

Welcome to the Wired World

by Ian Jukes & Ted McCain

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Synopsis:

Ready or not, here comes the Communication Age. Never has time and distance meant less. Whether it's using the Internet, cell phones or a myriad of other digital wonders, we now live in different times - in a world of instantaneous global communications. The emerging digital superhighways are a development on a par with invention of light, electricity, the telephone or printing press. They are having an impact on virtually every aspect of our lives, changing forever the way we live, work and learn.

This presentation outlines the four major trends that are re-defining our world, and helps you understand a new age which is reshaping education as it already has the rest of the world. By combining snapshots of the new technological realities with visions of tomorrow, participants will be able to better understand why the emergence of the Information and Communication Age marks the start of really remarkable times for students, educators, families, businesses and the communities that they live and work in.

Who is this guy and what is he going to do?

What I want to do is explain the future - since we're short of time, I'll leave out some the details. I want to talk about the affront of change - the tyranny of the urgent and unnecessary we seem to be operating under right now. I want to give a sense of what is, but more importantly, a hope of what can and might be. Since I only have an hour, I can't hope to educate you, I can only hope to irritate you. My intention is to make you feel a little bit uncomfortable. If I do, I promise to comfort the afflicted, but at the same time, I want to afflict the comfortable.

My reason is a selfish one. I'm not as concerned about making you feel uncomfortable as I am about our children and what the future holds for them. My goal is to help all our children, both biological and otherwise, by helping you to develop a personal & professional vision about life in the 21st century....

So let's begin!!!

It's a changing world, but change is sometimes hard to fathom. Change is subtle, change is sneaky. We know that something is happening but it's really hard to put a finger on exactly what's changed. It's with our own children - they grow before

we look at a picture of them and realize that before our very eyes they've gone from being an infant to a child to a serious young consumer. .

In much the same way, it's hard to see the changes that are occurring in our society, let alone comprehend the scale & scope of the change. Whatever way we slice it, it's a different world today than the one we grew up in. Things haven't just changed, they have fundamentally & irrevocably changed. It's not just about change today and status quo tomorrow - it's constant, relentless change today and change tomorrow - change forever.

We are at the dawn of a new age

Much of this is happening because we are being engulfed by a wave of technological change. And my message to you is that you better ride that wave, or run risk of becoming part of the beach as the wave of change sweeps over top. The message is clear - surf's up!

So, what is the new technological reality?

Over the course of the past 10 years, computers, networks and a host of digital wonders have become the infrastructure for virtually every company & industry in marketplace . The E-economy is now the world's fastest growing economic sector. It is driving fundamental changes in business & community. Like it or not, ready or not, it's here - the new reality for 21st C. The new reality is ubiquitous, embedded & transparent technology. It's the technological compression of time & distance through instantaneous global communication allowing anytime, anywhere access to information and resources. This has led to what Frances Cairncross from the Economist calls the death of distance - there's never been a time when distance has meant less than it does today.

Our amazing technological world

Whether we're talking about the presidential election, the bombing of Kosovo, or breaking news from around the world, we now see history as it happens, and world events as miniseries because we are connected wherever we are at that moment. This is all being driven by emergent technologies but you ain't seen nuthin yet because the biggest changes are yet to come

There are four major developments you just can't ignore

1. global digital networks
2. technological fusion
3. new strategic alliances
4. personal computers for everyone

suit - where advertisements didn't have <http://spend.bucks> at the bottom - when "the Web" was the TV and phone networks - and picking up mail was done by going to the mail box?

What happened?

The first indication was the appearance of fax machines, pages and cell phones. This was followed quickly by the appearance of email and the Internet. As a result, there has been an absolute explosion in data transmissions as a share of telephone traffic - in 1990 - 80% of telephone traffic was voice - in 2001, it's less than 5%. where is this leading?

Do you remember when you could actually look at a newspaper or magazine and NOT see some gee whiz articles about the amazing potential of the Web? Do you remember when surfing was done outdoors? When Java was something you drank with milk and sugar? When you didn't have to know what the @ sign was for? When you could actually turn on a show or watch a movie and not see <http://www.spend.money>? It's hard to believe that our world was a simpler place a little more than 5 years ago.

