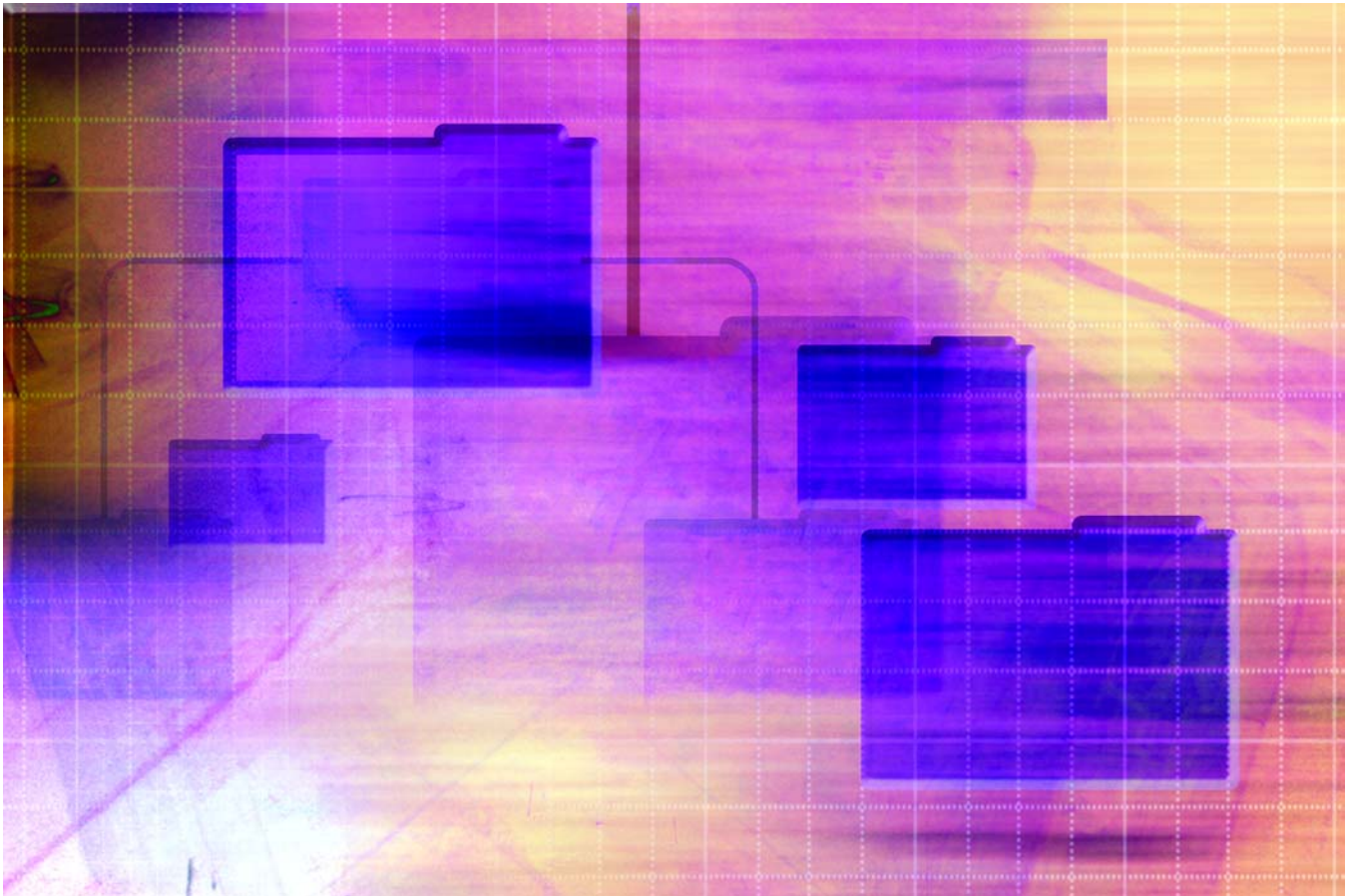# The 2003 e-learning readiness rankings

A white paper from the Economist Intelligence Unit

Written in co-operation with
IBM

About the Economist Intelligence Unit

The Economist Intelligence Unit is the business information arm of The Economist Group, publisher of *The Economist*. Through our global network of over 500 analysts, we continuously assess and forecast political, economic and business conditions in 195 countries. As the world's leading provider of country intelligence, we help executives make better business decisions by providing timely, reliable and impartial analysis on worldwide market trends and business strategies.

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About the rankings

O this learning, what a thing it is!
—The Taming of the Shrew: I, ii

Since 2000, the Economist Intelligence Unit has published an annual e-readiness ranking of the world's 60 largest economies (eb.eiu.com/err). The ranking provides a benchmark for governments seeking to make their economies amenable to Internet and high-tech investment, and companies aiming to direct their investments to the most receptive countries.

This year, in response to important new trends in Internet usage, we are publishing a complementary ranking: e-learning readiness in the same 60 countries. E-learning readiness indicates a country's ability to produce, use and expand Internet-based learning— both informal and formal, at work, at school, in government and throughout society.

For governments, this ranking and report will suggest ways to encourage the development of e-learning for the benefit of society and the economy. Companies will be able to benchmark their Internet-based training methods against others in their industry, country and region. And anyone with an interest in increasing educational opportunities around the world will be eager to read this assessment of the state of e-learning.

