



It's GLOBAL

Unlimited scope

'All of us are surging through the most profound revolution in human history. Its impact is personal, national, global—and, in many ways unlimited. At its core are seven catalysts, now converging and fusing to change the way we live, work, play, learn, teach, think and create—at any age. The keys to unlock that future are simple but revolutionary. Once unlocked, that revolution has the power to unleash the combined talents of millions.' **Introduction, Page 22.**



It's INTERACTIVE

Unlimited discovery

*For decades most school students have learned **about** subjects such as history, space travel and science. Now they can actually **rebuild** ancient Rome and Athens (with SimCity); **create** their “own universe” (with Spore); and actually **become** a scientist. Brigham Young University’s Virtual ChemLab provides a working classroom of the future, for some 150,000 online science students. Now: the new cyberspace university. **From Chapter ten, The co-creative revolution.***



It's EASILY SHARED

Unlimited partnerships

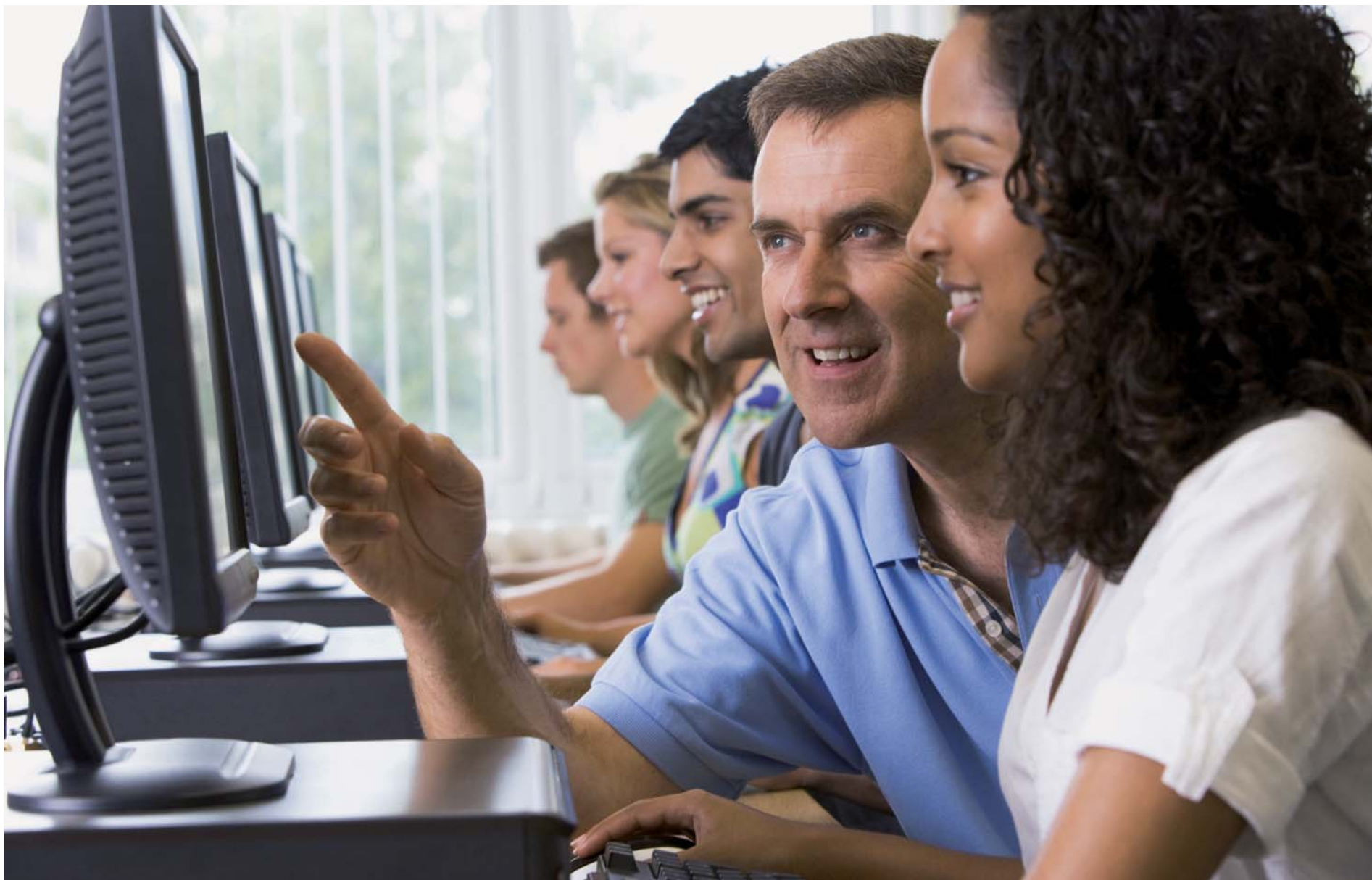
*Amazingly, 59 million school teachers around the planet work in isolation, mostly in chalkboard classrooms—as if the Web didn't exist. But at Singapore's Overseas Family School (in photo) 3,500 students from over seventy countries not only co-create their vision of the future—they help their teachers digitize lesson plans with Macromedia Flash and computer animations. Now those brilliant lesson-models can be shared free. **Chapter thirteen, The global revolution.***