But then, everything changed in the summer of '95, when using the Web went from something done by geeks to a sign of being cool.

Overnight, it went from being a specialized thing done by propeller heads who spent their time waxing their modems to get higher speeds to something deeply embedded in the public consciousness. In '93, there were no users of Web - this was mainly because Marc Andreessen, the creator of Mosaic, which eventually became Netscape and then was bought out by AOL, had just graduated from high school. Now, according to the latest statistics (February 2001) use is just exploding. First, the existing Web continues to expand at a phenomenal pace. In just the past 24 hours, 3 million new Web pages, 196,000 new Internet-access devices and 147,000 new Web users were added. By 2002, there will be more Web pages than people on the planet. There are estimated to be more than 300 million users in 170 countries. And it's projected that there will 1 billion regular users by the year 2005.

Conservatively, in terms of pages of content and Internet traffic, it's estimated that the Web is doubling in size every 120 days, which means that conservatively it is doubling in size 3 times per year! If this is the case, more than 80% of the sites that will exist a year from now don't exist today. This is absolutely stupendous, biological growth - like bacteria or disease.

been more than 2 centuries since the Internet was born, more than 60 years since the emergence of the Web; and by the year 2002 (5 staff development days away) the Web will have undergone another decade of growth & development

Then combine this with the explosion of E-mail. Current estimates (June 2000) are that more than 15 billion e-mail messages are sent daily in the US alone -this figure is anticipated to reach 17 billion e-mail messages daily by the year 2003. Email use is estimated (Oracle ad) growing at 1000 times the rate of conventional mail. Access to the Web combined with use of e-mail has led to a fundamentally new mindset for many people. Until recently, cyberspace was only for propeller heads who spent their lives sitting in the ethereal glow of a computer screen getting a great tan while drinking Jolt Cola and eating Hostess Twinkies while waxing their modems for higher speed. Now, it's a middle class suburb. And the amazing thing is that this has happened in a world where it's still going to cost you \$1000 by the time you've bought your computer, modem, software and service access and where downloading files is, as Jim Hargreaves, David Thornburg and others suggest, literally like trying to suck peanut butter up a straw.

But stand back for a moment and consider where things will go tomorrow when we see the appearance of little \$500 network and handheld devices in combination with new products and services, and growing awareness of the power and potential of on-line communications. Where's do you think that usage is going to go? Is it going to go down or is it going to go up?

Look, we still aren't there yet. There's lots of criticism about slowness, security, under/over regulation, and system overload. But we need to get over it. These things will eventually be resolved. Just like the early telephone system, things aren't perfect yet, not all have the necessary access, it's not always easy to use...but despite all of the "Yeah buts", this thing is coming at us like a freight train. In just more than 6 years, it has reached full-fledged status as a commercial medium. It is probably the dominant communications medium for next century - as MIT's Nicholas Negroponte suggests, a veritable 10.5 on Richter scale of social significance - and so, it's almost impossible to overstate its importance of what's happening.

The Growing E-conomy

The sudden result, according to a recent University of Texas study, an E-conomy estimated to be 1.3 trillion dollars, up from 400 billion a year before. 55 million books sold on line. The ability to buy and sell almost anything, anytime, anywhere (download the Gutenberg to Gates and Living on the Future Edge handouts to learn the full implications)

geostationary satellites from Teledesic

- 500 number - anytime/anywhere connection
- bizarre patents for cellular earring, watch, glasses, ringeven a nose implant

Where are we going?

- digital, global, wireless
- WAN of telephones, television, cable, satellites, & personal computers
- connects everyone to everything forever altering the way we work, play, move about & view fellow citizens

Moving from LANs to WANs

- wireless webs already happening
- UPSNET - 50,000 trucks
- one way wireless asymmetrical bandwidth data only now
- symmetrical bandwidth for data, voice, graphics, sound, motion video within 18 months
- we'll see it with couriers first - homes & schools next

A new communication paradigm

- conceptual dynamite - like the shift from steam to oil - trains to planes - mainframes to PCs
- we are just embarking on the new communications century
- new global digital networks combined with...