For the purposes of this study, e-learning is defined as formal and informal education and information-sharing that uses digital technology. E-learning readiness is a nation's ability to generate, disseminate and use digital information among its citizens to the betterment of the country's economic activity.

Nearly 150 qualitative and quantitative criteria, organised into four distinct categories (government, industry, education and society), feed into the e-learning readiness rankings. Within these categories, data is organised into four areas: connectivity, capability, content and culture. The majority of qualitative data are from the Economist Intelligence Unit and Pyramid Research; additional data are from UNESCO, the World Bank, and other public and private organisations. Qualitative criteria are assessed by the Economist Intelligence Unit's extensive network of country experts. (For an account of the criteria used in the ranking and country-by-country scores, see the appendix on pages 14 and 15.)

For both the e-readiness and e-learning rankings, the Economist Intelligence Unit worked in association with IBM Learning Solutions, which helps organisations systematically increase the effectiveness of their learning programmes and processes. IBM worked with the Economist Intelligence Unit to build the rankings model. The Economist Intelligence Unit is entirely responsible for the rankings and the content of this white paper.

The 2003 e-learning readiness rankings

A revolution in learning

Whether it is the Massachusetts Institute of Technology's OpenCourseWare initiative—which since September 2002 has made course materials freely available on the Internet—or the African Virtual University (www.avu.org) in Nairobi, Kenya, which works with international universities to educate students across Africa, or any of the countless Internet-based staff training programmes run by small and large corporations around the world, people are embracing e-learning.

The lure of Internet-based learning is undeniable. It can bridge distances and conserve classroom costs. It is available any time, at the student's convenience. Online education materials are more easily updated than traditional textbooks, and the communication channels between teacher and student are always open. Technology has enabled people to access courses they otherwise would not have been exposed to. Online education fosters life-long learning and personal and career development.

"The old system with one teacher and 30 students in a classroom is falling apart as we become more concerned with individual learning," says Kersti Hjertqvist, a project leader at Stockholm's IT Centre. The centre produces and publishes secondary-school curricula on the Internet and encourages e-learning in Stockholm schools. "In order to organise individual learning we have to use new technology."

Unconfined to full-time students and employees, e-learning options are available to everyone: senior citizens and rural residents; workers unable to quit their day jobs to attend university; professionals seeking to advance their careers or change fields; and parents unable to leave the home. "There is much more flexibility possible with e-learning," says Richard Straub,

Paris-based director of IBM Learning Solutions for Europe, the Middle East and Africa. "You do it when you need it, just in time."

The benefit of e-learning to companies is already evident. They can improve the quality of their training programmes while making them both cheaper and more convenient to today's mobile workforce. IDC, a research firm, estimates the corporate e-learning market will grow from US$6.6bn in 2002 to US$23.7bn in 2006. It forecasts the IT and business-skills training markets to have a compound annual growth rate of about 5% globally, and 10.5% in the US alone, between 2002 and 2007.

Other factors are also fuelling e-learning enthusiasm. As more countries transform themselves into knowledge economies, where intellectual capital is the raw material, they are finding that skills shortages can wreak economic havoc. The demand for quick, adaptable training options is rising. In the US, for example, it is estimated that more than half of all federal employees will be eligible for retirement in just two years. How will legions of new staff be integrated quickly and efficiently, without interruption to services? E-learning can meet this and myriad other demands in today's mobile world.

Yet, when discussing all the things that e-learning can be, "misunderstood"

often tops the list. "A lot of people have a misconception about e-learning," says Arleta Chen, Hong Kong-based director of IBM Learning Solutions in the Asia-Pacific region. "They think it is dull computer-based training where you just read on the screen."

This is not the case. Like traditional education, e-learning has many incarnations. Real-time chat technology, Internet-based phone telephony and online meeting software allow boundless opportunity for collaborative e-learning. The sheer ubiquity of the Internet draws diverse groups of students, spanning all ages, geographies and backgrounds, together in ways that would not have been possible before. Monique Conn, head of programmes at the International Baccalaureate Organisation, a non-profit based in Geneva that works with nearly 1,500 schools in 115 countries, describes an experience in which Canadian and German high-school classrooms were connected for a cultural exchange. The students posted history assignments about the second world war on the Internet so that Canadians could study the perspective of the German students, and vice versa. "Even though the topic was identical, the perspectives were quite different," says Ms Conn.

Students need not be alone when they study online. In corporations and colleges, classes are often held virtually—everyone logs on at the same
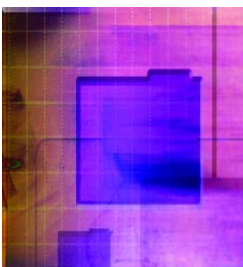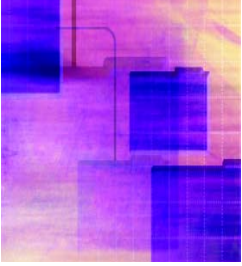
The four Cs

E-learning readiness means more than connectivity. The best-connected countries in the world, led by Singapore and South Korea, are not necessarily the top e-learners. Other building blocks—including a strong education system and a wealth of online content—are also necessary, as is a willingness to adapt to new ways of learning.

