Beyond Technology to the New Literacy

by Ian Jukes & Ted McCain

Synopsis:

Where is the long-awaited technological revolution in education? Twenty years and a hundred billion dollars of spending later, technology remains on the periphery of education. There continues to be a fundamental abyss of misunderstanding about the role that technology can and should play in student learning. How do we get beyond cards and cables, hardware and software,input and output, RAM and ROM to the real issues that must be addressed - curriculum, strategic teaching, strategic learning, staff development and authentic assessment? What are the "new basics" for our students and teachers? How do we move our educational system from where it is to where it needs to be? How do we move from hardware to headware? This presentation outlines how we move beyond technology to the new literacy.

Handout:

As accidental early adopters, we blundered into our own personal discoveries of the power of computers as an instructional tool. Sadder but hopefully somewhat wiser, we're now twenty years on with the use of computers in the curriculum. Yet recently, we have become troubled by the findings of several studies that seem to indicate that, in general, the vast investments made in buying computers for the classroom have been largely ineffective in enhancing student learning. Granted, the findings also show beyond a shadow of a doubt that the problem lies not with the tools, but with the application of the tools. Used appropriately as a tool of discovery computers can transform the learning experience. But this hasn't generally happened.

Twenty years and billions of dollars later, one has to wonder where the long-promised revolution is. Today, the use of technology remains on the periphery of education. There remains a fundamental abyss of misunderstanding as to the role that technology can and should play in student learning. After what I believe has been *years* of healthy discussion about the real role of technology in the learning process, we continue to be absolutely astonished at the number of folks both inside and outside education who just don't seem to get it – who suffer from what we affectionately call NFI (No Frigging Idea!) As a result – and to put it mildly – we're mad as hell and just not willing to take it any longer. It's time to put several myths about the role of technology in learning to rest forever.

First and foremost, computers and all of those amazing little gadgets that have been cascading into our lives will never replace teachers. While they are remarkably powerful, the bottom line is that we could put a state-of-the-art piece of technology on the desk of every student, and every teacher in every school - even, God forbid, on the desks of principals and superintendents – and if that's all we do, the only thing that will change is that the power bills will get much bigger. Technology cannot and should not drive learning, curriculum and effective instructional strategies drive learning. We assert that any teacher who can be replaced by a computer *deserves* to be.

Second, despite all of their growing power and amazing capabilities, computers do not displace the need to read. Even if the new multimedia machines are dazzling, it doesn't mean that the alphabet and language are obsolete. We have yet to develop computers that don't depend on letters, words and sentences. This should readily apparent to anyone who has learned to use a piece of software or

new hardware from a manual either in book form or from a screen. In an increasingly complex world, using any aspect of a computer demands and will continue to demand excellent reading skills. As technology continues to methodically seep into our lives, computers become the new way to use even the simplest manual tools - drill presses, lathes, welders, saws as well as everything from complex information systems to microwaves, VCRs and cellular phones. In this new world laborers and learners must increasingly use their minds more than their hand. In the Information Age, reading will be a critical skill. High literacy rates will separate countries that can aggressively move forward from those that will be left behind.

Third, computers will not replace writing either. They will certainly make it easier to write and to move the written word from place to place. They can even check our spelling and to a degree our grammar. But they won't replace writing. For knowledge workers, business people, and professionals, writing will remain a primary means of recording and communicating information. While automated interpreting telephony (alias voiceprint) shows great promise for moving us from the writing process to the speaking process, this capability is still in its infancy. Even though multimedia provides us with the ability to provide four flavors of information (numbers, letters, sounds and images) it will be some time before we see web sites, manuals or even computer-generated designs for cars, planes and buildings without a wealth of accompanying text. Despite the overnight emergence of powerful new communications devices, it will be a long time before business research, reports and presentations lose all vestiges of writing. Consequently, it's safe to assume that this is one skill even our grandchildren will still need in abundance. The ability to produce clear, concise high quality written material will remain a primary skill for all of us well into the future.

Fourth, numeracy will remain a critical competency. Numeracy is so important, so fundamental to a high-tech society that the need for it should be obvious to everyone. Even the most pedestrian of tasks, such as counting your change from a purchase at the corner store requires numeracy skills – and this will remain the case even when money becomes electronic credits. But for numbers to have meaning, our minds must be able to relate them to the physical world. We need numbers to count things, measure distance, and track time. On a calculator the difference between 10 and 1000 is a keying error - nothing more. It has no meaning to the user. Although most people would eventually understand the difference between 10 dollars and 1000, could they detect the difference between 10 and 1000 microfarads). Yet such a difference was undetected, the error could completely invalidate a statistical analysis, destroy a research project or turn a new product to trash. Unless people learn to do math in their minds at an early age, numbers are just numbers. In fact they are much more. They are numeric representations of the world around us. Calculators are only a tool. In unskilled hands, they become fraught with problems - like computers they are not a replacement for the ability to think.

As we move into a future that is zooming ahead at the speed of light, computers will be a tremendous tool for teaching the new basic skills for the new age in which we will live. But it would be beyond science fiction to believe that these devices will make reading, writing and numeracy obsolete. The computer does not preclude the need for basic skills. On the contrary, the need for people to have a solid foundation in basic skills will be heightened in the Information Age. Computers, the World Wide Web and all of the magical new electronic devices are powerful new tools, but they can't think. Computers have already helped mankind achieve much and will be central to our future progress, yet we must guard against being seduced by technodrool and technolust, and in doing so, miss the point.

Computers are not a substitute for teachers and education - they are a powerful tool to support and stimulate education. But they are not a substitute for people with skills and experience - they can only enhance the abilities of those who are already skilled. Those who believe that computers solve problems are sorely mistaken. Technology, regardless of how sophisticated and powerful, simply helps people, business and industry to solve their own problems. Computers will forever remain a tool of mankind. They will never replace the human spirit, skill & perseverance. For this reason, educators must strongly support the structured teaching of basic skills. As we enter an age of unprecedented technological sophistication, the need for highly skilled people will be unparalleled. We are at a difficult crossroads; for we need to maintain one foot firmly planted in the basics of the past while the other races ahead to the future - it will be a gut wrenching experience.

Education is the foundation of our society. We must understand that any society that relies on a highly complex technological infrastructure that includes highways, railways, airlines, electrical grids, telephones, networks, satellites and innumerable other high technology items - needs highly competent people to sustain, manage and develop that society. In the high technology global market, a nation's ability to compete rests solely on the skill and dedication of its citizens. To be sure, there are many other factors which determine a country's success in the global arena, but if skills and dedication are missing, the rest are insignificant. When these elements are present, they can overcome shortcomings in other areas.

If the new technology can improve education - and it can- it would be scandalous not to pursue it zealously. If it can capture the interest of our young people, keep them in school longer and teach them more while they are there, it will not only change the educational establishment, it will change our society and our lives.

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