It's PERSONAL

Unlimited future

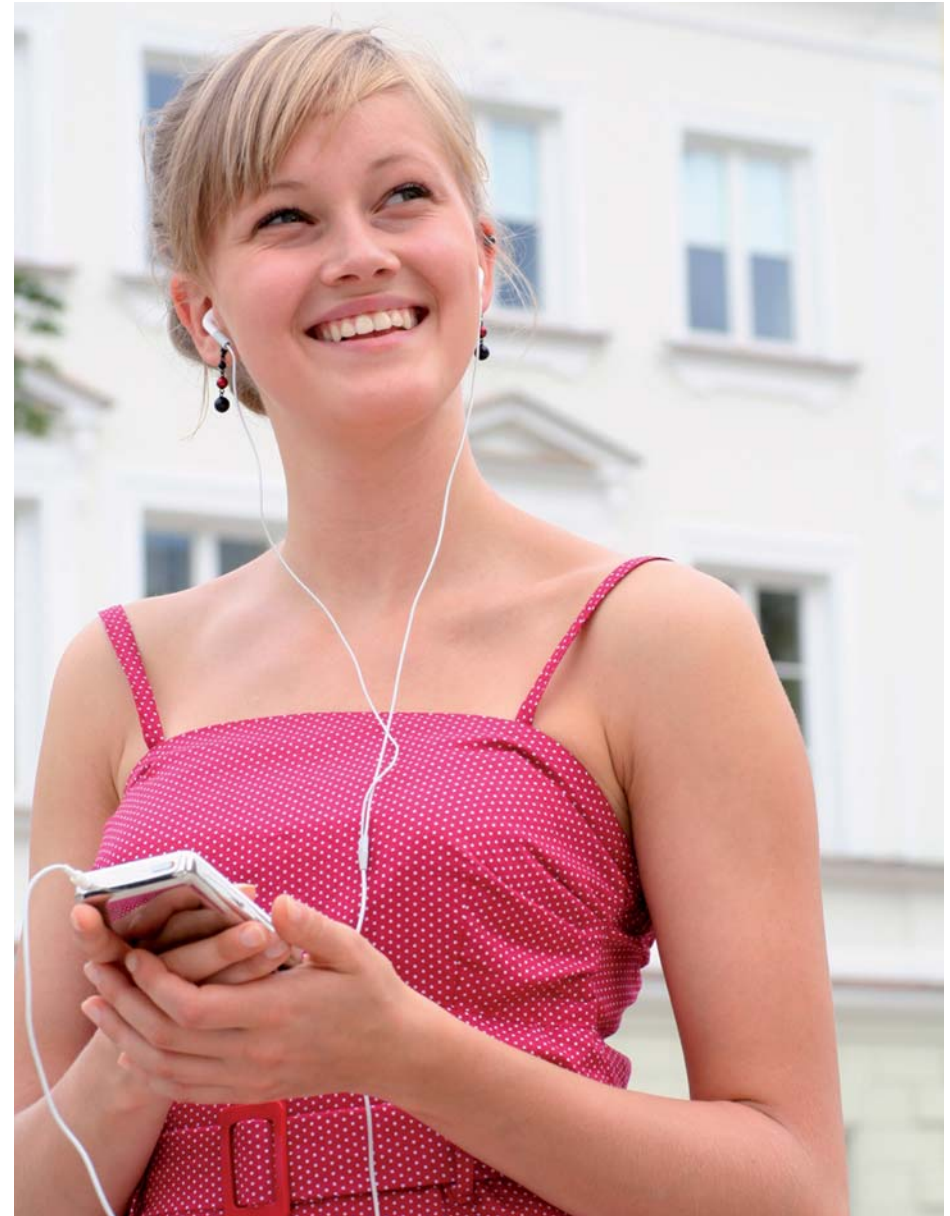
*'Everyone has the potential to become talented and successful, but in different ways. Every healthy baby is born with 100 billion active brain cells. Each has the ability to sprout at least 10,000 learning-branches. That learning ability soars most from birth to four.' And that is why, at Mexico's world-leading Thomas Jefferson Institute (in photo), psychologists help parents to work out a specific learning plan for every child. **Chapter three: The talent revolution.***



It's CO-CREATIVE

Unlimited innovation

*When tens of thousands of passionate people who have never met can write ten million articles and together co-create the planet's biggest-ever encyclopedia, something magic is stirring in the world. When Wikipedia is available instantly and free to 1.4 billion people, the magic glows. When four billion will soon have that encyclopedia in their pocket, the world is surging into a new Renaissance: the one we will co-create. **In Chapter one: the Wikinomics revolution.***



It's **INSTANT**

Unlimited mobility

*Even by 2000 half the people on earth had never placed a phone call. Only 12 percent owned mobile phones. Now over half own them: 3.3 billion. By late 2009, 4 billion will be in use, for the planet's 6.6 billion people. But now they are becoming 'teleputers' more than phones. And soon you'll be able to have Google on tap in your pocket, too. Google's new Android software platform will be available for any manufacture to use in its cellphones. **Preface, page 18.***

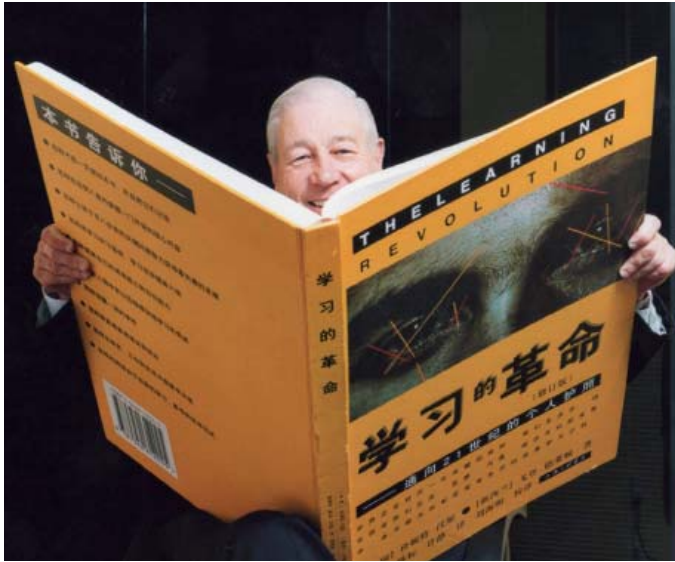


It's **OFTEN FREE**

Unlimited choice

*In China, students can now buy low-cost computers without an operating system—and download that free from the Web. Then they can use it for free international phone calls with Skype. Many teachers use the same tools to teach Mandarin each day around the world. Google's climb to several fortunes has been spurred by the simple idea: give away information free and “make a billion one 5-cent click at a time”. **Chapter ten, The co-creative revolution.***

China TV apologized: only 10 million would be watching



But that interview launched the world's fastest-selling book

In photo: Gordon Dryden with one of the giant souvenir copies of the Chinese version of *The Learning Revolution*, printed to mark sales of 10 million copies in under seven months: a global non-fiction record. The book was launched on a late-night national TV show with apologies that “only 10 million people would be watching”, but 260,000 copies were sold the next day, when thousands attended *Learning Revolution* exhibitions in China’s thirty largest cities: 44,000 in Beijing alone.

Author biography: Gordon Dryden

How to quit school at age 14 and end up writing the top-selling book on learning

How Gordon Dryden and Jeannette Vos became the world’s biggest and fastest-selling non-fiction authors is almost a fiction story in itself:

One: the New Zealander who left high school illegally at age fourteen. Yet he went on to become an award-winning newspaper journalist, top radio and television talkshow host and specialist in interactive multimedia communications.

The other: the Dutch-born wartime refugee, later United States school teacher who became so frustrated at the education system she decided to change it. That decision was to result in a seven-year research program into new methods of learning, and a doctorate in education.

When they met, by accident, sitting next to each other at a 1991 international conference on learning, their backgrounds could not have been more diverse:

Dryden’s self-taught career up to then had mainly been in mass communications: in print journalism, advertising creative director, public relations. Later as marketing director for a major corporation; then a long stint in radio and television, as a producer-presenter and on international assignments that ranged from the revolution in Iran to the counter-revolution in Czechoslovakia.

In 1990—New Zealand’s 150th anniversary—he persuaded that country’s largest charitable trust to donate \$2 million to set up the Pacific Foundation, to pioneer new methods of parenting and schooling. His chance meeting with Jeannette Vos happened while editing six one-hour television documentaries as part of that project. Later, when

the two swapped their research—TV programs for a thick doctoral dissertation on the same subject—the idea emerged for a joint book. That was to lead, late in 1993, to the first edition of *The Learning Revolution*—and later its world success: published in twenty different languages in twenty-six countries. This included world-record non-fiction sales of 10 million copies in one seven-month burst in China: 44,000 in one day in Beijing alone.

But what has struck them most: how their own backgrounds have provided completely different perspectives. Now these have converged to produce a complete new theory of learning, schooling, teaching and education.