We have arranged the criteria in our ranking in four main areas: *Connectivity* (the quality and extent of Internet infrastructure), *Capability* (a country's ability to deliver and consume e-learning, based on literacy rates, and trends in training and education), *Content* (the quality and pervasiveness of online learning materials) and *Culture* (behaviours, beliefs and institutions that support e-Learning development within country). Among our findings:

Connectivity

Across the board, successful e-learners have the right infrastructure. They lead in broadband connectivity, mobile-phone usage, and PC penetration. The Internet reaches more of society, including rural residents and the poor, and is readily available in private homes and offices, government agencies large and small, and in public settings including schools and libraries. Without Internet connectivity, there can be no online learning, and governments in both developed and developing countries are wise to continue prioritising infrastructure rollout and upgrade.

Capability

Connectivity is a crucial foundation, but additional building blocks are needed to spur e-learning: a strong education system, traditions in job training, support for lifelong learning and a high rate of literacy. In this area, which we term "capability", the leaders are Sweden, the US and Canada, followed by three countries in Asia-Pacific: South Korea, Australia and Singapore. Many countries, including many developing countries, value education highly. But enthusiasm for secondary and university schooling often does not carry over to the workplace or extend through a person's life-time. For e-learning to succeed broadly, and not just in the traditional school setting, there must be a broad tradition of learning. Governments and industry can help by expanding training opportunities within their offices, and demonstrating to people that by continually improving skills, they continually improve their prospects.

Content

There is another basic building block for e-learning: online content. People must be able to access library materials, newspapers, corporate information, government databases, and much more, online and in their native language. This content makes informal Internet learning possible, and contributes to the strength and viability of structured e-learning programmes run by schools, companies and other institutions. North America dominates in the rankings in online content, including e-learning content, followed by northern Europe. Countries where English is widely spoken are at an advantage, given the predominance of English-language content on the Internet. But other countries, including South Korea, are gaining ground as companies aggressively move training materials online. Governments can support the creation and dissemination of content by keeping censorship and regulation to a minimum, encouraging schools and libraries to increase online content, and setting an example through the online migration of government information and services.

Culture

With connectivity, capability and content, e-learning is possible. But to truly flourish, other ingredients are required: beliefs, behaviours and institutions. In countries where the teaching profession is respected and rewarded, where non-traditional certificate and degree programmes are readily accepted, where national institutions support and promote e-learning, where learning is important to the general populace, and where there is a general acceptance of progressive ideas, there is immediate promise for e-learning ventures. Here Western Europe is ahead. Internet advancements are heartily welcomed by government and society alike, and there is a clear desire to leverage technology to reach ambitious and long-standing educational goals. Governments in other regions should likewise develop plans and policies to welcome e-learning into public institutions, and support the validity of online degrees and certificates. They should regulate the e-learning industry in a way that encourages private ventures to enter the field. And they should publicise their efforts in order to increase public acceptance of—and trust in—online learning.

Economist Intelligence Unit e-learning readiness rankings, 2003

	Score (of 10)	Rank (of 60)		Score (of 10)	Rank (of 60)
Sweden	8.42	1	Mexico	5.96	31
Canada	8.40	2	Argentina	5.86	32
US	8.37	3	Poland	5.73	33
Finland	8.25	4	Brazil	5.63	34
South Korea	8.24	5	Slovakia	5.51	35
Singapore	8.00	6	Thailand	5.11	36
Denmark	7.98	7	Peru	5.10	37
UK	7.93	8	Colombia	5.05	38
Norway	7.91	9	Bulgaria	5.04	39
Switzerland	7.72	10	South Africa	4.96	40
Australia	7.71	11	Romania	4.91	41
Ireland	7.60	12	Venezuela	4.82	42
Netherlands	7.59	13	Philippines	4.80	43
France	7.51	14	Russia	4.65	44
Austria	7.49	15	India	4.56	45
Taiwan	7.47	16	China	4.52	46
Germany	7.45	17	Saudi Arabia	4.50	47
New Zealand	7.37	18	Ukraine	4.38	48 (tie)
Hong Kong	7.34	19	Ecuador	4.38	48 (tie)
Belgium	7.19	20	Turkey	4.33	50
Italy	7.07	21	Egypt	3.98	51
Spain	6.98	22	Kazakhstan	3.79	52
Japan	6.53	23	Indonesia	3.67	53 (tie)
Greece	6.52	24	Azerbaijan	3.67	53 (tie)
Malaysia	6.48	25	Sri Lanka	3.66	55
Israel	6.34	26	Algeria	3.52	56
Portugal	6.33	27	Vietnam	3.32	57
Chile	6.13	28	Pakistan	3.22	58
Czech Republic	6.11	29	Iran	3.06	59
Hungary	6.09	30	Nigeria	2.82	60

Source: Economist Intelligence Unit
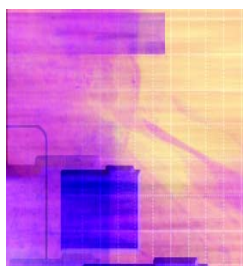
time and can pose questions as an instructor's video lecture or webcast is delivered. Afterwards, students can assemble in breakout rooms to discuss using chat, e-mail or phone-conferencing technology.

