale in terms of production are not what they used to be.

In every industry there are not three, four, or five major players; no one talks about oligopolies any more, clusters of a handful of major players that coordinated production and output. They could do this because nobody else could afford to enter their industry because of the barriers posed by economies of scale. But now there is so much and such intense competition that no industry is limited to a few competitors; every industry has 10, 15, 20 global competitors. The traditional entry barriers have dropped. The new barriers are in the form of innovation.

The way for a new competitor to get in is to be faster, cheaper, better, more innovative. Through a website, the entire world can discover a new invention within a month or two. In this new economy, investors, consumers, and buyers now have all sorts of ways of discovering new products from emerging companies. These companies, by the way, cannot rely on a pyramid-shaped organizational structure, because it takes too much time for ideas or information to get from the bottom to the top and then back down again.

New economy organizations are highly flexible and adaptable, and necessarily flatter in hierarchy. Innovators are to be found at all levels — problem solvers, problem identifiers. These are not necessarily software firms, or the likes of Yahoo or Google; these characteristics extend to all parts of the economy, including education.

Technology has shifted the barriers to entry from high-volume to high-value, from economies of scale to innovation. In the old economy, the people at the top of the organization needed a college education because they made strategic decisions. Most of the people in the middle — the implementers — could have used a college degree, but it was not always necessary. The blue-collar workers at the bottom did the same tasks repetitively and did not need much in the way of education. They needed to be compliant and reliable because they would be doing the same things for forty years. At the end of their work life, they could look forward to retirement and Social Security.

In the economy that we now find ourselves, blue-collar workers are being replaced by people all over the world who are willing and eager to work for a fraction of their wages or by technology. These people, who used to be paid pretty well and were protected by unions are now in the local service economy. That is where all the "routine" workers have ended up: retail, restaurant, hotel, hospital, surface transportation, building and construction, child care, elder care. They do not compete with people from elsewhere in the world because they perform a localized

function. Nor are they competing with technology because the essence of what they do is to provide personal services locally. The problem is that these jobs do not pay nearly as well as the old economy's middle-class jobs.

In a system that depends on innovation, unlike the mass production system, fewer than 8 percent of workers are in unions. The people who are in the innovation sector have college and graduate degrees; they are not paid to take orders, they identify and solve problems, recognize patterns, perform experiments, think critically, and collaborate. Their education is very different from that of the old economy.

It is quite understandable why incomes and wages are diverging as fast as they are in the United States and in almost every so-called advanced industrial society. Incomes, wages, and wealth diverge because there is a greater demand for innovators, who are the key to competitive advantage, and less demand for people who perform routine tasks. As more people enter the local service economy, the competition heats up. It is true that immigrants entering the workforce exert downward pressure, but the members of the local service economy were not doing well to begin with. Even without an influx of new immigrants, their wages would be depressed because so many people, most without college degrees, are in the labor pool.

A fifth of the American population is able to function in the new economy, and a tenth can do it well. For these happy few, wages and benefits keep on going up. Globalization and technical change work to their benefit. Globalization means a larger market for their innovations; technology means that their ideas have greater leverage and currency. Sitting at a computer, with a single click you can send your ideas anywhere around the world. This is a world of symbols and analysis, innovation, creativity, a world of constant and continuous change in response to developing markets. But globalization and technology work against people in the world of routine work. Hence the increasing gap in wealth, income, and even opportunities.

Other things come into play; it is not all about globalization and technology. There are more concentrations of poverty than ever in the United States. It is hard for people in geographic concentrations of poverty to be exposed to models of adults who have been able to lift themselves up and out. In addition to the absence of successful role models, the schools in these areas are hamstrung by low and fragile tax bases. These schools cannot provide nearly the quality of education that is to be found in the more elite suburbs and private schools whose graduates go to good colleges and universities. The children of the service economy workers are not going to college, or if they are, they have a hard time financing their education.



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## **Demographics**

The third vector is demographics. Demographics has a certain predictability. Immigration may be a wild card, but we can predict the impact of the baby boom generation. We know that 76 percent of the people born between 1946 and 1964 will reach retirement age within seven years, at which point they will face a huge problem because they have not saved enough. Baby boomers assumed that the trajectory of their earnings would follow that of their parents; in fact, the trajectory of the boomers' income has been flat, and median wages adjusted for inflation are going down. People in their fifties are beginning to realize that their retirement will not allow them to lead the kinds of lives they expected. There are strains on personal finances and concerns about the future of social security.