Between researching and writing, Gordon Dryden mainly helps schools, businesses and other learning organizations put this research into practice:

❑ As seminar coordinator and presenter for a wide range of programs to marry the world's finest new interactive technology with the world's best teaching and learning methods: for the Singapore Ministry of Education's program to "teach less, learn more"; the New Zealand Ministry of Education's current five-year program on the use of interactive technology in schools; the British Government's program to teach business enterprise and innovation at high schools; the Swedish giant IKEA's management program to introduce new staff training methods in Scandinavia, Poland and Western China; and New Zealand's Southland Innovator Program to retrain teachers for the new century.

❑ As consultant to some of the world's most visionary schools, including: Mexico's Thomas Jefferson Institute (the supreme school-of-the-year for innovation and vision among all schools in the Spanish-speaking world); Singapore's Overseas Family School (the first in South-East Asia to introduce the International Baccalaureate Curriculum for all age groups, from pre-kindergarten to senior high school); and the Beijing Academy of Educational Sciences in Beijing.

❑ As a consultant to Arizona's University of Advancing Technology, which has awarded him an honorary Doctor of Computer Science for his contribution to creative thinking in using interactive technology as the catalyst to reinvent education.

Now six-year-olds make their own television shows



For almost twenty years, Gordon Dryden has been recording and promoting the way in which his home country, New Zealand, is using interactive technology in schools. He regularly takes international visitors to public schools such as Sherwood Primary, in the Auckland area, where six-year-olds, from their first day in grade one (above), learn to use video cameras. Within two days they are using Apple iMovie software to edit what they have shot, before adding their own computer animations.

From the freezing cold of northern Sweden to Canada and South Africa



The book that's been translated into twenty languages

In photo: Co-author Jeannette Vos with some of the twenty-six editions of *The Learning Revolution* sold around the world in twenty languages since her doctoral research and Gordon Dryden's television programs came together to produce the first edition in 1993, and five updates since then. At one stage she spent months doing up to six seminars a week in Sweden.

Author biography: Jeannette Vos

The frustrated teacher who spent seven years researching a better way

When Jeannette Vos arrived in Canada as a poor World War II migrant from Nazi-occupied Holland, she never dreamed her life in the Americas would take her to a career in teaching, research, authoring and consulting around the world.

Nor did she conceive that her later frustration with the education system would lead to designing a better one—and take her back to Europe and around the world to promote it.

When she first started teaching in the United States and Canada, her enthusiasm was high—and so was her success as she rose through the ranks of teachers, working with all age groups. But soon her frustration became so strong she almost gave up teaching—until she discovered the difference with the then-new SuperCamp, and its ten-day program to replace the boredom of school with confidence-building learning-to-learn courses.

Determined to prove that it worked, she embarked on a seven-year research study, not only into SuperCamp's programs but going beyond into other new methods of learning. It was to earn her a doctorate in education and the opportunity to put those methods into practice around the globe.

But her chance 1991 meeting with Gordon Dryden at an international learning conference was to produce an even greater coincidence. He was searching for a musical theme for the television series he was working on—and music is one of the Vos specialties. But when they swapped experiences, the coincidence was even more remarkable.

The television series showed how the new methods were transforming schools and teaching methods around the planet. The doctoral research confirmed the TV programs' other international findings.

When they met again the following year at a similar international conference, the ideas were born for the first of their new series of co-authored books on *The Learning Revolution*.

The first was written by fax machine across the Pacific—the first year's bills totalled \$6,000—and then others by email as they toured the world promoting the results and adding more.

At one stage, Jeannette Vos was presenting at least six seminars a week over the length and breadth of five continents: Europe, the Americas, Asia, Africa, Australia and New Zealand.

She is also a well-known international keynote conference presenter and seminar leader with a “whole person” approach to learning – and practical applications to show how “true learning” works wonders. Her specialities encompass boosting the genius and achievement in people through “selling” and teaching to the full potential of the brain, which includes the use of music, the arts, movement, nutrition, and overall accelerated learning methods to help people become destiny-makers for a better world.

In her workshops, representatives have come from many countries and institutions: schools, hospitals, churches, and many companies such as Telenor of Norway, Ericsson, IKEA and SAAB of Sweden, Pipsa Paper Mill of Mexico, the Pyslingen and Lemshaga Schools of Sweden and The Master's Academy of Alberta, Canada.

When Vos and co-author Dryden had concluded the last update of *The Learning Revolution* in late 2005—with the core of a completely new theory of learning—both realized the world of education was about to undergo even bigger changes.

The latest in brain-mind-body research and the new breakthroughs in instant communications and digital technology were challenging the world to reinvent education in all its forms. This book takes up that challenge, to present a total new approach to lifelong learning—based on practical models that are already working.

New ways to make the most of your mind, brain and body



*When not co-authoring books, Jeannette Vos spends her working life these days touring the world, keynoting conferences and running workshops on two of her passions: new methods of learning and how to make the most of your mind through sensible nutrition and exercise. Apart from her doctorate in education, she is a Certified Natural Health Professional from the US National Association of Certified Natural Health Professionals. Generally she manages to combine both interests: like using “accelerated learning” methods to demonstrate the best ways to link good nutrition, good health with fun and good humor (in photo). See Chapter three, **The talent revolution.***



Also by Gordon Dryden and Jeannette Vos
Book, video, audiotape and CD-rom series:

The Learning Revolution
The New Learning Revolution

Also by Gordon Dryden

Books:

Out Of The Red
The Reading Revolution (with Denise Ford)

Parenting program:

FUNdamentals (with Colin Rose)

Television series:

New Zealand: Where To Now?

The Vicious Cycle
Right From The Start

The Vital Years

Back To Real 'Basics'

The Chance To Be Equal
The Future: Does It Work?

16-part United States series:

The Learning Revolution

Also by Jeannette Vos

Doctoral dissertation:

An Accelerated/Integrative Learning Model Program

Authors' websites and email addresses: Page 320.

UNLIMITED

The new learning revolution and the seven keys to unlock it

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Guide to reading this book

The spelling used: For the English-language version of the book, the authors have chosen to use their own selection of "International English". Mainly the book uses the simpler American words: "program" not "programme". But it uses the English preference of "s" in verbs such a "practise" and "c" as in nouns, as in "practice". We have also chosen to hyphenate some words such as co-creative where the meaning, without the hyphen, may be unclear to readers in some countries.

Currency, and measurement: All currency is in US dollars. A billion is 1,000 million and a trillion is a million million. Generally international metric measurement is used.

**Now more than half
the world's people
have mobile phones**



**And the online choice
is virtually unlimited:
from 83 million videos
to English lessons**

Preface by Gordon Dryden

Welcome to the new world, with unlimited access to unlimited opportunities

Even by the year 2000 half the people on earth had never placed a phone call.

Now more than half own mobile phones: 3.3 billion of them by early 2008. Four billion phones will be in use by the end of 2009—for the planet's 6.6 billion people.

For more than twenty years the Sony *Walkman* personalized the world of portable music. Now the new era of Nokia, Apple *iPod* and *iPhone* will soon make almost any information available instantly on a multimedia computer in your pocket. And with its newest product, *Android*, all Google's services will be free on most cellphones.

Well over 550 million mobile phones are now used in China. And more Chinese are learning English than the entire population of North America. They're learning it best by mobile-phone lessons and singing to karaoke machines in cyber-cafes.