In years to come, e-learning may become more informal in corporate settings. For example, an employee with a training need may mine the corporate database to identify an expert on that topic. "You may have mentors available on a just-in-time basis," says Yael Ravin, a senior manager of learning technologies at IBM's TJ Watson Research Center. "There's going to be a lot more blending of formal and informal learning." Simulation may increasingly find its way into e-learning programmes. Managerial dilemmas may be depicted in a training module, for instance, just as cockpit dilemmas are simulated in pilot training.

E-learning will become ever more entrenched in society, and will continue to redefine the process of education. As more children grow up with computers and the Internet, learning will become synonymous with e-learning, and e-learning with learning.

Regional findings

Without exception, the top-ranked countries in our rankings have several assets in common: a high degree of IT penetration; strong education systems; free markets that encourage competition and reward-promising Internet ventures; and governments, citizens and business that have all embraced technology on a cultural level. Many of these factors go hand-in-hand with economic development, and it is not surprising that the top-ranked countries are rich. Wealth does not determine everything, however. The world's three largest economies—the US, Japan and Germany—came in 3rd, 17th and 23rd, respectively, while smaller, nimbler competitors placed better. In e-learning, as in everything, creativity and determination go a long way.

Sweden, the frontrunner in this year's Economist Intelligence Unit e-readiness ranking, has also placed first in our inaugural e-learning readiness ranking. A host of factors—an unparalleled IT infrastructure, a citizenry that is eager to integrate the Internet into all facets of daily life and a top-notch education system, to name a few—propel Sweden to the lead in e-learning readiness. The Swedish government has helped set the stage. Advanced online government services, at both the national and local levels, are evidence of its determination to harness technology for the common good. Creative government initiatives pushed Sweden from having a relatively low PC-penetration rate in 1998 to the

world's highest rate today. Internet-based training is common within government agencies, and serves as an example to businesses and schools. The government is continuing to develop laws and strategies to expand the role of e-learning within its offices and the public education system.

Sweden does not stand alone in glory. Its neighbours, Finland, Denmark and Norway, all place within the top nine slots. It helps that the region is saturated with mobile phones and broadband connections. But other factors, such as cultural proclivities and government initiatives, put these countries ahead of the curve. Northern Europe as a whole has shown greater enthusiasm for information technology than Southern Europe.

Canada and the US place second and third, respectively, in our rankings. Internet culture is strong in North America, as are traditions of life-long learning and open access to education. Community colleges abound and enrolment in tertiary education is high. And in no other countries are online university courses and degree programmes more developed or accessible. Canada is home to hundreds of e-learning companies, and the US has a thriving online university market exemplified by the OpenCourseWare initiative at MIT and the Apollo Group's programme with the University of Phoenix. Even in the offline classroom,
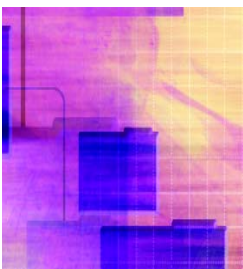
the Internet is a constant presence in North American schools. Teachers from elementary through post-secondary school exploit the Internet to prepare and deliver lessons, and students depend on computers and the Internet to do their schoolwork.

In the Asia-Pacific region, South Korea (5th place) and Singapore (6th) lead the pack. South Korea's ascendancy is particularly notable in that it is the only top-ranked country in which English is not commonly spoken in business settings. The English language dominates on the Internet and e-learning materials are often in this emerging lingua franca. Yet South Korea has surged ahead, tying with the US for first place in the Industry category of our rankings. Korean industry groups and private companies in every sector are active in creating online-learning content and in establishing standards for e-learning. The governments of South Korea and Singapore are also aggressive in promoting online learning. "From as young as kindergarten, e-learning is being used," says An Gie Foo, a manager in education at International Enterprise Singapore, the restructured Singapore Trade Development Board.

Every region has its stars and promising up-and-comers. In the Middle East and Africa region, Israel (26th place) is the clear leader, ahead of South Africa (40th), Saudi Arabia

(47th) and Turkey (50th). There are pockets of e-learning strength in each country—particularly in their financial sectors. In Latin America, which is dragged down by relatively low technology penetration rates, government initiatives and public-private partnerships in countries including Chile (28th), Mexico (31st) and Brazil (34th) have helped bring Internet advancements to the people. The recent introduction of broadband technology in the Czech Republic (29th), along with efforts to reduce Internet access costs and extend connections to every public institution in Hungary (30th), has put these countries ahead in Eastern Europe.

Many of the countries that top our annual e-readiness rankings also excel in e-learning. This is no surprise: a country that is amenable to all kinds of Internet content and all manner of usage is likely to be amenable to a specific content and usage—in this case, online learning. But e-learning readiness has its own set of requirements, and demands a targeted response by government and industry.

## Industry trends and best practices

Government initiative is evident in countries where e-learning is developing quickly. In Europe, for example, the European Union's eEurope 2005 Action Plan encourages the development of broadband Internet access and e-learning programmes. Governments are behind e-learning advances in Sweden, Canada, South Korea and other countries.

But industry also plays a leading role. Countries that score well in our study tend to have a high degree of collaboration between corporations, industry associations and government agencies. "E-learning can't just be driven by the private sector," says An Gie Foo at International Enterprise Singapore. "A close working relationship between the government and the private sector is important." In the highly competitive Asian countries of South Korea, Singapore, Taiwan and Hong Kong, the Internet is widely regarded as a tool for strengthening trade and investment. E-learning has fit easily into an overall plan to boost economic competitiveness.