#2 Technological Fusion

Monomedia not multimedia

- we live in a new digital reality that allows us to capture, process, store & communicate all forms of knowledge - words, still photos, video, music & animation - in a single medium
- what does Rubbermaid make - the Rubbermaid home office

Where is this all heading?

Technological overdrive

- virtual vision glasses combined with Sony compressed video technology - DVDS CDs with a capacity of more than 4 GB per side allowing us to store up to 4 movies per side - that's now - who knows how much later

Virtual reality

- fly an airplane - design a house - design 777 - fly it before you make it - virtual medicine - stepping inside a calculus function - have the ability to touch it, feel, it, do it
- not readily available but then there's virtual Sega - as sign of things to come

Voiceprint

- right now, 20% of all paid hours & 40% of all workers are for keyboarding - problem is that you can only type at a maximum speed of 120 wpm vs. speaking at up to 1000 wpm
- but on the immediate future is IBM voiceprint - voice to text instantly
- and shortly thereafter, there will be automated interpreting telephony - your voice in another language instantly - Hitachi wants this in the phone system world wide in next four years

Technological overdrive

- in 1996 - every 12 seconds -1 new technology -10 high tech services
- by 2000 - every 1 second -15 high tech products-100 high tech services

Why is this such a big deal?

- and this is just what we know now - tech extrapolation - wow! - because transformation of past 5 decades will be dwarfed by changes of next decade
- today's high tech just hints of a future world that we can't even begin to imagine because it's not just global digital networks & tech fusion.
- it's this combined with...

#3 New Strategic Alliances

Strange bedfellows

- SEGA, Nintendo, AT&T, TCI...
- anyone & everyone with product
- connections not immediately clear
- why?????
- no longer about hardware
- now about information
- blurring lines between cable, telephone & computer services
- new age of interactive services
- cybercash generation
- emerging black box technology

Black box services

- movies - TV programs - video games - home shopping - virtual shopping - bill paying - home banking - home cash machines - email - teleconferencing - personalized info - intercasting - virtual learning - libraries, museums, art galleries - all from one source
- this in part explains the current turf wars
- we have diverse corporations fighting to shape your digital future
- not just consumer electronics industry but also media industry, computer/phone/ cable operators anyone with a pipeline into your home - they want a piece of action and the pot of gold at the end of it

Piecing the puzzle.....What have we got so far?

- global digital networks- new high speed highway
- technological fusion - powerful vehicles for highway
- new strategic alliances - new interactive global destinations
- so what's the final piece?.....

#4 Computers for Everyone

Personal telecomputers

- to extend tech fusion to mass consumer market
- technology for many not few at calculator prices
- they will be smaller, cheaper, lighter, more portable & powerful
- by early 21st century we'll see them in our pocket, on our wrist or in the palm of hand
- these will be powerful personal intelligent communicator capable of sending & receiving all communications like Dick Tracy watch
- not for us - we can't handle it - they are the natural next step for Nintendo

Death of distance

- geographically separated but electronically connected
- from workers to job...to bringing job to worker
- the work site becomes wherever you live
- telecommuting to job site using computerized PDA
- you become the office or classroom wherever you are at that time

This is a catalyst for major change

- absolute revolution in economic activity
 - like 19 C transcontinental railway
 - like 20th C - oil, automobile, highways
 - lead to application of new mindsets
 - new technologies, industries, jobs, economic horizons & great leaps in economic development.
 - it is leading to a new digital world order
 - you can accuse me of being the master of hyperbole & overstating things..
- but what's happening here is on a on par with the invention of the light bulb, discovery of electricity, motor, phone, printing press
- each fundamentally changed nature of economic activity

Having a hard time accepting that this will change our lives?