By early 2005 no one had ever heard of *YouTube*. Now anyone with a computer—or broadband access through their cellphone-screen—can view from a choice of more than 83 million free videos on this one site: twenty-first-century literacy in practice.

Six years ago long international phone calls cost far too much for most. Now more than 300 million people make free international calls—or join in free video conference calls—anywhere on earth through *Skype*. Teachers can gain degrees in educational technology almost entirely online.¹ They are on campus only three weeks a year. And they can apply their lessons immediately in their own classrooms.

Welcome to the new world of interactive, global and personalized learning. If these trends, and dozens of similar ones, changed only the world's technology and computer industries, they would be important enough. But they also form the catalysts to

reinvent education, schooling and learning—even new global cyber-universities.

In the four-fifths of their time they spend outside school, students from Mumbai to Mexico are leading this new learning revolution. But most schools are struggling to use the new transforming tools—simply because they are trying to patch twenty-first century technology on to a system designed for a bygone age.

Yet in pockets around the globe brilliant teachers are doing it right. They are using new tools to turn “education” on its head: to start with individual passions, talents and interests and unleash each person’s almost unlimited ability to flower.

Bright young students are reinventing a new society: of unlimited choices, unlimited options, and unlimited personal potential.

The brand names of this new era are passwords to the future: *Google, Yahoo, YouTube, Wikipedia, MySpace, Facebook, Bebo, eBay, Skype, iPod, iPhone, iTunes, Sim City, PlayStation* and *Nintendo*. In South Korea, the phenomena of *CyWorld*, an on-line co-creative network, is shared by more than 90 percent of its fifteen-to-thirty-year-olds. In Japan, *DoCoMo*—the multilevel cellphone service that invented texting—is used by over fifty million people for everything from learning and portable video-conferencing to shopping and banking, from email to online games. And the DoCoMo company is worth more on the Stock Exchange than Google in America.

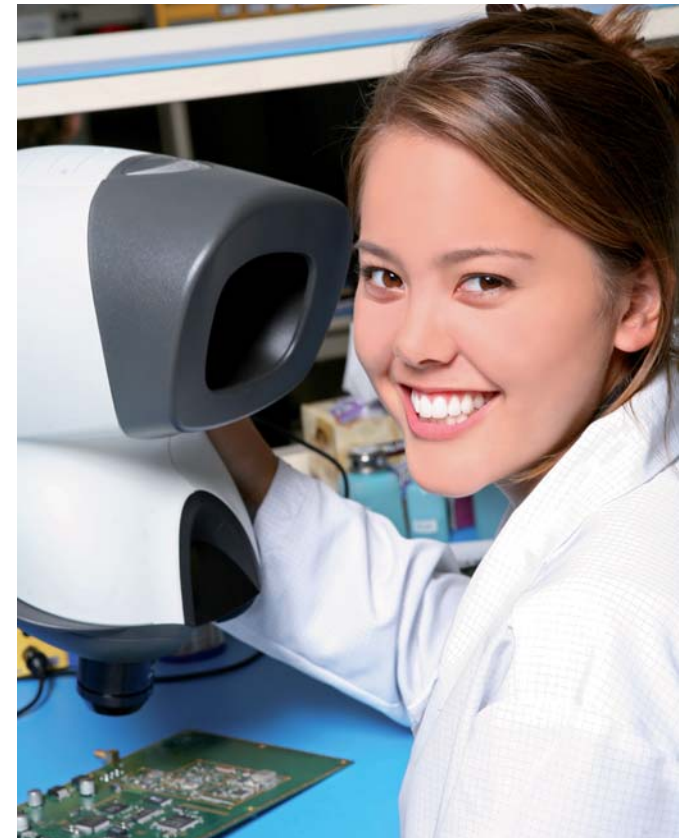
Some call it Web 2.0: the completely new interactive phase of the World Wide Web. Others call it the New Renaissance. Still others: the new era of mass innovation, mass participation, mass co-creativity, mass personalization.

At the base of the revolution is the ability to stack millions of transistors on to a chip of silicon, and to double the number on a circuit board every eighteen months. When five transistors doubled to ten, it launched the digital age. But when five billion now double to ten billion in eighteen months, the potential is almost limitless.

For the first time in history, everyone has the opportunity to turn individual personal passion and talent into a successful life and career. And to keep on adding new skills throughout life—with almost unlimited access to the world’s best new retraining and relearning methods . . . to make the future itself almost without limits.

Gordon Dryden, co-author and editor

**When five transistors
on a chip rose to 10
the revolution began**



**When five billion
soars to 10 billion the
potential is unlimited**

Real learning starts with a happy, healthy, secure child in a loving home



Foreword by Jeannette Vos

The more the new technology soars, the more the need for holistic balance

Even thirty years ago, most teachers were taught that intelligence was fixed—and could be measured from early childhood by standardized I.Q. tests.

Even today, in the country where I have spent most of my adult life, almost the entire American schooling system is based around standardized tests of standardized knowledge—as if all children were the same. They are not.

Some of the world's best neuroscientists have proved for over two decades that all of us are smart in different ways. We each have a different learning style, a different thinking style, and different ways of studying and working. So the school of the future will be personalized for every individual learning style.

We also learn best in a happy, safe environment, with good diet and nutrition, in caring, loving families, and in schools where lifeskills and holistic learning are even more important than learning to master the new tools of high technology.

So capitalizing on the new world of instant information and interactive technology is only one side of the path to a potentially unlimited future. Every good parent and teacher knows the other side involves the whole person, in a caring home and a caring community—with brain, mind and body acting together in balance.

At its simplest, you cannot learn well if you're hungry or fearful. You cannot learn well if your brain has been stunted from birth because you're under-nourished. You cannot benefit from a world of potential plenty if you live in a country with polluted water, unsanitary sewerage, without adequate food, clothing and security; in a world where sometimes obscene wealth is surrounded by overwhelming poverty.

An over-riding message of this book is that all of us can also learn best when we use the whole world as a classroom . . . especially when that world is a welcoming, caring, sharing one. But even in the world's most affluent countries—in North America, western Europe, Australia and New Zealand—many are handicapped by poverty, emotional stress, bad nutrition and poor family environments.

We also all live in a series of interlocking eco-systems, where pollution, environmental degradation and climate change are crying out for new solutions. We live, too, in a world where a \$600-billion-a-year pharmaceutical drugs industry is mistaken for a real health policy. Often where inadequate schooling is mistaken for real-life education. Where inefficient bureaucracy is mistaken for social innovation.

As we two co-authors have travelled to many parts of the world, we have seen the positive, holistic alternatives that can match the new digital wealth-producing revolution with an equal balance of social, emotional, mental and cultural enrichment.

❑ Children of poor parents in developing countries, like India, have filled schools whenever daily meal programs have been introduced.

❑ Entire school-age populations have prospered—as in Finland—when the government provides high-quality teachers and teacher training programs.

❑ The soaring world population, in over-crowded poor countries, is matched by a growing environmental crisis—and equally successful sustainable technologies.

❑ Small nations like Singapore, Ireland, Finland, Sweden, Norway, Denmark and New Zealand have shown that size is not important for national success.