As a former trustee of the Social Security Trust Fund, I was privy to conversations about social security. The news is not bad. The social security actuaries have been using conservative estimates of economic growth, and the predictions of the time when the fund will run out of money are based on the assumptions that the United States economy will grow by 2.3 percent a year over the next seventy-five years. But historically, since the Civil War, the average yearly growth has been 3 percent. Even if we assume 2.8 percent, the so-called crisis in social security disappears. This is not to say that we should not be worried about the future of government retirement programs such as Medicare, which will be unaffordable, but assumptions about the actual rate of growth of our economy offer some relief.

Some of that growth has to do with technological change, but also population growth through immigration. Currently 12 percent of the population was not born in the United States, a relatively high figure. Like the 1880s and 1890s, when the percentage of immigrants was at its peak, many of the current newcomers do not have much education. That adds a burden to our systems of education and social services, but at the same time, the people who get here are among the most ambitious in our country. You cannot teach ambition, one of the critical ingredients of success in America as determined by upward mobility. There is every reason to believe that the people who are coming here will, like previous waves of immigrants, add much more to society in a few years. And we need them.

Underlying all these trends — globalization, technological change, demographics — is education, not just primary and secondary education, but also early childhood education. We need to rethink the way we characterize educational development, starting with zero to five. Every dollar spent on children before the age of five will reap huge returns on investment. Every child today needs some education beyond K through 12; it may not necessarily be a college degree, but some training in an area of expertise, technology, or industry that can be the base for continuous learning.

Most of us are smart enough to know that everything we learn today may be obsolete in three to five years. What we need to teach is not a body of knowledge that students will retain forever, but effective ways of thinking. We need to give them the tools and ways of understanding that will help them continue to learn. The kind of testing that goes on nowadays in many of our schools mainly teaches students how to take multiple-choice tests. Life is not about taking multiple-choice tests, it is about learning to think.

Exams are not bad; they help to benchmark, ensure that students are learning what they should, and keep people accountable, but we have gone overboard. We need to teach people about problem identification, problem solving, experimentation, the ways that people learn to be innovative and creative. When I visit schools today, I find that not much has changed from my educational experience. That is nostalgically satisfying, but frightening when I think about the future of our economy and what is happening in the world today. So many terminally bored children are marking time in classrooms. Outside of the classroom, those same children show creativity and imagination; some of the games that they play are so complicated that it is obvious that these children are capable of much more. They could be creating, if not leading the world of the future, but what is being done to them in their classrooms is shameful.

When he was sixteen, one of my sons came to me and said he was leaving school. He had talked to his teachers, and they agreed with him. His grades were excellent, but he felt that he was not getting anything out of his classes. He assured me that he was not acting out; he wanted to pursue his creative passions, whether as an actor or director, or through the medium of the Internet. He hoped to learn in more formal settings in the future, but at that time, he was anxious to do something. He already had a job, an apartment, and sufficient finances to live independently. My wife and I had long discussions about this, and despite my finest reasoning about the importance of graduating high school and getting a college degree, he was bent on cultivating his creativity. Five years later, at the age of twenty-one, he has maintained that earlier passion, and by any internal or external benchmarks of success, he has been successful. He earned a GED along the way, and takes courses when he can, and even teaches. He is more involved with education, innovation, and creativity than I at his age.

The point is that there are many different ways of learning; Howard Gardner told us that years ago when he wrote about multiple intelligences. Unfortunately, while the economy has been transformed, our educational institutions have remained unchanged. K through 12 and higher education are still designed for the old high-volume, standardized, stable mass production system: a top-down, regimented system where everyone does the same thing, learns a uniform curriculum, graduates at the same age after going

through the same sequences, as in an assembly line. If we took seriously the implications of a world of continuous change, innovation, and creativity, our educational system would look very different. Even at the university level, things have not changed much since my undergraduate years; instead, departments have become silos, with little interaction between departments. What is needed is a much more open and varied system featuring more choices and more opportunities at various times and places.

The new economy offers more paths of innovation and creativity than ever, more opportunities to succeed for those who have passion and creativity. Education can bring this out in students, but only if it is geared toward understanding their passion and needs over a lifetime. All of us will be involved in the business of lifelong education because globalization, innovation, and demographics require it. Learning does not and cannot end at the age of twenty-two, thirty-eight, forty-five, sixty, or eighty.

The joy, passion, and importance of learning will spread throughout our lifetime, and not only in this country, but all over the world. As educators, those of you in continuing education need to be evangelists to make sure that others understand these dynamics. We need to create opportunities for all our children, all of our people. Many Americans are sinking, the gap is growing; it is not healthy for our society. It is a waste, especially since the number of good jobs is unlimited. There is no limit to the ingenuity of the human mind or to the needs of human beings, and when ingenuity and needs are combined, the opportunities for success are immense. But it all begins and ends with the right kind of learning.

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