- then consider TV, PCs, satellites, ATM's, cell telephones, faxes, personal pagers, Walkman, CD's & camcorders - what effect have they had? what effect will new ones have on us & our kids?
- and what about schools?...

What promise could this hold for classrooms of tomorrow?

21st century classrooms

- technology in the workplace today, will be in the schoolplace tomorrow
- schools without walls - the classroom will no longer be stationary place but rather a vehicle capable of transforming classroom

21st century classrooms

- visit hidden realms - explore inside microscopic cells - build virtual house, fly virtual plane, drive virtual car

New ways of doing things

- fact delivery to on-line research - teacher no longer content expert - textbook replaced

as primary source- pursuit of topics anywhere, anytime with same access to world class info as research scientists worldwide

- remote access to information - students telecommute to school - instead of

Classrooms for tomorrow

- multimedia teleconferencing
- virtual field trips
- visits to virtual museums rain forests, volcanoes, art galleries and other geographically scattered sacred sites of learning
- not real experience - will never replace a real experience but will complement them
- not *physically* visit but psychically televisit them
- a virtual electronic recreation with shocking richness, realism & authenticity
- extend transparent boundary between real & virtual world

So what's stopping us?

- hard to imagine if you work in a school where the technology is older than the kids
- tools are here and cheap enough for schools to obtain but they will only be used if we dream & believe boldly
- the starting point is a fundamental philosophical realignment
- change is about HEADWARE not HARDWARE!

It's time to get going! So, where do we begin?

Where will this lead us tomorrow?

- living life like quarterback - educators as futurists - anticipating future - seeing present as past of future - from contemplating here & now to envisioning that future before we talk about what to
- must understand that it's not technology but rather the social power of technology to fundamentally transform

Beyond technolust!!

- we must rethink & redefine notions of technology & classroom
- re-assess how technology can & will transform education
- develop new paradigms for classrooms of tomorrow
- as a starting point.....

Start by acknowledging

- we live in the old, kids live in the new - it's a matter of relevance - we don't relate to their present, let alone their future - we must focus on bringing about conceptual shift and getting beyond biases need to change mindset

changing modern world

But change is hard & messy!!

- most of us have a real sense of overwhelm & hopelessness
- how do you make change? one at time
- conflict & discomfort guaranteed
- but when it's right...all will change

But why should we change?

- because the revolution just begun and already it's overwhelming us - outstripping capacity to cope- antiquating laws - transforming mores - reshuffling economy - reordering priorities - redefining workplace -putting Constitution to fire - shifting our concept of reality
- most critical assets no longer minerals, fiber, grain, wood, & appliances
- now it's technologically literate work force with skills needed to compete
- everything from neck down will be minimum wage
- countries which don't embrace technology are toast
- capital & jobs attracted to economies with state of the art infrastructures & innovative, affordable services - they will become uncompetitive
- they face the specter of massive structural unemployment - a workforce that is not just unemployed - but unemployable
- no nation can operate 21st century economy without viable 21st century electronic infrastructure
- countries lagging will tend to become backwaters of economic activity
- need educated population to drive this infrastructure as we did transportation system
- this is a national security issue

How can you begin?

- beyond overwhelm & yabbut
- path of least persistence
- can't let things happen - make things happen
- stop waiting for others we all need to get moving!!
- 25% of population - 100% of the future
- pensions & very future depend on doing it right

And it all starts with us

- rhetoric not language of change
- by self can't reform schools
- if we do what we've always done...
- personal challenge to each of you

TO CONTACT US:

Office Manager: Lori Anderson

Office Phone: 250-717-0998

Office Fax: 250-717-0999

E-mail: ijukes@shaw.ca (Lori Anderson)

WEB SITES

www.infosavvygroup.com

www.ianjukes.com

www.thecommittedsardine.net

Ted McCain, Associate Director

Thornburg Center for Professional Development

26855 - 108th Avenue, Maple Ridge, BC, Canada V2W 1P4

(604) 462-8586

tmccain@shaw.ca

Web site: <http://www.tcpd.org>

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