❑ The enormous cost of the war in Iraq proves that money is not the problem. Nobel prize-winning economist Joseph Stiglitz estimates that war will end up costing at least \$3 trillion.¹ So even a tiny fraction of that, invested in the right way, would more than solve the world's problems of poverty, malnutrition, poor health—and provide a decent basic education for all.

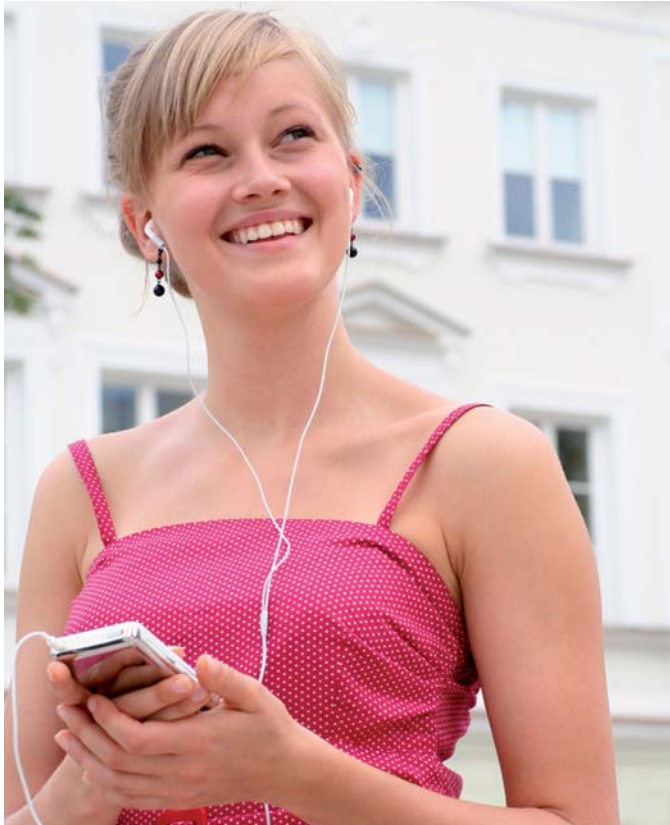
❑ Ideally, too, we now know that well-prepared parents are the world's best first teachers. A happy, healthy home is the world's best school. A healthy, caring community is the world's best playground. A secure, ecologically balanced world is the planet's best classroom—that unlimited global classroom we all share together.

Jeannette Vos, co-author

**Sound nutrition and
exercise are as much
'food for the mind'
as for the body**



Will students study tomorrow as the iPod works today?



Asked to predict the future, Google CEO Eric Schmidt admits “we don’t know what’s coming.” But he adds: “I personally believe the right model is to think of all the world’s information in the equivalent of an Apple iPod. What does it do to teaching when every student can do the answer quicker than any professor can get it out of her mouth?” Now Google’s own new Android software will soon put Google in your pocket too.

Introduction

History’s newest revolution and the seven keys to unlock it

All of us, together, are surging through the most profound revolution in human history. Its impact is personal, national, global—and, in many ways, unlimited.

At its core are seven catalysts, now converging and fusing to change the way we live, work, play, learn, teach, think and create—at any age.

This new networked age makes it urgent to rethink entirely what we mean by education, learning, teaching and schooling. For education is changing more than it has since the invention of the printing press over 500 years ago and compulsory classroom schooling 300 years ago. Now the world is your classroom and learning is lifelong.

Already two billion students spend four-fifths of their waking hours outside school, in an iPod, YouTube, Google, Bebo, Facebook, MySpace, Wikipedia, Skype and Sim-City world so different from yesterday’s deskbound classrooms.

Business Week magazine says lifelong learning will soon be the world’s greatest growth industry, with \$370 billion a year in sales as millions learn online. And Google CEO Eric Schmidt predicts that before long all the world’s information will be instantly available on pocket computers like the Apple iPod. Then students will be able to find answers quicker than professors can ask questions.¹

The keys to unlock the future are simple but revolutionary. Once unlocked, that revolution has the power to unleash the combined talents of millions:

1. **It’s PERSONAL:** where information and learning programs can be personal-

ized and tailored to your own passions, talents, interests and needs. And where you can share your own talents and skills with millions—for both fun and income.

2. **It's INTERACTIVE:** with new digital platforms and templates to make it easy, simple and fun to learn by doing, playing, creating, producing and interacting—a new world of creative experiences.

3. **It's GLOBAL:** the ever-expanding world-wide Internet owned by no one, used by everyone; where the combined knowledge of humankind is now available to virtually all at the tap of a digital keyboard or a touch screen.

4. **It's INSTANT:** for the first time in history, the ability to learn anything “just in time”, when you need it, as you need it, at your request, and in your own way.

5. **It's MAINLY FREE:** or nearly so—one low-cost click-at-a-time. The World Wide Web, browsers, search engines and digital platforms make it easy to access much information free, and to download other information for a few cents. Even free international phonecalls.

6. **It's EASILY SHARED:** the new world of collaborative networks to share your abilities with anyone, anywhere. To store—free online and on community websites—your family photographs, videos, music and even your digital multimedia portfolios to demonstrate what you know and what you can do.

7. **It's CO-CREATIVE:** if we can dream it, we can now do it—together with millions around the world. Now we can merge our own talents into multi-talented global teams, to produce new innovative answers to major global problems.

These seven keys have already unlocked new doors to transform industries, countries, communities, commerce, communications and companies. They have the power to reinvent every aspect of lifelong learning, teaching and schooling. But when these “tipping points” link with other sweeping changes, the impact will be even greater:

❑ **The neuroscience revolution:** our new-found abilities to unlock the incredible potential of the human brain and mind, and shatter many of the myths on which much of “education” is based. That research shows that everyone can learn anything faster and more efficiently. That learning starts in the womb and flowers through life.

Latest neuroscience research is opening up new ways to reinvent education



How infants learn thousands of words before they can speak even one

Neuroscientists have learned more about the human brain in recent years than in all the rest of recorded history. Like the research which shows how babies can learn thousands of words even before they start speaking, around age one. The way parents talk to their babies and what they say is even more vital. See chapter three for an introduction to Your Future.

Not long ago parents left their child's education to schools



Now real-life adult
experience balances
the hi-tech of youth

❑ **The genetic revolution:** the knowledge that “all life is one”: that all living things are made from the same genetic code—where we’ll soon have access to our own.

❑ **The demographic revolution:** in which, of all people who have ever lived longer than sixty-five years, two-thirds are alive today—while two billion, mainly in the poor world, are under age twenty. But now the wisdom of age and experience can link, in new ways, with the soaring hi-tech skills of children and grandchildren.

❑ **Above all, the new Open Revolution:** at long last the chance to find a genuine new way to reinvent society. Not only a choice between free-enterprise capitalism and state-controlled socialism. But a new unlimited choice of cooperative enterprise and collaborative co-creativity.

For global education the need has never has been greater.

❑ As Philippe Legrain summarizes it in *Open World: The truth about globalization*: “One in five of the world’s 6.6 billion people live on less than a dollar a day—almost half on less than two dollars a day. More than 850 million cannot read or write. Nearly a billion do not have access to clean water, 2.4 billion to basic sanitation. Eleven million children under five die each year from preventable diseases.”