Around the world, large multinationals are among the biggest consumers of e-learning. It is easy to see why. An international firm that wants to train local product mangers in ten countries in a consistent manner finds that e-learning is the least expensive and most efficient way to do so. Companies including SAP of Germany, Ericsson of Sweden, Samsung of South Korea and Phillips of the Netherlands depend on online programmes to train workers around
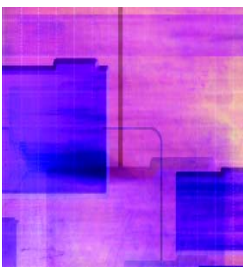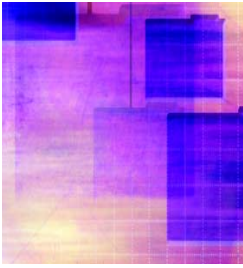
the world. Experts predict that small and medium-sized companies will not be far behind in adopting e-learning.

In highly regulated industries, companies both large and small are finding that online training solves entrenched problems. Pharmaceutical companies, financial services, carmakers and law firms have to adapt to constantly changing regulations—new emission controls, drug approvals and so on—that demand readily accessible, updateable learning tools.

Technology-dependent industries, such as IT and airlines, which have long used computer simulation for pilot training, have also been among the early adopters of e-learning. The healthcare profession, however, has been relatively slow to pick up online learning, though that is expected to change.

Among industries using e-learning, two trends stand out: outsourcing and the pooling of infrastructure resources. A mobile phone manufacturer, for example, may discover that it has the knowledge needed to train employees in marketing techniques, but not the technology to deliver that knowledge. Schools and local governments, meanwhile, often cannot afford the investment needed to bring together high-speed Internet connections, PCs and video-conferencing equipment necessary for effective e-learning. In many places, these e-learning consumers are joining together to share costs.

Ten tenets of e-learning

E-learning is still in its infancy. As companies, governments and schools struggle to get it right, they can take lessons from those already blazing the e-learning trail.

1. Think big. Piecemeal approaches to e-learning do not work. It is important to examine goals and map out how to achieve them. "You need a holistic approach and an understanding of pedagogy, culture, technology and languages," says Richard Straub of IBM Learning Solutions. For companies, taking a holistic approach may mean linking e-learning programmes to corporate goals. This will make it easier to select e-learning providers, justify costs to management and keep the programme on track. South American oil company Petróleos de Venezuela, for example, needed to cut training costs, and turned to e-learning with that goal in mind. The state-owned firm was able to cut 70% of the cost of traditional, classroom-based training, and expects a return on its investment in just three years.

2. Build infinite infrastructure. There is no e-learning without the "e". Capable computers, smart software, high-speed Internet connections and more are needed to support e-learning.
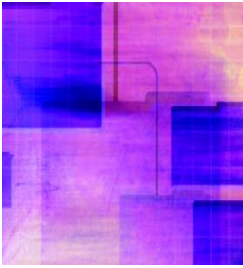
"We know quite well today how to make e-learning work, how to manage the process and how to put teaching online," says Mr Straub. "Infrastructure is the big obstacle." Fortunately, new technologies can provide shortcuts. Countries lacking in traditional telecommunications infrastructure, for example, are now considering wireless Internet connections as a way to get people online. Every day new solutions become available—broadband, wireless technology, satellite spectrum—that will allow even the remotest areas to have access to the world's learning institutions.

3. Embrace the "e". The traditional lecture hall is revered as a sacred place in which an instructor can create rapport with his students and inspire them through personal appeal. But technology offers its own set of perks. The Internet is a perfect medium for allowing students not only to pose questions to professors but, more importantly, collaborate with each other. Companies, governments and schools should exploit technology so that it enhances—not merely delivers—learning. "If it's only reading online and taking tests online, it is no more than a correspondence course," says Monique Conn of the International Baccalaureate Organisation (IBO).

4. Make credits transferable. Many students know the pain of accruing countless hours of credit at various schools that never amount to a degree because one institution does not accept credits from another. Online campuses should learn from this common frustration and build a better model. As the virtual world develops its own Ivy League equivalents, focus should be on making it easier for students to transfer credits, obtain transcripts and move efficiently towards earning a degree or certificate.

5. Mix it up. Technology can be a great tool for educators, but it cannot replace them. Experts recommend a "blended" approach to e-learning whereby classroom time or face-to-face consultations supplement online material. "As good as e-learning is, I don't want to have open-heart surgery from someone who only got his education online and has had no in-hospital training," says Fred Poker, a managing consultant in human capital management knowledge, content and e-learning solutions at IBM Business Consulting Services. At universities in Singapore, for example, students may go to lectures on campus but access course materials or reading assignments online. If courses must be predominantly online, e-mail and Internet-phone features can be used to plug students into a discussion or group project. "Make sure there is a feeling of community where students interact with the instructor and one another," says Ms Conn of IBO.

