Roles of IT in Improving Our Educational System. Part 8: 
The Innovative Educator's Dilemma


*The Innovator’s Dilemma* (Christensen, 2000) is one of the most thought-provoking books I have read in the past year. Christensen is a business professor and consultant. His work explores the effects that changing technology has on established businesses.

For example, consider IBM during the time that the microcomputer was being developed. IBM dominated the mainframe computer market and was considered a model of a well-run corporation. IBM had excellent research facilities with many brilliant researchers and developers. It had the technological knowledge and the capital to develop a microcomputer and to immediately control that market.

However, microcomputers were clearly inferior to mainframe computers. Many people considered them to be “toy” computers. These toy computers did not meet the needs of IBM customers. The microcomputer market was tiny, and initial profits were very small.

As the microcomputer market began to grow, IBM faced a serious dilemma. Should it invest its resources in developing and marketing a product that competed with its other products—especially at a time when the other products dominated the worldwide computer market and were highly profitable? Eventually IBM compromised by putting out a “PC” that was inferior to some of the existing microcomputers on the market and used a disk operating system from a fledgling company named Microsoft. IBM, with its superior marketing skills and excellent reputation, felt it would be able to gain a significant market share in microcomputers and not disrupt its existing business.

Most of us know some of the results of that business decision. Microcomputers continued to gain in power and became useful throughout the business world. Microsoft grew to be a worldwide powerhouse in microcomputer operating systems and other microcomputer software. A consequence of not making a good accommodation to microcomputers is that IBM eventually went through a long period of serious business decline.

Christensen analyzes a number of examples of major companies faced with the dilemma of technological innovation. He shows that time after time, well managed and successful companies have been severely damaged—indeed, often driven into bankruptcy—by not making good accommodations to changing technology. This is not just a computer technology phenomenon. Consider the steam-shovel types of digging equipment that use cables and winches to move earth. Very little of this type of equipment still exists, because it has been replaced by hydraulic-based earth-moving equipment. Very few of the companies that made this earth-moving equipment survived the transition.
Relevance to Education

A strong parallel exists between the problems innovation brings to business and those it brings to various components of our educational system.

To begin, let’s look at our educational “system” about 5,000 years ago, just before writing and mathematics were invented. Until then, the educational system consisted of a combination of informal learning and apprenticeship-based learning. The agricultural age had existed for about 5,000 years, city-states were growing, and businesses were expanding. The growing city-states and businesses faced information storage and processing problems that could not be solved by training people to be better at memorizing and at carrying out computations in their heads.

Writing and mathematics are powerful aids in addressing information problems. In many information processing tasks, basic literacy and numeracy skills empower a person to far outperform one who lacks such knowledge and skills. Thus, the innovations of writing and mathematics severely damaged the businesses of people who made a living through mental storage and processing of information. The new information technologies were so powerful that formal education—with schools somewhat like we still have today—developed.

Why Are Schools Like They Are?

Our current formal educational system is based on 5,000 years of experience in meeting the needs of its customers. During this time, there have been advantages of having students physically come together in a school and in classrooms. There has been an economy of scale in having a group of students all learning the same thing at the same time. There has been an economy of scale in having a teacher, supported by a few textbooks and a small library, be the primary source of information.

If we go back about two centuries, we are at the time the industrial age was first emerging in England. The industrial age led to greatly expanding the public school system and schools having a “factory-like” design. The idea was that the school system could mass-produce educated students, somewhat like factories mass-produce physical goods. Such ideas continue to play a major role in standards-based education and in national and statewide assessments.

The Innovative Educator’s Dilemma

Individual teachers, schools, and school systems are all facing the innovator’s dilemma described by Clayton Christensen. To briefly summarize, we know that IT provides powerful mind tools that are clearly relevant to educators and to our formal education system. Many IT-savvy educators can imagine an educational system that is significantly different from what we have today, one in which IT obviates many of the major design considerations that led to our current educational system.