But already the tools exist to share some of the world’s best and simplest learning and health programs with billions of poor people: to provide them with most of the unlimited opportunities that today only rich countries and people enjoy.

❑ Those wealthy countries are already spending billions on these new tools that have the power to reinvent education. But most are “doing it wrong”.

Very simply, they are trying to patch the technology of the twenty-first century on to a classroom system invented for a bygone age: a school system gradually conceived after the invention of the printing press in Europe more than 500 years ago.

❑ Where kindergartens, schools, colleges, universities and organizations are “doing it right”, the results are remarkable. This book abounds with them. They start with individual brainpower and the seven keys to unlock the future that are already transforming nearly every other aspect of society. Together they provide the catalyst to reinvent education itself: personally, locally, nationally and globally.

1. It's PERSONAL

For everyone, everywhere, any time, in your own way

Two years ago, *Time* magazine named its Person of the Year simply: YOU.

Its cover subtitle puts it succinctly: “Yes, you. You control the Information Age. Welcome to your world.”² That cover story simplifies its main message: “This was the year that the people took control of the media. Silicon Valley consultants call it Web 2.0, as if it were a new version of some old software. But it's really a revolution. It's a tool for bringing together the small contributions of millions of people and making them matter.”

Time calls it a massive social experiment: “an opportunity to build a new kind of international understanding, not politician to politician, great man to great man, but citizen to citizen, person to person.” In some ways it's a “new digital democracy”:

- ❑ **Blogs or Web-logs:** More than 100 million of personally-written websites flooding the Internet for anyone to share—not counting 72 million in China alone.
- ❑ **Mobile phones:** soaring to 3.3 billion in use around the world in 2008, predicted to rocket to at least four billion before the end of 2009.
- ❑ **eBay.com:** the world's biggest online auction site—where 200 million registered users each day trade goods and services worth \$100 million: a new global community “flea market” where anyone can sell to anyone anywhere.
- ❑ **MySpace.com:** a new online community of over 100 million active users.
- ❑ **Flickr.com:** which hosts two billion photos in the world's biggest album.
- ❑ **Facebook.com**—also with more than 100 million registered users by mid-2008, growing by 25,000 a day, and 65 billion “page views” a month as friends share their experiences, videos and photographs.
- ❑ **YouTube.com**—the video-sharing phenomena where visitors to the site can choose from 83.4 million video-clips. *YouTube* is the forerunner to a completely new form of international online television. Only a few years back such videos would have been shot by professionals on expensive cameras and edited by other experts. Today

Now you can share
your family photo
album with millions
on flickr.com . . .



and co-create your
own global TV
channel on YouTube

Five-year-olds used to learn from illustrated books



Now they can also create their own 3-D digital artwork on home computers

Even children as young as three or four find it easy to create simple computer animations with KidPix and KidPix Deluxe. And children as young as five are ready to do three-dimensional animations with free Web software such as 3D Blender. See more details, chapter eleven.

they're even shot by young children, edited on home computers and viewed on a new breed of digital pocket-phone-computers the size of a pack of playing cards.

No longer is education a one-way presentation process, with students as passive receivers. Now you can co-create your own lifelong learning plan—and keep on expanding your individual talent with new skills throughout life.

2. It's INTERACTIVE

Easy-to-use templates make it simple at any age

In yesterday's world, one-year-olds loved to see and hear their parents read colorful nursery-rhyme books.

Today's one-year-olds still do. *With the help of their parents, they can now also flop their tiny hands anywhere on to a computer keyboard, and see shapes, numbers and colors—and hear them in eight languages: on BabyWow software, invented by a parent for his new baby.*

Yesterday, four- and five-year-olds loved to color-in scrapbooks, with crayons and finger-painting. They still do. *They can also now create brilliant and colorful digitized artwork on such programs as Kid Pix Deluxe.*

Yesterday, children went to the movies. They still go. *They can also use Microsoft Movie Maker and Apple iMovie software to professionally edit videos they have shot themselves or in teams.*

In many New Zealand public schools, six-year-olds, from their first day in grade one, start using video cameras to explore their world and record it. They quickly learn to edit video and compose music.

In yesterday's world, seven-year-olds lucky enough to live near the sea loved to swim and build magic sand castles. They still do. *They can also now download free software from the Web to make their own three-dimensional animations.*

Great teachers have always involved their students in interactive learning. Now we can each use twenty-first-century tools to create an entire new world of interactive experiences: our own Disneylands if we wish.

3. It's GLOBAL

The Web owned by no one, but used by almost everyone

Better still, we can go on learning and sharing new skills throughout life: we can co-create the future together.

Says Canadian researcher and author Don Tapscott in *The Digital Economy*: “We are at the dawn of a new Age of Networked Intelligence—an age that is giving birth to a new economy, a new politics and a new society.”

Says British scientist and author Matt Ridley, in his book, *Genome: The autobiography of a species*: “I genuinely believe we are living through the greatest intellectual moment in history. Bar none.”

Says Dee Hock, the founder of Visa International and author of *Birth of the Chaordic Age*: “The undeniable fact is that we have created the greatest explosion of capacity to receive, store, utilize and transform information in history. There is no way to turn back. Whether we recognize it or not, whether we will it or not, whether we welcome it or not, whether it is constructive or not, we are caught up together—all of us and the earth as well—in the most sudden, the most profound, the most diverse and complex change in the history of civilization. Perhaps in the history of earth itself.”³

Says Professor Michio Kaku, author of *Visions*: “Since the 1950s, the power of our computers has advanced by a factor of roughly ten billion. By 2020, microprocessors will likely be as cheap and plentiful as scrap paper, scattered by the millions into the environment, allowing us to place intelligent systems everywhere.”⁴

Says Tim Berners-Lee, creator of the Web: “The vision I still have of the Web is about anything being potentially connected with anything.”⁵

And from Google's Sergey Brin and Larry Page, on its mission: “To organize the world's information and make it available to anyone.”

But the new co-creative learning revolution will be equally astounding.

□ The Hewlett Foundation, inspired by the life of Silicon Valley pioneer Bill Hewlett, has invested \$68 million charting precisely how it will come about: led by some of our best universities in North America, Europe, Asia, Africa and South America.⁶

59 million teachers still work mainly by themselves in isolated schools classrooms



Now fiber optics, low orbiting satellites and wireless make global classrooms possible

See globalizing the revolution, chapters ten and thirteen.

Imagine computer lessons instantly at your fingertips . . .



and access to 35,000 online video tutorials for \$1 to \$2 per student a year*

* www.atomiclearning.com

❑ The International Baccalaureate movement already provides a global curriculum to 539,000 students, aged from three to nineteen, in 2,051 schools in 125 countries.⁷

❑ SUN Microsystems' co-founder Scott McNealy has set up Curriki as The Global Education and Learning Network, to work towards a worldwide online curriculum for K-12 schools.⁸

❑ John Seely Brown, former head of the Silicon Valley Palo Alto Research Center that invented the personal-computer age, has spelled out how young students themselves are already leading that revolution.⁹

And brilliant schools, like Singapore's Overseas Family School, Britain's Cramlington Community High School, Mexico's Thomas Jefferson Institute, and The Master's Academy in Canada, are pioneering new ways to globalize lessons.