6. Support standards. Proprietary e-learning equipment and software prevent users from sharing solutions, pooling resources and updating materials in the most efficient manner. Standard ways for cataloguing and organising e-learning materials are the only way to provide universal access. "Just like we have the Dewey Decimal system for public libraries, we have to develop taxonomies," suggests Mr Poker, by which course materials used in e-learning are organised into online libraries. Groups such as the Advanced Distributed Learning (ADL) Initiative—a collaborative effort by government, industry and academia—are making progress in this realm. One of ADL's priorities is an e-learning standard known as sharable content object reference model (SCORM). Complying with this collection of specifications from multiple sources helps governments, businesses and schools develop interoperable, accessible and reusable materials. First released in 2000, SCORM now has support from international groups including the Aviation Industry Computer-Based Training Committee, the Institute of Electrical and Electronics Engineers and the Alliance of Remote Instructional Authoring & Distribution Networks for Europe.

7. Make it modular. Standards can make it easier to develop smart e-learning materials quickly and efficiently. Content developers can transform existing material into any number of e-learning formats: text, video, interactive quizzes and more. The better it conforms to standards, the easier it is to build "modular" content that can easily be reused. Modular content is also simpler to update if all forms of the material can be updated simultaneously.

8. Pick a partner. Whether you are a content developer who uses a museum's resources, a small business that joins a consortium to help defray infrastructure costs or a corporation that outsources its training programmes, e-learning works best when players partner up. The US Army, for example, has teamed with a host of education, technology and infrastructure-support partners to create eArmyU. Organisations that need e-learning services should continue to focus on their core competence while leaning on a partner for e-learning expertise. For institutions without the resources for heavy infrastructure investments, collaboration is not only helpful, but often necessary. With shared infrastructure, you can achieve economies of scale.

9. Go native. English may be the language of international business, but it is not the world's most common native language. The availability of course material in local languages is critical for e-learning's success, as are
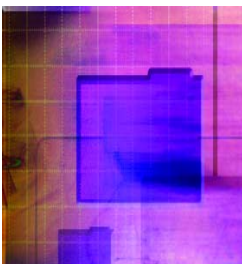
culturally adapted teaching methods. In Asia, for example, students tend to hold teachers in high esteem, seldom challenging their professors. Assignments in which they are instructed to challenge the teacher's views are not likely to succeed. North Americans and Europeans, however, often like to question an instructor's premises or conclusions, and may not enjoy a course where they are meant to be passive recipients of lecture materials. The world is filled with cultural nuances that should be accommodated to increase the success of e-learning programmes.

10. Teach the teacher. Instructional methods that work for students sitting in the back row of a science lab may not reach students at the far end of a cable-modem line. The way in which an online curriculum is delivered is new and different, and instructors must be trained to make the most of updated teaching methods. The stakes are high: an ineffective teacher can waste the time of 30 or 40 students. But bad teaching online can touch thousands. "We can create mass damage quickly," says Mr Poker. "We have to put into place controls to ensure the validity of online materials."

Conclusions

There is not a corner of the world without the need for e-learning.

Whether it is an exodus of baby-boomers from the US workforce that requires large-scale training efforts, or a health crisis such as the outbreak of SARS in Asia that forces thousands of people into quarantine, the utility of online learning becomes more apparent every day.

Businesses have latched onto e-learning in order to reduce training costs, maintain consistency of teaching in offices around the world and keep staff constantly up-to-date with new regulations and market trends. They can further enhance e-learning readiness by supporting industry standards; partnering with schools and government to extend the reach and improve the quality of e-learning programmes; and expanding training opportunities within their own offices to show employees that ongoing learning results in career development.

Schools use online courses to reach a broader segment of the population, to meet the needs of mobile and non-traditional students, and to capitalise on new ways of promoting class participation. To strengthen e-learning readiness, they should support regulations to make credit easily transferable; continually expand the range of classes and courses that include an online component; and observe the world's most advanced e-learning institutions. They should work with government to develop strategy
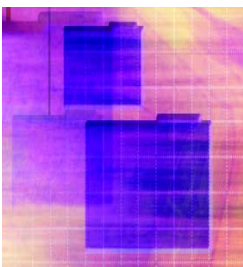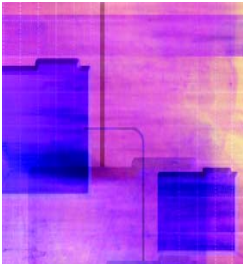
for implementing existing educational goals by leveraging new technology. And they should consult with business to ensure that students are being properly prepared for a future in which job training occurs increasingly online.

Small or large, businesses and schools need help from governments to build and expand e-learning opportunities. Governments already recognise e-learning as a way to expand educational opportunities to all citizens, and to keep workers' skills up to world standards. They know e-learning-ready countries attract investment from multinational companies that need to set up shop where workers are skilled and can be easily trained. They see the Internet as a competitive tool in the global marketplace.

To further boost e-learning readiness, governments should find a balance in regulating the burgeoning e-learning market: lightly enough to allow market forces to spur competition and efficiency, while carefully enough to maintain high standards of content and instil public trust in online learning programmes. They should be proactive in finding creative ways to use online learning within ministries and agencies, and in the public school system. They should work with industry to create technology standards. And they should

collaborate with learning institutions to ensure that online degrees and certificates are equivalent in value to their offline counterparts. Most important, governments must continue to rollout and upgrade technology, and extend public access to computers and the Internet, so that everyone has a chance to e-learn.