But, consider an individual school or an individual school system contemplating a significant change to accommodate and build upon IT. The school or school district is faced by the dilemma that any serious attempts to change will:

1. Divert resources being used to maintain and incrementally improve what is currently being done.
2. Create dissatisfaction among some major “customers” (stakeholders) such as political groups, business groups, parents, educators, and students.
3. Create competition for the current ways of doing things.
As with IBM at the time microcomputers were being developed, many individual schools and school districts have the knowledge, skills, and capacity for the significant changes needed to accommodate the IT innovation. However, the pressures to change cannot overcome the pressures for business as usual, with its modest incremental changes to accommodate the customers.

What to Do?

Christensen provides some interesting insights into a possible solution to the dilemma created by technological innovations in business. In essence, he suggests that a company should create a relatively independent, wholly owned subsidiary. IBM, for example, could have created a “child,” a microcomputer company that was nurtured and encouraged so that it might eventually compete with the parent company. The microcomputer company would be provided with sufficient capital, researchers, developers, leaders, and other staff needed to get started. The goal of the new company would be to be very successful relative to all existing microcomputer companies in the field and to eventually compete successfully with the parent company. Indeed, the new company might eventually surpass its parent. (From a stockholder point of view, because the stockholders own both the parent and the child, this is not a financial disaster.)

What would this approach mean in terms of our public education system? It is easiest to envision it at a district level. School districts can readily create new schools (for example, schools within schools) that have a significant level of independence. Indeed, this is a relatively common occurrence, and these new schools are often called alternative schools or magnet schools.

The new school needs startup capital and other startup resources; it should be expected that its initial costs per student will exceed those of the other schools in the district. The new school needs to be designed so that it can develop its own customer base, compete for market share, and succeed if it is able to effectively compete. The new school needs to be unshackled from the myriad of rules, regulations, and traditional ways of designing an educational system—it must be allowed and encouraged to deviate significantly from the status quo.

A district-created new school is wholly owned by the school district—it is part of it. Some of these new schools will succeed, and others will fail. The approach being described here provides a safety net for students who decide to move into the new schools. It provides a safety net for the parent school district, as student income is not lost to competing educational systems. It allows a school district to change significantly over time, but in an incremental manner.

Contrast with Charter Schools

Over the past few years, a charter school movement has grown significantly in the United States. The federal government has provided a substantial amount of money for aid and encouragement designed to produce 3,000 charter schools. From a business point of view, it is as if the federal government is helping to create 3,000 companies that compete with the existing companies we call “public schools.” The business-oriented thinking is that these new schools will effectively compete with the existing public school system, eventually leading to significant improvements in that system.

Of course, an alternative outcome is that the charter schools will wipe out our current system. This alternative is supported by the many business examples provided in The Innovator’s Dilemma (Christensen, 2000). I find it interesting to try to understand why our federal
government chose to pursue a policy that could well lead to the destruction of what has been a very successful “company”—our public school system.

**Final Remarks**

The field of IT use in education is still in its infancy. IT provides tools that can help translate the Science of Teaching and Learning into effective educational practice. Our current public educational system is on a cusp. On one side of the cusp lie significant improvements in the quality of education being received by our children. On the other side lie major disruptions and perhaps the decline of our current public education system.

**Reference**


**Retrospective Comments Added 3/26/03**

Christensen's book is still quite popular. I noticed it in the Business Weekly bestseller list a week or so ago.

During the past few years, Christensen was involved in the development of an investment company that followed his general ideas on the selection of stocks to buy. His company has not done well. (Remember, this has been a time of very extensive decline in the stock markets.) [Click here](#) to read more about Christensen.

We now have several more years of experience with Charter Schools, and the Federal Government is continuing to fund the startup of new Charter Schools. So far, there is relatively little evidence to suggest that the Charter School Movement is making a significant contribution toward improving our country’s educational system.