4. It's INSTANT

Just in time, when you need it, as you need it

For most of the last century, the assembly lines of Ford and General Motors typified the mass-production revolution.

Then Japan's Toyota introduced just-in-time mass-production, with all the hundreds of car-parts delivered each day as needed, where needed. Soon Japan and its methods dominated the world's car industry.

Then in the early 1990s a small band of computer-science students and graduates started to use online digital and interactive technology to reinvent the entire world:

❑ Tim Berners-Lee invented the tools for the World Wide Web.

❑ Mark Andreessen and his fellow Illinois students linked with financier Jim Clark to produce Netscape, the world's first real browser—to instantly surf the Web.

❑ Then students Sergey Brin and Larry Page invented Google, with the incredible ability to soon scan billions of Web sites and find answers in under half a second. Now with more than 300 million visitors every day.

❑ Atomic Learning,¹⁰ a company set up by ex-teachers, offers 35,000 instant, on-demand personalized video tutorials to provide any subscriber with easy-to-follow

graphic instructions to learn more than 100 computer programs: from editing video to making three-dimensional animations.

But probably the greatest early impact has been with music: and the power to allow fans anywhere in the world to download their favorite tracks, instantly and on demand, from a variety of online libraries, generally for under \$1 a track.

The most popular service is Apple's *iTunes*, which by early 2008 offered a library of more than six million tracks. That links directly to Apple's other major twenty-first century innovation, the *iPod*. A brilliantly-designed personal music library, it's also only the size of a pack of playing cards, yet able to hold up to 15,000 personally-chosen tracks on the most expensive *iPod*.

And if students can download their choice of music instantly on demand, why not the same access to instant learning programs?

5. It's MAINLY FREE

Or nearly free: often one low-cost click at a time

Imagine any sales manager twenty years ago deciding to give away millions of copies of his company's main product absolutely free. The result: probably instant dismissal or referral to a psychiatrist. But that's what Netscape did in 1994 when it launched its first *Navigator* browser. Within a few weeks forty million computer buffs around the globe had downloaded it free. Soon Netscape was selling other advanced copies to business. And when their company "went public" in 1995 it turned financier Jim Clark into an instant billionaire. It also made multimillionaires out of Marc Andreessen and his fellow young Illinois college developers. Since then that's been one of the keys to the Web-based revolution: give away instant service free—and sell the extras.

But the new ingredient: sell those extras "one low-cost click at a time"—on some sites as low as 5 cents a click—just like Google does with its sponsored advertising links. Millions of people can now turn their own highly-specialized talents into saleable products or services. They can give away millions of free summaries on Google, and then sell the extras for a few cents or dollars on every click.

Now an entirely new marketing concept has soared into prominence. Chris Ander-

**Not only instant
access to information
but much of it free**



**Google scans billions
of Web pages 300
million times daily:
answers in seconds**

Three-dimensional science lesson plans take time to prepare



But they can be stored digitally and shared

Photo courtesy Overseas Family School, Singapore: see its remarkable story, chapters twelve and thirteen.

son, the Editor in Chief of *Wired* magazine, calls it “the long tail”.¹¹ Up till recently, he says, we lived in “the age of the blockbuster”. Only the world’s top-selling books or long-playing records featured in most bookstores or radio-station play-lists.

Now, as Apple has proved, if only ten copies each of five million songs are sold, on average, at under \$1 each, that would achieve sales of \$50 million. Apple has made big profits from that.

But Apple has made even bigger ones by selling more than 140 million *iPods* in six years. In that time *iTunes* has sold over four billion songs, 50 million TV shows and 1.3 million movies. That’s the kind of impact that Google’s Schmidt is talking about when he says “we should think of all the world’s information being available in the equivalent of an *iPod*”.

And Harvard Business Professor Clayton M. Christensen—an expert on “disruptive innovation”—predicts this revolution will go further. No later than 2014, he says, 25 percent of all high school courses will also be available online—later personalized to each student’s preferred learning style. By 2019 that will be 50 per cent.¹²

6. It’s EASILY SHARED

The new world of collaborative networks

All seven “keys” are of vital importance for education. But none more so than the new world of cooperative networks of teachers and students.

Wikipedia is the ideal example.¹³ Ten years ago it didn’t exist. Other encyclopedias, such as *Britannica* and *World Book*, sold for \$1,000 or more. Microsoft’s *Encarta* soon surpassed them in popularity, given away free or sold cheaply on a CD-ROM to encourage sales of *Windows*. But *Encarta* was based on an inferior printed encyclopedia, with only 4,500 articles.

Now *Wikipedia* is by far the world’s largest encyclopedia. It has around 2.5 million English entries, with over ten million in all its 252 languages: instantly available, free, on the Web. All are contributed free by more than 75,000 volunteers.

Wikipedia founder Jimmy Wales states his aim succinctly: to give “every single person free access to the sum of all human knowledge”.¹⁴ Now apply that same principle to

learning and schooling. The world currently has around 59 million K-12 (kindergarten to twelfth-grade) teachers, with about 1.5 billion students.

Silicon Valley researchers say around 2 percent of adults are innovators and another 13 percent “early adopters”. Simple arithmetic shows 15 per cent of 59 million equals 8,850,000 teachers. Imagine each of those contributing only one favorite teaching or learning idea in a year, and sharing it with teachers around the world. Now imagine one each a month!

Britain’s Promethean company already provides a model. It makes some of the world’s best interactive digital whiteboards (at right), with built-in touch-screen software to teach mathematics, science, geography and other subjects. Promethean also coordinates collaborative online classrooms. In them, science and other teachers at every level can share their best lesson plans online with teachers around the world.

7. It’s CO-CREATIVE

To link your unique talents with multi-talented teams

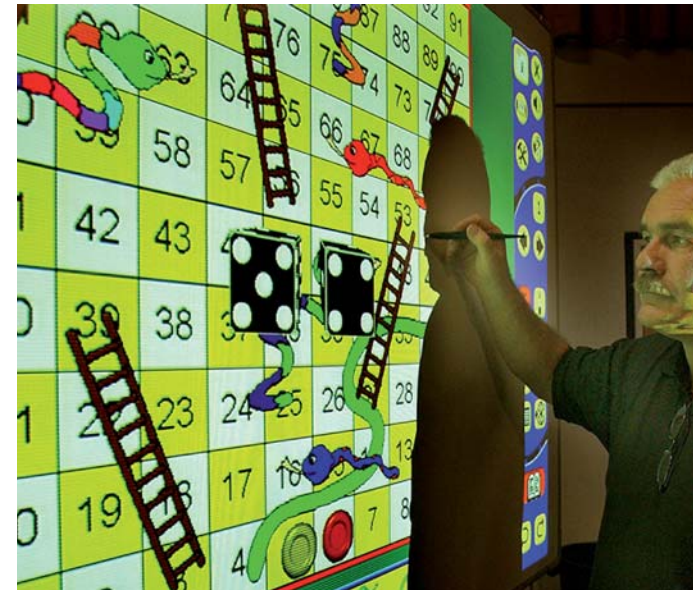
As we’ll explore in later chapters, everyone has a talent to be good and probably great at something. The trick is to find that something, and now to blend it together with the talents of others—anywhere.