As learning technology develops, it will become ever more intelligent and collaborative. Training will be almost seamlessly embedded into a trainee's workflow. Standards of content will be more widely recognised and applied, and there will be increasing freedom for learners to mix and match learning modules from among a world of possibilities. Online degrees and certificates will come to have considerably greater value in the marketplace.

Eventually, e-learning will become another knowledge tool—like libraries or overhead projectors. It may marginalise other types of learning, just as the Internet has encroached upon fax machines and telephones in offices around the world. "Within the next couple of years, we'll see the 'e' drop off of 'e-learning'," says Fred Poker at IBM Business Consulting Services. Until then, governments, schools and companies must actively refine their e-learning goals and methods.

Appendix:
How we did the rankings

Our rankings include nearly 150 qualitative and quantitative criteria divided into four categories: education, industry, government and society. We assessed the readiness of each of these "sectors" to take advantage of e-learning advancements, based on existing use of Internet-based learning programmes as well as access and use of the Internet in general and attitudes towards new technology. A country's overall score is a weighted average of these four category scores.

Within each of these categories, we divided criteria into four components: *Connectivity* (the quality and extent of Internet infrastructure), *Capability* (a country's ability to deliver and consume e-learning, based on literacy rates, and trends in training and education), *Content* (the quality and pervasiveness of online learning materials) and *Culture* (behaviours, beliefs and institutions that support e-Learning development within country).

The majority of qualitative data are from the Economist Intelligence Unit and Pyramid Research; additional data are from UNESCO, the World Bank, and other public and private organisations. Qualitative criteria are assessed by the Economist Intelligence Unit's extensive network of country experts.

The scope of the four categories is as follows:

Education. In this category, we measure Internet access and usage among teachers and students within a country's education system, from primary school through university. Countries score well if the Internet is equally accessible in urban and rural schools, as well as in wealthy and poor communities. We consider whether universities commonly offer Internet-based courses and degree programmes. We also measure the strength of the education system as a whole: how many years of compulsory schooling? What percentage of GDP is spent on education? How well are teachers paid, and how are they regarded by the community and government? Answers help establish each nation's readiness for e-learning within the sphere of organised education.

Industry. This category looks at Internet access and usage within each economy's major sectors: tertiary (services), secondary (manufacturing), primary (agriculture and mining) and government. Countries score well if the Internet is being exploited across each of these sectors, among small and large organisations alike, to reach customers, enhance internal processes and train staff. Among the questions we asked: how do companies regard online degrees when selecting employees? Are employees enthusiastic about Internet-based training programmes? We also examine the e-learning industry itself, assessing the ease with which an e-learning company can set up and provide services within a country's regulatory regime.

Government. To assess government support for e-learning advancements, we look at its attitude towards the Internet and e-learning within its own agencies, within the public education system and within society at large. Countries score well if local and national branches of government offer user-friendly online services that the general population embraces; if online training is common among civil servants at all levels; and if the government, and the education ministry in particular, support the development of e-learning programmes in the public schools and universities.

Society. Here we examine a population's access to and use of the Internet. We consider its attitude towards education in general and e-learning in particular. Countries score well if people have ready Internet access, supported by a high penetration of PCs, mobile phones, low-cost fixed-line and broadband connections. We also take into account the population's level of education. Are children encouraged to go as far as possible in their educational pursuits? How do a country's test scores compare internationally? Do people use the Internet to take courses—for work, education or personal interest—that they might otherwise not have taken?