Most people—if provided with the opportunities—probably have a passion for something. And when both passion and talent are unleashed, those opportunities are virtually limitless. Great schools are already achieving this by enthusing students to set up their own personalized learning plans. And to keep on upgrading them, and their skills, throughout life”: to be self-directed, self-motivated lifelong learners.

Many brain researchers, such as Harvard’s Professor Howard Gardner, have argued for more than twenty years that intelligence is not fixed and that each of us is smart in different ways. Many schools now include Gardner’s theory of “multiple intelligences” into their daily program—so that students can build on their own strengths and learn from the strengths of others.

But the new twenty-first century world of digital multimedia means that students, even from early elementary-school age, can blend their own talent into semi-profes-

**After three centuries,
the era of chalkboard
and passive listening
is finally ending**



**Now school can be
fun and involving with
interactive electronic
screens* and global
lesson-plan sharing**

** Photo shows a Promethean Activboard in action.*

Once children could only go to the movies at the cinema



Now they can create their own in digital classrooms and multi-talented teams

In photo: Twelve-year-old students in a “digital classroom” at New Zealand’s Gulf Harbor public primary school use the world as their classroom. On outdoor adventure camps (on screen) and field trips, they capture their discoveries with video cameras, then edit them on Apple iMovie video software. In this way they learn to blend their own individual talent into multi-talented teams. See *The Digital Revolution*, chapter twelve.

sional multi-talented teams. Scripting, shooting, editing and providing music and props for school videotape, for example, requires many different talents: technical, visual, musical, graphic, linguistic and animation.

Wikipedia provides a brilliant one-dimensional model for cooperative sharing and co-creation. But leading American digital games producer Marc Prensky has an even better idea.¹⁵

Like the co-authors of this book, he wants the world’s students to reinvent education, reinvent schooling, reinvent the way the world learns and teaches.

And he wants them to do it by cooperatively building digital learning games with the same appeal that Sony *PlayStation 3*, Nintendo and Microsoft interactive games already have for tens of millions of children in every continent. Kids love them because they’re interactive fun.

Now imagine tens of thousands of individual colleges, schools or millions of classrooms each taking responsibility for becoming the expert on one “subject” or aspect of each subject. The goal: the best learning software, produced by the students of the world, and shared freely with all other students around the world—on every aspect of every “subject”. Welcome to the real Free World. Linux, the open-source computer operating system inspired by Finnish student Linus Torvalds, was co-created by thousands of computer-science students around the world. You can now download it free from the Web, like you can download low-cost or free software or music.

“Linux,” says Eric Raymond, “was the first project to make a conscious, successful effort to use the entire world as a talent pool.”¹⁶ A small group of students on the new Web first proved this by together co-designing a complete computer operating system. Now one million are working together on other digital projects—and a new business model: instead of the winner-takes-all—all can be winners.

In pockets around the planet, talented school teachers have also started the reinvention. All great teachers involve their students in challenging, interactive projects.

Some of their interactive classroom innovations are brilliant, but serve only twenty to forty students. We’ve called that *The Learning Revolution 1.0*.

Now the overwhelming need is to “scale up” their efforts—to make them available to hundreds of millions—to use the whole world as this new talent pool. And this is *The Learning Revolution 2.0*.

Just as genius students like Google’s Brin and Page can turn their combined talents into a company valued at \$170 billion—so too can the world’s greatest teachers and other bright students share their talents with millions—some free and others as income-earners.

❑ At Singapore’s Overseas Family School, with international students from seventy-four countries, teachers and students have digitized most of their lesson plans, for sharing with others. And they’ve also used their own excellent computer network to provide individual learning programs for all 3,500 students.

❑ At Mexico’s K-12 Thomas Jefferson Institute, highly creative students from its high schools and middle schools each produce one Broadway musical a year to professional standards: from *The Disney High School Musical* to *Cats* and *Wicked*. And the Institute has ongoing global relationships with MIT’s MediaLab, NASA, Apple, Microsoft and top-tier schools and universities around the world. Their high school students even take the Harvard Business School’s business courses.

❑ In New Zealand, the Government abolished its national Education Department almost twenty years ago and replaced it with a much smaller policy-recommending Ministry. Since then all schools, public and private, have been charter schools, run by local boards. Innovation has soared.

At two new special-designation schools in Christchurch, students use the entire city as a classroom. Each student has a personalized learning plan, worked out in partnership with parents and learning advisers. Each plan starts with the student’s own passions, talents, interests, vision and drive. The very names of the schools—Discovery One (for primary students) and Unlimited (for high school)—echo the emphasis.

New Zealand’s new national curriculum guidelines are also being hailed as an international model for K-12 education.¹⁷ The vision is for young people who are confident, connected and enthusiastic lifelong learners, with goals to achieve excellence,

At many schools students perform in annual musicals



Now their videos of Broadway hits are good enough for the Disney Channel

*Broadway musicals produced each year by the students at Mexico’s Thomas Jefferson Institute are so professional that the Disney Channel screened the video of their production of *The Disney High School Musical*. To produce the Broadway hit *Wicked* (above), the challenge was even harder: to translate and rhyme the English script in Spanish. For two years in a row the Institute has been voted Latin America’s school of the year for vision and innovation. See full story, chapter twelve.*

But the real power to reinvent everything: the human brain



- ❑ A trillion brain cells
- ❑ 100 billion neurons
- ❑ 900 billion others
- ❑ 100 trillion ‘files’

- ❑ For a new theory of learning: *chapter two*.
- ❑ For the latest brain research: *chapter three*.

innovation and diversity as well as twenty-first century literacy and numeracy.

A completely new approach is also about to revolutionize university life. A group of educational leaders have used a \$68 million fund from the Hewlett Foundation to show how the world can build a new online Global Cyberspace Learning Web. This will be co-created by all, shared by all, expanded by all.

But we stress that this is not a book that recommends interactive technology and the Internet as new all-embracing “magic bullets” to transform education. Only a fool worships his tools. But over centuries dramatic new *disruptive technologies*—from the wheel to the plow, sail-power to steam-engines, printed books to electric power, automobiles to television—have ushered in great *social* changes.

Those changes transcend the technologies themselves. And this new revolution is more about the social and personal changes than the technologies that spur them.

Link those new innovations with the incredible powers of the human brain—and the new breakthroughs to unleash the unique power of the human mind—and the scope of the new revolution is truly unlimited.

As Gary Hamel summarizes it in *Leading The Revolution*: “We are now standing on the threshold of a new age—an age of revolution. Change has changed. No longer is it additive. No longer does it move in a straight line. In the twenty-first century, change is discontinuous, abrupt, seditious. In a single generation, the cost of decoding the human gene has dropped from millions to less than a hundred bucks. The cost of storing a megabyte of data has dropped from hundreds of dollars to essentially nothing. The Web is rapidly becoming a dense global matrix of connections between people, their ideas and their resources.”¹⁸

In this new world, says Hamel, the future is not something that happens to you, but something you create.

And now we can co-create that future together, wherever we live.