Economist Intelligence Unit e-learning readiness rankings, 2003, by category

	Educatn. score (of 10)	Educatn. rank (of 60)	Industry score (of 10)	Industry rank (of 60)	Govmnt. score (of 10)	Govmnt. rank (of 60)	Society score (of 10)	Society rank (of 60)	Overall score (of 10)	Overall rank (of 60)
Weight in overall score	20%		40%		20%		20%			
Sweden	8.17	6	8.26	4	9.67	1	7.76	2 (tie)	8.42	1
Canada	8.83	2	8.35	3	8.80	14 (tie)	7.67	6	8.40	2
US	8.90	1	8.39	1 (tie)	8.27	22	7.92	1	8.37	3
Finland	8.00	9	7.97	5 (tie)	9.60	2	7.69	5	8.25	4
South Korea	8.32	4	8.39	1 (tie)	8.73	16 (tie)	7.36	12	8.24	5
Singapore	7.98	11 (tie)	7.84	7	8.60	19	7.74	4	8.00	6
Denmark	8.25	5	7.32	10 (tie)	9.27	6	7.76	2 (tie)	7.98	7
UK	8.46	3	7.16	12	9.40	3 (tie)	7.46	9 (tie)	7.93	8
Norway	8.08	7 (tie)	7.32	10 (tie)	9.33	5	7.46	9 (tie)	7.91	9
Switzerland	8.08	7 (tie)	6.87	16	9.20	7	7.57	8	7.72	10
Australia	7.56	19	7.97	5 (tie)	8.40	21	6.66	21	7.71	11
Ireland	7.70	18	7.06	13 (tie)	9.40	3 (tie)	6.75	19	7.60	12
Netherlands	7.98	11 (tie)	6.71	19	8.93	12	7.62	7	7.59	13
France	8.00	9	6.81	17 (tie)	9.13	8 (tie)	6.80	18	7.51	14
Austria	7.75	17	6.81	17 (tie)	9.13	8 (tie)	6.96	14	7.49	15
Taiwan	7.92	13	7.52	9	7.53	25 (tie)	6.89	17	7.47	16
Germany	7.80	16	6.48	24	9.07	11	7.44	11	7.45	17
New Zealand	7.83	14 (tie)	7.55	8	7.53	25 (tie)	6.38	23	7.37	18
Hong Kong	7.17	20	7.06	13 (tie)	8.47	20	6.93	15 (tie)	7.34	19
Belgium	7.83	14 (tie)	6.26	25 (tie)	8.67	18	6.93	15 (tie)	7.19	20
Italy	6.79	23	6.52	22 (tie)	8.87	13	6.68	20	7.07	21
Spain	6.96	21	6.26	25 (tie)	9.13	8 (tie)	6.31	25	6.98	22
Japan	6.71	24	6.52	22 (tie)	6.60	32	6.33	24	6.53	23
Greece	6.40	26	5.87	28 (tie)	8.80	14 (tie)	5.66	28	6.52	24
Malaysia	6.25	27	6.94	15	7.07	28 (tie)	5.19	32	6.48	25
Israel	6.92	22	5.52	31	6.67	31	7.07	13	6.34	26
Portugal	6.42	25	5.29	32 (tie)	8.73	16 (tie)	5.93	27	6.33	27
Chile	5.77	30	5.29	32 (tie)	7.80	24	6.51	22	6.13	28
Czech Republic	5.28	32	6.65	20	6.40	33 (tie)	5.58	29	6.11	29
Hungary	5.42	31	6.58	21	6.40	33 (tie)	5.50	30	6.09	30

Source: Economist Intelligence Unit

Economist Intelligence Unit e-learning readiness rankings, 2003, by category

	Educatn. score (of 10)	Educatn. rank (of 60)	Industry score (of 10)	Industry rank (of 60)	Govmnt. score (of 10)	Govmnt. rank (of 60)	Society score (of 10)	Society rank (of 60)	Overall score (of 10)	Overall rank (of 60)
Weight in overall score	20%		40%		20%		20%			
Mexico	5.87	28	5.26	35 (tie)	8.20	23	5.22	31	5.96	31
Argentina	5.83	29	5.23	37 (tie)	7.07	28 (tie)	5.97	26	5.86	32
Poland	5.25	33	6.23	27	6.20	36	4.75	38	5.73	33
Brazil	5.23	34	5.23	37 (tie)	7.33	27	5.16	33	5.63	34
Slovakia	4.85	39	5.87	28 (tie)	5.87	38	5.07	34	5.51	35
Thailand	5.17	35	5.55	30	5.27	41	4.01	47	5.11	36
Peru	4.94	36	4.81	43	7.00	30	3.97	49 (tie)	5.10	37
Colombia	4.71	41	4.74	44	6.27	35	4.80	36	5.05	38
Bulgaria	4.70	42	5.16	39	5.40	40	4.78	37	5.04	39
South Africa	4.50	46	4.61	46 (tie)	6.13	37	4.96	35	4.96	40
Romania	4.63	43	5.26	35 (tie)	5.00	43 (tie)	4.43	42	4.91	41
Venezuela	4.92	37 (tie)	4.87	42	5.13	42	4.33	44	4.82	42
Philippines	4.35	48	4.90	41	5.67	39	4.16	45	4.80	43
Russia	4.78	40	4.94	40	4.13	49	4.46	41	4.65	44
India	4.18	50 (tie)	5.29	32 (tie)	4.07	50	3.97	49 (tie)	4.56	45
China	4.01	53	4.61	46 (tie)	5.00	43 (tie)	4.34	43	4.52	46
Saudi Arabia	4.92	37 (tie)	4.35	49	4.33	45 (tie)	4.55	40	4.50	47
Ukraine	4.62	44	4.65	45	4.00	51	4.00	48	4.38	48 (tie)
Ecuador	4.55	45	4.61	46 (tie)	4.27	47	3.86	51	4.38	48 (tie)
Turkey	4.46	47	4.19	50	4.20	48	4.61	39	4.33	50
Egypt	4.06	52	3.71	54 (tie)	4.33	45 (tie)	4.08	46	3.98	51
Kazakhstan	4.18	50 (tie)	3.97	53	3.27	55	3.58	52	3.79	52
Indonesia	3.25	58	4.13	51	3.60	52	3.26	55	3.67	53 (tie)
Azerbaijan	4.35	48	3.71	54 (tie)	3.20	56	3.39	53	3.67	53 (tie)
Sri Lanka	3.51	57	4.03	52	3.47	53	3.25	56	3.66	55
Algeria	3.75	54	3.65	57	3.40	54	3.18	58	3.52	56
Vietnam	3.58	56	3.61	58	2.87	57	2.94	59	3.32	57
Pakistan	3.15	59	3.71	54 (tie)	2.73	58	2.80	60	3.22	58
Iran	3.70	55	2.94	59	2.53	59 (tie)	3.19	57	3.06	59
Nigeria	2.75	60	2.77	60	2.53	59 (tie)	3.29	54	2.82	60

Source: Economist Intelligence Unit

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